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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188 (1)	
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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 1990	3. REPORT TYPE AND DATES COVERED ~~XXXXXX~~ /DISSERTATION		
4. TITLE AND SUBTITLE A Field Scale Investigation of Enhanced Petroleum Hydrocarbon Biodegradation in the Vadose Zone Combining Soil Venting as an Oxygen Source with Moisture and Nutrient Addition. <i>(Appendices)</i>		5. FUNDING NUMBERS		
6. AUTHOR(S) Ross N. Miller				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) AFIT Student Attending: Utah State University		8. PERFORMING ORGANIZATION REPORT NUMBER AFIT/CI/CIA- 90-031D		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) AFIT/CI Wright-Patterson AFB OH 45433-6583		10. SPONSORING/MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release IAW 190-1 Distributed Unlimited ERNEST A. HAYGOOD, 1st Lt, USAF Executive Officer		12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words) <i>This document contains appendices regarding a report on</i>				
14. SUBJECT TERMS			15. NUMBER OF PAGES ~~15~~	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

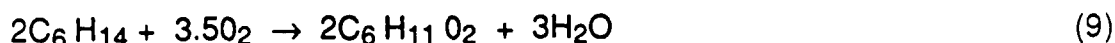
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APPENDICES

Appendix A
Engineering Calculations

Accession For	
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Availability Codes	
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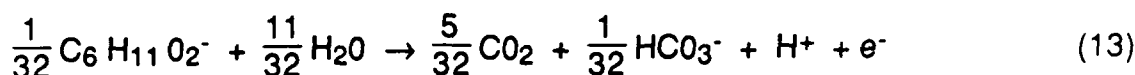
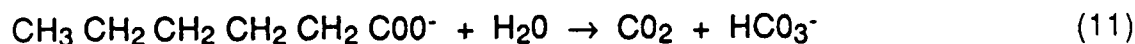
McCarty (Sawyer and McCarty, 1978)
 approach for determining
 oxygen consumption assuming
 cell synthesis and no endogenous
 respiration



Therefore: approximately 3.5 moles of oxygen are required to oxidize 2 moles of hexane to 2 moles of hexanol. From Equation 10, 0.65 g of oxygen are required to oxidize 1 gram of hexane to hexanol.

$$\frac{3.5 \text{ mole O}_2 \times \frac{32 \text{ g O}_2}{\text{mole O}_2}}{2 \text{ mole C}_6\text{H}_{14} \times \frac{86 \text{ g C}_6\text{H}_6}{\text{mole C}_6\text{H}_6}} = \frac{0.65 \text{ g O}_2}{\text{g C}_6\text{H}_6} \quad (10)$$

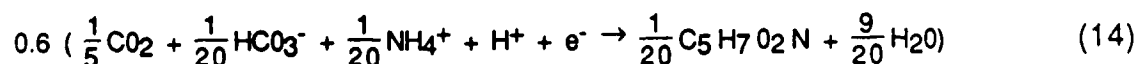
Using hexanol as a starting point:



$f_s = 0.6$ for cell synthesis

$f_e = 0.4$ for energy requirements using oxygen as an electron acceptor

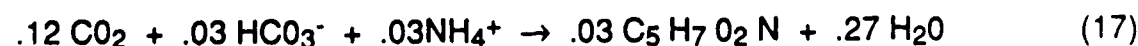
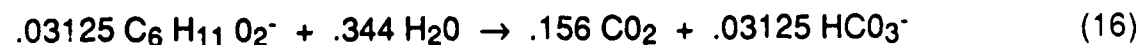
Half reaction for cell synthesis:

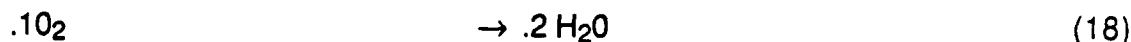


Half reaction for electron acceptor:

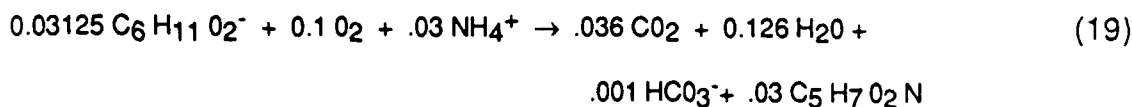


Simplifying Equations 13, 14, and 15:





Combining Equations 16, 17, and 18 results in the overall reaction:



The oxygen equivalent for the biodegradation of hexanol is 0.89 g oxygen per gram of hexanol (Equation 21):

$$\frac{0.1 \text{ moles } O_2 \times \frac{32 \text{ g } O_2}{\text{mole } O_2}}{0.03125 \text{ mole } C_6 H_{11} O_2^- \times \frac{115 \text{ g } C_6 H_{11} O_2^-}{\text{mole } C_6 H_{11} O_2^-}} = 0.890 \frac{\text{g } O_2}{\text{g } C_6 H_{11} O_2^-} \quad (20)$$

Since 0.65 g of O_2 are required to convert 1 mole of hexane to 1 mole of hexanol (Equation 10), the total oxygen requirement to biodegrade hexane using the McCarty Method (Sawyer and McCarty, 1978) is 1.54 g of oxygen per g of hexane.

From Equation 19, 0.036 moles of carbon dioxide are produced for each 0.1 moles of oxygen consumed during the biodegradation of hexanol. Since hexane is converted to hexanol on a 1 mole per 1 mole basis (Equation 9), the ratio of oxygen consumed to carbon dioxide produced during the biodegradation of hexane is approximately 2.78 (Equation 21) using the McCarty Method (Sawyer and McCarty, 1978).

$$\frac{.1 \text{ moles } O_2}{.036 \text{ moles } CO_2} = \frac{2.78 \text{ moles } O_2}{\text{mole } CO_2} \quad (21)$$

Calculations Supporting Air Flow Rates

Volume of Vents (not including gravel)

- Treatment Vent (per vent)

$$L \times W \times H = V$$

$$4.9 \text{ m} \times 2.4 \text{ m} \times 1.7 \text{ m} = 20 \text{ m}^3 \quad (16 \text{ ft} \times 8 \text{ ft} \times 5.5 \text{ ft} = 704 \text{ ft}^3)$$

- Background Vent (per vent)

$$2.4 \text{ m} \times 1.2 \text{ m} \times 1.1 \text{ m} = 3.2 \text{ m}^3 \quad (8 \text{ ft} \times 4 \text{ ft} \times 3.5 \text{ ft} = 112 \text{ ft}^3)$$

Assuming an air filled void volume of 0.20. With a variable flow of 0.1 - 5 pore volumes/day then the range in rate of air movement is:

- Treatment Vent

$$0.4 \text{ to } 19.9 \text{ m}^3/\text{day} \quad (14 \text{ to } 704 \text{ ft}^3/\text{day})$$

$$0.275 \text{ to } 14 \text{ L/min} \quad (0.01 \text{ to } 0.49 \text{ cfm})$$

- Background Vent

$$.06 \text{ to } 3.2 \text{ m}^3/\text{day} \quad (2.2 \text{ to } 112 \text{ ft}^3/\text{day})$$

$$0.044 \text{ to } 2.2 \text{ L/min} \quad (0.0016 \text{ to } 0.078 \text{ cfm})$$

Calculations Supporting Water Flow Rates

Surface Area of Vents

- Treatment Vents

$$L \times W$$

$$4.88 \text{ m} \times 2.44 \text{ m} = 11.9 \text{ m}^2 \quad (16 \text{ ft} \times 8 \text{ ft} = 128 \text{ ft}^2)$$

- Background Vent

$$2.44 \text{ m} \times 1.22 \text{ m} = 3 \text{ m}^2 \quad (8 \text{ ft} \times 4 \text{ ft} = 32 \text{ ft}^2)$$

Assume a surface infiltration rate of 43 cm to 432 cm/year (17 to 170 inches/yr)

$$= .12 \text{ cm/day to } 1.12 \text{ cm/day} \quad (0.047 \text{ to } 0.47 \text{ inches/day})$$

$$= .0012 \text{ m/day to } .0112 \text{ m/day} \quad (0.0039 \text{ to } 0.039 \text{ ft/day})$$

The flow rates may be calculated

- Treatment Vents

$$11.9 \text{ m}^2 \times .0012 \text{ to } .0112 \text{ m/day} \quad (128 \text{ ft}^2 \times 0.0039 \text{ to } 0.039 \text{ ft/day})$$

= 0.014 to .14 m ³ /day	(0.50 - 5.0 ft ³ /day)
= 14 to 140 L/day	(3.7 - 37 gal/day)
= 10 to 100 mL/min	(0.0026 - 0.026 gal/min)

- Background Vents

3 m ² x .0012 to .0112 m/day	(32 ft ² x 0.0039 - 0.039 ft/day)
= .0036 to .036 m ³ /day	(0.12 - 1.2 ft ³ /day)
= 3.6 to 36 L/day	(0.94 - 9.4 gal/day)
= 2.5 to 25 mL/min	(0.00065 - 0.0065 gal/min)

Calculations Supporting Nutrient Addition Rates

- Treatment Vents (per vent)

Volume = 20 m³ (704 ft³)

Assume = 1600 kg/m³ (100 lb/ft³) density of soil

Mass of soil ~ 32,000 kg (70,400 lbs)

Assuming a contamination level of 20,000 mg/kg (2 lb/ft³) of JP-4

Then the total JP-4 mass ~ 640 kg (1408 lbs)

Using nutrient ratio of C : N : P
100:10:1 (Alexander, 1977)

Then approximately 64 kg (141 lbs) N, and 6.4 (14 lbs) P are needed over a 7 month period for the test. (Note: From Table 5, values obtainable by maximizing equipment were 44.5 kg (98lbs) N and 4.3 (9.5 lbs) P, respectively.)

Nutrient delivery to treatment plots is summarized as follows:

- Treatment Vents (per vent)

64 kg (141 lbs) N = 245 kg (539 lbs) NH₄Cl/7 months

= 1.15 kg (2.57 lbs) NH_4Cl /day/treatment vent

6.4 kg (14 lbs) P = 21 kg (46 lbs) Trimetaphosphate
(TMP)/7 months

= 100 g (0.22 lbs) TMP/day/treatment vent

- KNO_3 was added as a 0.18 g/L solution for additional nutrient needs.

$\text{KNO}_3 = 0.18 \text{ g/L} @ 20 \text{ mL/min} = 5.18 \text{ g (0.011 lb) KNO}_3/\text{day}$

*Mass Balance Approach for
Determining rate constants (k)
in Off-Gas Treatment Plot V3*

Figure 83 illustrates the mass balance approach to calculating leakage and oxygen consumption rate (k %/min) in Off-Gas Treatment Plot V3.

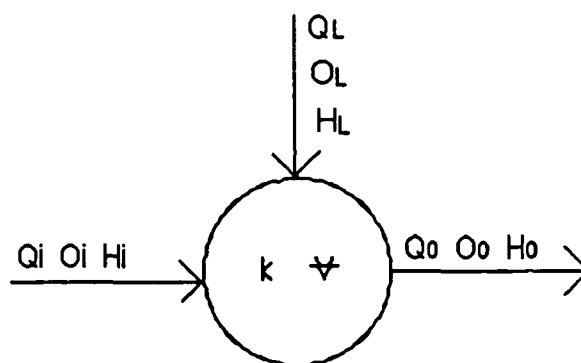


Figure 83. Mass balance schematic for Off-Gas Treatment Plot V3.

- Q_i = Flow from V1 into V3, unknown, L/min
- Q_L = Leakage flow, unknown, L/min
- Q_o = Flow discharged V3, known, L/min
- O_i = Oxygen inflow from V1 into V3, known, %
- O_L = Oxygen from leakage, known (%), assumed to equal V4 oxygen
- O_o = Oxygen discharged from V3, known, %
- H_i = Hydrocarbons inflow from V1 into V3, known, % by volume
- H_L = Hydrocarbons from leakage, assumed to be 0 % by volume

H_O = Hydrocarbons discharged from V3, known, % by volume

V = V3 soil volume, assumed to be:

$$2.44 \text{ m} \times 1.22 \text{ m} \times 1.07 \text{ m} \times .31 \times 1000 \text{ L/m}^3 = 983.27$$

K = Zero order oxygen decay constant, unknown, but may be estimated from shutdown data, %/min.

Mass balance equations:

$$Q_o O_o = Q_i O_i + Q_L O_L - (K V) \quad (22)$$

$$Q_o H_o = Q_i H_i - K V X \quad (23)$$

$$Q_o = Q_i + Q_L \quad (24)$$

Where X = ratio of hydrocarbon mineralized to oxygen removed = .1053

Allowing $Q_o = 1$ and rewriting equation 22

$$O_o = a O_i + b O_L - K D \quad (25)$$

Where: a = fraction of flow from V1
 b = fraction of flow from outside leakage
 D = Detention time

Rewriting Equation 23:

$$H_o = a H_i - K D (.1053) \quad (26)$$

Rewriting Equation 24:

$$1 = a + b \quad (27)$$

$$b = 1 - a \quad (28)$$

Substituting into Equation 25:

$$O_o = a O_i + (1-a)O_L - K D \quad (29)$$

Rewriting Equation 26:

$$k = \frac{a H_i - H_o}{D (.1053)} \quad (30)$$

Substituting into Equation 29:

$$O_o = a O_i + (1-a)O_L - \frac{(a H_i - H_o) D}{D(.1053)} \quad (31)$$

$$O_o = a O_i + O_L - a O_L - a \frac{H_i - H_o}{(.1053)} \quad (32)$$

$$O_o - O_L = a (O_i - O_L - \frac{H_i - H_o}{(.1053)}) \quad (33)$$

$$a = \frac{O_o - O_L}{O_i - O_L - \frac{H_i - H_o}{(.1053)}} \quad (34)$$

Rewriting Equation 30:

$$K = \frac{a H_i - H_o}{\frac{983L (.1053)}{\text{Flow Rate (L/min)}}} \quad (35)$$

Appendix B**Field Data**

ppm = $\mu\text{L/L}$

cc = mL

Table 15. Field data collected July 1989 through May 1990.

Date Sampled	Sample Location	Coordinate		Depth ft	Sample (Lt)	CO2 DATA			Dilution (Rt.)	G/S	Dil. Flow cc/min	Gastech		O2 Data	
		x	y			Rotameter	G/S	Smpl Flow cc/min				Reading CO2 (%)	Calc. Conc. CO2 (%)	Reading O2 (%)	Gastech Reading O2 (%)
7/14/89	Treatment Area	100	298	2	80	80	G	121.7	150	S	769.2	2.05	15	7	
7/14/89	Treatment Area	106	298	2	80	80	G	121.7	150	S	769.2	2.6	19	2.6	
7/15/89	Clean Area	200	300	2	OPEN	OPEN			CLOSED			0.45	0.45	20.5	
7/15/89	Clean Area	220	300	2	OPEN	OPEN			CLOSED			0.4	0.4	20.9	
7/15/89	Clean Area	220	280	2	OPEN	OPEN			CLOSED			0.55	0.55	20.5	
7/15/89	Clean Area	220	260	2	OPEN	OPEN			CLOSED			0.18	0.18	20.9	
7/15/89	Clean Area	200	260	2	OPEN	OPEN			CLOSED			0.7	0.7	20.6	
7/15/89	Clean Area	200	280	2	OPEN	OPEN			CLOSED			0.5	0.5	20.9	
	Positive Control														
7/15/89	Clean Area	210	270	2	OPEN	OPEN			CLOSED			0.48	0.48	20.8	
7/15/89	Clean Area	210	290	2	OPEN	OPEN			CLOSED			0.45	0.45	20.9	
	Positive Control														
7/15/89	Treatment Area	112	298	2	80	80	G	121.7	150	S	769.2	2.59	19	2.6	
7/15/89	Treatment Area	118	298	2	80	80	G	121.7	150	S	769.2	2.55	18.7	2.8	
7/15/89	Treatment Area	124	298	2	80	80	G	121.7	150	S	769.2	1.9	13.9	10	
7/15/89	Treatment Area	126	298	2	80	80	G	121.7	150	S	769.2	2.6	19	6.5	
7/15/89	Treatment Area	124	274	2	80	80	G	121.7	150	S	769.2	2.5	18.3	2.7	
7/15/89	Treatment Area	118	274	1.5	OPEN	OPEN			CLOSED			3.2	3.2	18	
7/15/89	Treatment Area	112	274	2	80	80	G	121.7	150	S	769.2	1.15	8.4	7	
7/15/89	Treatment Area	106	274	2	80	80	G	121.7	150	S	769.2	2.6	19	2.8	
7/15/89	Treatment Area	100	274	1.5					CLOSED			2.8	2.8	18.3	
7/15/89	Treatment Area	112	282	1.5	80	80	G	121.7	150	S	769.2	2.6	19	3.8	
7/15/89	Treatment Area	112	282	2	80	80	G	121.7	150	S	769.2	2.55	18.7	3.2	
7/15/89	Treatment Area	112	290	0.5	150	150	S	777	150	G	308.9	2.45	3.4	18.5	
7/15/89	Treatment Area	112	290	1	80	80	G	121.7	150	S	769.2	2.2	16.1	10	
7/15/89	Treatment Area	112	290	1.5	80	80	G	121.7	150	S	769.2	2.85	20.9	5.3	
7/15/89	Treatment Area	112	290	2	80	80	G	121.7	150	S	769.2	2.75	20.1	4.3	
7/15/89	Standard Check														
7/16/89	Standard Check														
7/16/89	Treatment Area	124	290	2	80	80	G	121.7	150	S	769.2	3.5	3.5	20.9	
7/16/89	Treatment Area	100	290	1.5	80	80	G	121.7	150	S	769.2	2.4	17.6	2.5	
7/16/89	Treatment Area	100	282	1.5	150	150	S	777	110	G	202.7	1.9	13.9	5.9	
7/16/89	Treatment Area	100	282	1.5								2.8	3.5	1.6	

Date Sampled	Sample Location	Coordinate		Depth ft	Sample (Lt)	CO2 DATA			Dilution (Rt.)	G/S	Dil. Flow cc/min	Gastech		O2 Data	
		x	y			Rotameter	G/S	Smpl Flow cc/min				Reading C02 (%)	Calc. Conc.	Reading O2 (%)	Gastech Reading
7/16/89	Surrounding Area	0	300	2	80	OPEN	G	121.7	150	S	769.2	2.9	21.2	2.8	
7/16/89	Surrounding Area	0	200	2	OPEN				CLOSED			3.8	3.8	17.9	
7/16/89	Surrounding Area	100	200	2	OPEN				CLOSED			1.9	1.9	19	
	Standard Check														
7/17/89	Treatment Area	100	182	1.5	80		S	349.6	80	S	337.1	2.95	5.8	14.2	
7/17/89	V1-2A	104	286	1-1.5	80		G	121.7	150	S	769.2	1.6	11.7	3	
7/17/89	V2-2A	120	286	1-1.5	OPEN				CLOSED			2	2	17.5	
7/18/89	Standard Check											3.5		20.9	
7/18/89	V1-3A	106	282	1-1.5	OPEN				CLOSED			2.8	2.8	11	
7/18/89	V1-3A	106	282	1-1.5											
7/18/89	V1-2A	104	286	1-1.5	80		G	121.7	150	S	769.2	3.1	22.7	4.5	
7/19/89	Standard Check											3.5		20.9	
7/19/89	V1-2A	104	286	1-1.5	80		G	121.7	150	S	769.2	1.8	13.2	2.8	
7/19/89	V1-1A	106	290	1-1.5	80		G	121.7	150	S	769.2	2.05	15	2.6	
7/19/89	V2-1A	118	290	1-1.5	OPEN				CLOSED			3.6	3.6	15	
7/19/89	Standard Check														
7/19/89	V2-2A	120	286	1-1.5	OPEN				CLOSED			2.95	2.95	17	
7/19/89	V2-3A	118	282	1-1.5	OPEN				CLOSED			2.7	2.7	15	

Date	Sample Location	Coordinate		Depth	Sample		Hydrocarbon Data				SIP Reading	Calc. Conc.	
		x	y		Rotameter	(Lt)	G/S	Smpl Flow	Dilution	Rotameter	G/S	cc/min	ppm
7/14/89	Treatment Area	100	298	2	40	20	G	48	150	150	S	769.2	840
7/14/89	Treatment Area	106	298	2	20	20	G	17.4	150	150	S	769.2	600
7/15/89	Clean Area	200	300	2	OPEN	OPEN			CLOSED	CLOSED			<1
7/15/89	Clean Area	220	300	2	OPEN	OPEN			CLOSED	CLOSED			<1
7/15/89	Clean Area	220	280	2	OPEN	OPEN			CLOSED	CLOSED			<1
7/15/89	Clean Area	220	260	2	OPEN	OPEN			CLOSED	CLOSED			<1
7/15/89	Clean Area	200	260	2	OPEN	OPEN			CLOSED	CLOSED			<1
7/15/89	Clean Area	200	280	2	OPEN	OPEN			CLOSED	CLOSED			<1
7/15/89	Positive Control				OPEN	OPEN			CLOSED	CLOSED			13
7/15/89	Clean Area	210	270	2	OPEN	OPEN			CLOSED	CLOSED			<1
7/15/89	Clean Area	210	290	2	OPEN	OPEN			CLOSED	CLOSED			<1
7/15/89	Positive Control				OPEN	OPEN			CLOSED	CLOSED			13
7/15/89	Treatment Area	112	298	2	20	20	G	17.4	150	150	S	769.2	460
7/15/89	Treatment Area	118	298	2	20	20	G	17.4	150	150	S	769.2	600
7/15/89	Treatment Area	124	298	2	20	20	G	17.4	150	150	S	769.2	370
7/15/89	Treatment Area	126	298	2	20	20	G	17.4	150	150	S	769.2	185
7/15/89	Treatment Area	124	274	2	20	20	G	17.4	150	150	S	769.2	350
7/15/89	Treatment Area	118	274	1.5	OPEN	OPEN			CLOSED	CLOSED			460
7/15/89	Treatment Area	112	274	2	20	20	G	17.4	150	150	S	769.2	390
7/15/89	Treatment Area	106	274	2	20	20	G	17.4	150	150	S	769.2	340
7/15/89	Treatment Area	100	274	1.5	OPEN	OPEN			CLOSED	CLOSED			39
7/15/89	Treatment Area	112	282	1.5	20	20	G	17.4	150	150	S	769.2	310
7/15/89	Treatment Area	112	282	2	20	20	G	17.4	150	150	S	769.2	460
7/15/89	Treatment Area	112	290	0.5	150	150	S	777	150	150	G	311.4	730
7/15/89	Treatment Area	112	290	1	50	50	G	53.6	150	150	S	769.2	506
7/15/89	Treatment Area	112	290	1.5	20	20	G	17.4	150	150	S	769.2	430
7/15/89	Treatment Area	112	290	2	10	10	G	8	150	150	S	769.2	410
7/15/89	Standard Check												1000
7/16/89	Standard Check												1000
7/16/89	Treatment Area	124	290	2	20	20	G	17.4	150	150	S	769.2	530
7/16/89	Treatment Area	100	290	1.5	80	80	G	121.7	150	150	S	769.2	510
7/16/89	Treatment Area	100	282	1.5	20	20	G	17.4	150	150	S	769.2	285

Date Sampled	Sample Location	Coordinate		Depth ft	Sample (Lt) Rotameter	G/S	Hydrocarbon Data			Dil. Flow cc/min	SIP Reading ppm	Calc. Conc. ppm
		x	y				Smpl Flow cc/min	Dilution Rotameter (Rt.)	G/S			
7/16/89	Surrounding Area	0	300	2	20	G	17.4	150	S	769.2	500	22603
7/16/89	Surrounding Area	0	200	2	OPEN			CLOSED			40	40
7/16/89	Surrounding Area	100	200	2	OPEN			CLOSED			13	13
7/16/89	Standard Check										1000	
7/17/89	Treatment Area	100	182	1.5							Flame quenched	
7/17/89	V1-2A	104	286	1-1.5	20	G	17.4	150	S	769.2	270	12206
7/17/89	V2-2A	120	286	1-1.5	50	G	53.6	150	S	769.2	445	6831
7/18/89	Standard Check										1000	
7/18/89	V1-3A	106	282	1-1.5	20	G	17.4	150	S	769.2	240	10850
7/18/89	V1-3A	106	282	1-1.5	60	G	80	150	S	769.2	870	9235
7/18/89	V1-2A	104	286	1-1.5	20	G	17.4	150	S	769.2	340	15370
7/19/89	Standard Check										1000	
7/19/89	V1-2A	104	286	1-1.5	20	G	17.4	150	S	769.2	500	22603
7/19/89	V1-1A	106	290	1-1.5	20	G	17.4	150	S	769.2	590	26672
7/19/89	V2-1A	118	290	1-1.5	60	G	80	150	S	769.2	540	5732
7/19/89	Standard Check										1010	
7/19/89	V2-2A	120	286	1-1.5	60	G	80	150	S	769.2	630	6687
7/19/89	V2-3A	118	282	1-1.5	60	G	80	150	S	769.2	405	4299

					CO2/THC DATA									O2 Data	

Date	Time	Sample Loc.	Anal.	CO2/THC DATA				Dil.				Calc. Conc.				O2 Data	
				Smpl. Rotameter (Lt)	Flow cc/min	Dil. (Rt.) Rotameter	G/S	Flow cc/min	Gastech-CO2 (%)	CO2 (%)	THC (ppm)	Flow cc/min	Gastech-CO2 (%)	CO2 (%)	THC (ppm)	O2 Reading	O2+C02 (%)
29-Sep	10:53	V1-3C	O2	OPEN		CLOSED										2.5	
			CO2	50	S	150	S	769	2.8	15.5		769					18.0
			THC	50	G	150	S	769	1527	20466.7							
29-Sep	AM	V2-1A	O2	OPEN		CLOSED										14.2	
			CO2	OPEN		CLOSED											17.6
			THC	OPEN		CLOSED			2400	2400.0							
29-Sep	AM	V2-1B	O2	OPEN		CLOSED										1.5	
			CO2	50	S	150	S	769	2.7	15.0		769					16.5
			THC	40	G	150	S	769	1705	30208.2							
29-Sep	AM	V2-1C	O2	OPEN		CLOSED										1.5	
			CO2	50	S	150	S	769	2.7	15.0		769					16.5
			THC	35	G	150	S	769	1730	35842.1							
29-Sep	PM	V2-2A	O2	OPEN		CLOSED										16	
			CO2	OPEN		CLOSED											17.8
			THC	OPEN		CLOSED			1.8	1.8							
29-Sep	12:20	V2-2B	O2	OPEN		CLOSED										2	
			CO2	50	S	150	S	769	2.75	15.3		769					17.3
			THC	50	G	150	S	769	1580	24080.4							
29-Sep	12:30	V2-2C	O2	OPEN		CLOSED										1.5	
			CO2	50	S	150	S	769	2.7	15.0		769					16.5
			THC	35	G	150	S	769	1505	31180.5							
29-Sep	12:40	V2-3A	O2	OPEN		CLOSED										12.8	
			CO2	OPEN		CLOSED											16.0
			THC	150	S	150	G	309	3.2	3.2							
29-Sep	12:53	V2-3B	O2	OPEN		CLOSED										19.5	
			CO2	OPEN		CLOSED											20.0
			THC	OPEN		CLOSED			0.5	.5							
29-Sep	13:03	V2-3C	O2	OPEN		CLOSED										1.5	
			CO2	50	S	150	S	769	2.65	14.7		769					16.2
			THC	40	G	150	S	769	1460	25867.4							

			CO2/THC DATA												O2 Data	
			Smpl		Dil.		Flow		Calc. Conc.				Gastech			
Sample	Anal.	Rotameter	G/S	Flow	Dil. (Rt.)	Rotameter	G/S	cc/min	cc/min	CO2 (%)	THC (ppm)	SIP-THC (ppm)	CO2 (%)	Reading	O2+C02 (%)	
2-Oct 13:51	V2-1A	O2	OPEN		CLOSED	CLOSED								15.7		
		CO2	OPEN		CLOSED	CLOSED						2.75	2.8			
2-Oct 14:00	V2-1B	O2	OPEN		CLOSED	CLOSED								.5		
		CO2	50	S 169	150	150	S	769	769	13.9		2.5	13.9		14.4	
2-Oct 14:04	V2-1C	O2	OPEN		CLOSED	CLOSED								.4		
		CO2	50	S 169	150	150	S	769	769	14.4		2.6	14.4		14.8	
2-Oct 14:09	V2-2A	O2	OPEN		CLOSED	CLOSED								14.0		
		CO2	OPEN		CLOSED	CLOSED				3.3		3.3			17.3	
2-Oct 14:21	V2-2B	O2	OPEN		CLOSED	CLOSED								1.5		
		CO2	50	S 169	150	150	S	769	769	13.6		2.45	13.6		15.1	
2-Oct 14:18	V2-2C	O2	OPEN		CLOSED	CLOSED								.5		
		CO2	50	S 169	150	150	S	769	769	14.2		2.55	14.2		14.7	
2-Oct 14:30	V2-3A	O2	OPEN		CLOSED	CLOSED								5.4		
		CO2	50	S 169	150	150	S	769	769	10.0		1.8	10.0		15.4	
2-Oct 14:40	V2-3B	O2	OPEN		CLOSED	CLOSED								.5		
		CO2	50	S 169	150	150	S	769	769	14.7		2.65	14.7		15.2	
2-Oct 14:37	V2-3C	O2	OPEN		CLOSED	CLOSED								.5		
		CO2	50	S 169	150	150	S	769	769	14.7		2.65	14.7		15.2	
Standard check with 101 ppm hexane - GC Counts =11																
2-Oct 15:36	V3A	O2	OPEN		CLOSED	CLOSED								16.2		
		CO2	OPEN		CLOSED	CLOSED						3.2	3.2		19.4	
		THC	OPEN		CLOSED	CLOSED						24	24.0			
2-Oct 15:40	V3B	O2	OPEN		CLOSED	CLOSED								16.5		
		CO2	OPEN		CLOSED	CLOSED						2.9	2.9		19.4	
		THC	OPEN		CLOSED	CLOSED						18	18.0			
2-Oct 15:45	V3C	O2	OPEN		CLOSED	CLOSED								16.2		
		CO2	OPEN		CLOSED	CLOSED						3.2	3.2		19.4	
		THC	OPEN		CLOSED	CLOSED						16	16.0			
2-Oct 15:58	V4A	O2	OPEN		CLOSED	CLOSED								17.5		
		CO2	OPEN		CLOSED	CLOSED						2.75	2.8		20.3	
		THC	OPEN		CLOSED	CLOSED						12	12.0			

			CO2/THC DATA										O2 Data		
			Smpl		Dil.				Dil.		Calc. Conc.		Gastech		
	Sample		Smpl (Lt)	Flow	Rotameter	G/S	cc/min	Flow	Gastech-CO2 (%)	CO2 (%)	THC (ppm)	Reading	O2+CO2		
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Dil. (Rt.)	G/S	SIP-THC (ppm)			O2 (%)	O2 (%)		
2-Oct	16:00	V4B	O2	OPEN			CLOSED					18			
			CO2	OPEN			CLOSED		2.35	2.4			20.4		
			THC	OPEN			CLOSED		12	12.0					
2-Oct	16:05	V4C	O2	OPEN			CLOSED					17.6			
			CO2	OPEN			CLOSED		2.6	2.6			20.2		
			THC	OPEN			CLOSED		12	12.0					
			Standard check with atmospheric air								.1		20.8		
			Standard check with 5.1% CO2/N2								5.1		0		
			Standard check - GC reading 113 ppm on 101ppm std.												
			Recalibrated GC using 1491 ppm std- GC counts = 267												
2-Oct	16:30	V1 disch	O2	OPEN			CLOSED						19.2		
			CO2	OPEN			CLOSED		0.8	.8					
			THC	OPEN			CLOSED		590	590.0					
2-Oct	16:44	V2 disch	O2	OPEN			CLOSED					14.2			
			CO2	OPEN			CLOSED		4.2	4.2					
			THC	50	S	169	150	S	390	2164.6					
2-Oct	17:10	Standard check with 1491 std								1556	1556.0				
		Standard check with atmospheric air								0.1	.1	20.9			
		Standard check with 5.1% CO2/N2								5.1	5.1	0			
3-Oct	8:30	Standard check with 1491 std								1491	1491.0				
		Standard check with atmospheric air								0.03	.0	20.9			
		Standard check with 5.1% CO2/N2								5.1	5.1	0			
		Note: Rotameter readings apply to CO2 and THC measurements only. O2 measurements are read directly.													
3-Oct	12:00	V1-1A	CO2/02	50	S	169	150	S	2.4	13.3		3.2	16.5		
3-Oct	12:00	V1-1B	CO2/02	50	S	169	150	S	2.6	14.4		1.8	16.2		
3-Oct	12:00	V1-1C	CO2/02	50	S	169	150	S	2.3	12.8		4	16.8		
3-Oct	12:00	V1-2A	CO2/02	50	S	169	150	S	2.4	13.3		2.3	15.6		
3-Oct	12:00	V1-2B	CO2/02	50	S	169	150	S	2.75	15.3		0.6	15.9		
3-Oct	12:00	V1-2C	CO2/02	50	S	169	150	S	2.82	15.7		1	16.7		
3-Oct	12:00	V1 disch	CO2/02	OPEN			CLOSED		1	1.0		19.2	20.2		

		CO2/THC DATA												O2 Data	
		Sample		Smpl (Lt)		Smpl		Dil.		Dil.		Calc. Conc.		Gastech	
Date	Time	Loc.	Anal.	Rotameter	G/S	Flow	Rotameter	G/S	Flow	Gastech-CO2 (%)	SIP-THC (ppm)	CO2 (%)	THC (ppm)	Reading	O2 (%)
3-Oct	12:00	V2 disch	CO2/O2	OPEN			CLOSED				4.3	4.3	4.3	14.6	18.9
3-Oct	12:00	V2-1A	CO2/O2	OPEN			CLOSED				2.4	2.4	2.4	16.5	18.9
3-Oct	12:00	V2-1B	CO2/O2	50	S	169	150	S	769	2.7		15.0		0.5	15.5
3-Oct	12:00	V2-1C	CO2/O2	50	S	169	150	S	769	2.8		15.5		0.4	15.9
3-Oct	12:00	V2-2A	CO2/O2	50	S	169	150	S	769	0.75		4.2		16	20.2
3-Oct	12:00	V2-2B	CO2/O2	50	S	169	150	S	769	2.7		15.0		1.2	16.2
3-Oct	12:00	V2-2C	CO2/O2	50	S	169	150	S	769	2.8		15.5		0.3	15.8
3-Oct	12:00	V2-3A	CO2/O2	OPEN			CLOSED				3.4	3.4	3.4	15.5	18.9
3-Oct	12:00	V2-3B	CO2/O2	50	S	169	150	S	769	2.4		13.3		4.2	17.5
3-Oct	12:00	V2-3C	CO2/O2	50	S	169	150	S	769	2.85		15.8		0.5	16.3
3-Oct	12:00	Standard check with atmospheric air									0.15	.2		20.3	20.5
	12:00	Standard check with 5.1% CO2/N2									5.1	5.1		0	
	12:00	Standard check with 1491 ppm std.									1470-1495	1470-1495			
3-Oct	12:00	V3 disch	CO2/O2	OPEN			CLOSED				1.6	1.6	1.6	17.8	19.4
			THC	OPEN			CLOSED				39	39.0			
3-Oct	12:00	V3 inlet	CO2/O2	OPEN			CLOSED				1.9	1.9	1.9	17.6	19.5
			THC	OPEN			CLOSED				1650	1650.0			
3-Oct	12:00	V3A	CO2/O2	OPEN			CLOSED				1.8	1.8	1.8	18.5	20.3
			THC	OPEN			CLOSED				120	120.0			
3-Oct	12:00	V3B	CO2/O2	OPEN			CLOSED				1.45	1.5	1.5	18.9	20.4
			THC	OPEN			CLOSED				216	216.0			
3-Oct	12:00	V3C	CO2/O2	OPEN			CLOSED				1.8	1.8	1.8	18.8	20.6
			THC	OPEN			CLOSED				162	162.0			
3-Oct	12:00	V4 disch	CO2/O2	OPEN			CLOSED				2.35	2.4	2.4	18	20.4
			THC	OPEN			CLOSED				20	20.0			
3-Oct	12:00	V4A	CO2/O2	OPEN			CLOSED				2.4	2.4	2.4	18.2	20.6
			THC	OPEN			CLOSED				10	10.0			
3-Oct	12:00	V4B	CO2/O2	OPEN			CLOSED				2.05	2.1	2.1	18.5	20.6
			THC	OPEN			CLOSED				9.4	9.4			
3-Oct	12:00	V4C	CO2/O2	OPEN			CLOSED				3.1	3.1	3.1	15	18.1
			THC	OPEN			CLOSED				15	15.0			

			CO2/THC DATA						Dil.		Calc. Conc.		O2 Data	
			Smpl		Flow		Dil. (Rt.)		Flow		CO2 (%)		Gastech	
Sample			Smpl (Lt)		G/S		Rotameter		G/S		SIP-THC (ppm)		Reading	
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Flow	Rotameter	G/S	cc/min	SIP-THC (ppm)	CO2 (%)	O2 (%)	O2+C02 (%)
4-Oct	12:00	V1-2B	O2										1.8	
4-Oct	12:00	V1-2C	O2										2	
4-Oct	12:00	V1-3C	O2										11.5	
4-Oct	12:00	V1-3C	O2										2.1	
4-Oct	12:00	V1-3C	O2										2.2	
4-Oct	12:00	V2-1A	O2										16.9	
4-Oct	12:00	V2-1B	O2										1.3	
4-Oct	12:00	V2-1C	O2										1	
4-Oct	12:00	V2-2A	O2										17.5	
4-Oct	12:00	V2-2B	O2										2.8	
4-Oct	12:00	V2-2C	O2										1	
4-Oct	12:00	V2-3A	O2										17	
4-Oct	12:00	V2-3B	O2										6.2	
4-Oct	12:00	V2-3C	O2										1	
4-Oct	12:00	V12 disch	CO2/O2	100	G	168	150	S	769	2.9	16.2	19489.1	1.9	18.1
			THC	40	G	46	150	S	769	1100				
4-Oct	12:00	V22 disch	CO2/O2	100	G	168	150	S	769	2.9	16.2		6	22.2
			THC	40	G	46	150	S	769	362	6413.7			
4-Oct	12:00	V12 disch	CO2/O2	150	G	311	150	S	769	4.35	15.1		0.8	15.9
			THC	40	G	46	150	S	769	1230	21792.4			
4-Oct	12:00	Dewater	CO2/O2	OPEN			CLOSED			1	1.0		18.5	19.5
			THC	100	G	168	150	S	769	600	3346.4			
4-Oct	12:00	V3 inlet	CO2/O2	100	G	168	150	S	769	2.85	15.9		1.8	17.7
			THC	40	G	46	150	S	769	760	13465.2			
4-Oct	12:00	V3 inlet	CO2/O2	100	G	168	150	S	769	2.1	11.7		7.5	19.2
			THC	40	G	46	150	S	769	600	10630.4			
4-Oct	12:00	V3 outlet	CO2/O2	OPEN			CLOSED			1.85	1.9		17.5	19.4
			THC	OPEN			CLOSED			88	88.0			
4-Oct	12:00	V4 outlet	CO2/O2	OPEN			CLOSED			2.6	2.6		17.5	20.1
			THC	OPEN			CLOSED			44	44.0			
		Standard check with atmospheric air									0.25	.3	20.2	
		Standard check with 5.1% CO2/N2									5.2	5.2	0	

		CO2/THC DATA										O2 Data	
		Sample		Smpl (Lt)		Smpl		Dil. (Rt.)		Dil.		Calc. Conc.	
Date	Time	Loc.	Anal.	Rotameter	G/S	Flow	cc/min	Rotameter	G/S	Flow	cc/min	CO2 (%)	Reading
5-Oct	12:00	Standard	check with atmospheric air									THC (ppm)	O2 (%)
		Standard	check with 5.1% CO2/N2									.0	20.9
		Standard	check with 1491 ppm std.									5.1	
5-Oct	12:00	V1-1A	CO2/O2									1495.0	
5-Oct	12:00	V1-1B	CO2/O2	100	G	168	150	S		769		9.8	6.3
5-Oct	12:00	V1-1C	CO2/O2										8.5
5-Oct	12:00	V1-2A	CO2/O2										12
5-Oct	12:00	V1-2B	CO2/O2										3.5
5-Oct	12:00	V1-2C	CO2/O2										4.3
5-Oct	12:00	V1-3A	CO2/O2										16.2
5-Oct	12:00	V1-3B	CO2/O2										16
5-Oct	12:00	V1-3C	CO2/O2										14.2
5-Oct	12:00	V1 disch	CO2/O2	150	G	311	100	S		445		6.9	11
		THC		40	G	46	150	S		769		23032.6	17.9
5-Oct	12:00	V2-1A	CO2/C2										20.5
5-Oct	12:00	V2-1B	CO2/O2										1
5-Oct	12:00	V2-1C	CO2/O2	No air flow									
5-Oct	12:00	V2-2A	CO2/O2										20.8
5-Oct	12:00	V2-2B	CO2/O2										2
5-Oct	12:00	V2-2C	CO2/O2	ucked water									
5-Oct	12:00	V2-3A	CO2/O2										19
5-Oct	12:00	V2-3B	CO2/O2										7.5
5-Oct	12:00	V2-3C	CO2/O2										2
5-Oct	12:00	V2-2 disc	CO2/O2	50	S	169	150	S		769		8.9	11
		THC		40	G	49	150	S	lit	788		9565.7	19.9
		Standard	check with atmospheric air									.0	20.9
		Standard	check with 5.1% CO2/N2									5.1	0
		Standard	check with 1491 ppm std. GC counts = 249									1491.0	
5-Oct	12:00	V2-1A	CO2/O2	OPEN				CLOSED				.5	20
		THC		OPEN				CLOSED				30.0	20.5
5-Oct	12:00	V2-1B	CO2/O2	100	G	168	150	S		769		11.7	0.5
		THC		40	G	46	150	S		769		25247.3	12.2

		CO2/THC DATA												O2 Data		
		Sample		Smpl (Lt)		Smpl		Dil. (Rt.)		Dil.		Calc. Conc.		Gastech		
Date	Time	Loc.	Anal.	Rotameter	G/S	Flow	cc/min	Rotameter	G/S	Flow	SIP-THC (ppm)	Gastech-CO2 (%)	CO2 (%)	Reading	O2+C02 (%)	
20-Oct	12:00	V2-2C	O2												14.5	
20-Oct	12:00	V2-3C	O2												9.6	
24-Oct	7:00	Calibrate FID - GC counts = 281 for 1491ppm standard.														
24-Oct		Standard check with atmospheric air										0.03		.0	20.9	
24-Oct		Standard check with 5.1% CO2/N2										5.1		5.1	0	
24-Oct	7:28	V3 inlet	CO2/O2	OPEN				CLOSED			2.4		150.0	2.4	18	20.4
24-Oct			THC	OPEN				CLOSED								
24-Oct	7:59	V3A	CO2/O2	OPEN				CLOSED			2		2.0	2.0	18.5	20.5
24-Oct	8:01	V3B	CO2/O2	OPEN				CLOSED			2.3		2.3	2.3	18.2	20.5
24-Oct	8:06	V3B	CO2/O2	OPEN				CLOSED			2.5		2.5	2.5	18	20.5
24-Oct	8:08	V3 disch	CO2/O2	OPEN				CLOSED			2.1		2.1	2.1	18.5	20.6
24-Oct			THC	OPEN				CLOSED			14		14.0			
24-Oct	8:10	V4 inlet	CO2/O2	OPEN				CLOSED			0.03		.0	20.9		
24-Oct			THC	OPEN				CLOSED			9		9.0			
Note: 5 ppm through sampling train.																
24-Oct	8:14	V4A	CO2/O2	OPEN				CLOSED			1.05		1.1	19.2	20.3	
24-Oct			THC	OPEN				CLOSED			9		9.0			
24-Oct	8:23	V4B	CO2/O2	OPEN				CLOSED			1.15		1.2	19.2	20.4	
24-Oct			THC	OPEN				CLOSED			8.5		8.5			
24-Oct	8:28	V4C	CO2/O2	OPEN				CLOSED			1.35		1.4	19.2	20.6	
24-Oct			THC	OPEN				CLOSED			8.5		8.5			
24-Oct	8:31	V4 disch	CO2/O2	OPEN				CLOSED			1.5		1.5	19	20.5	
24-Oct			THC	OPEN				CLOSED			8.5		8.5			
Note: THC in atmosphere = 6 ppm																
24-Oct	8:57	V2 disch	CO2/O2	OPEN				CLOSED			5.1		5.1	13.5	18.6	
24-Oct			THC	50	G	54	150	150	S	769			11583.0			
24-Oct	9:04	V2-1A	CO2/O2	OPEN				CLOSED			0.45		.5	19.8	20.3	
24-Oct	9:06	V2-1B	CO2/O2	OPEN				CLOSED			4.3		4.3	14.7	19.0	
24-Oct	9:08	V2-1C	CO2/O2	150	G	311	150	150	G	309			5.6	12.5	18.1	
24-Oct	9:10	V2-2A	CO2/O2	OPEN				CLOSED			0.15		.2	20.2	20.4	
24-Oct	9:17	V2-2B	CO2/O2	OPEN				CLOSED			3.3		3.3	16.3	19.6	

		CO2/THC DATA												O2 Data	
		Smpl (Lt)		Smpl		Dil. (Rt.)		Dil.		Calc. Conc.		Gastech			
Sample	Loc.	Anal.	Rotameter	G/S	Flow	cc/min	Rotameter	G/S	Flow	Gastech-CO2 (%)	CO2 (%)	Reading			
Date	Time									SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)		
24-Oct	9:26	V2-2C	CO2/O2	OPEN			CLOSED			4.95	5.0	14	19.0		
24-Oct	9:29	V2-3A	CO2/O2	OPEN			CLOSED			0.75	.8	19.5	20.3		
24-Oct	9:30	V2-3B	CO2/O2	OPEN			CLOSED			4.4	4.4	14.8	19.2		
24-Oct	9:32	V2-3C	CO2/O2	150	G	311	150	G	309	3.6	7.2	10	17.2		
24-Oct	9:35	V1 disch	CO2/O2	150	G	311	150	G	309	2.8	5.6	13	18.6		
		THC		50	G	54	150	S	769	690	10516.1				
24-Oct	9:42	V1-1A	CO2/O2	150	G	311	150	G	309	2.7	5.4	13.9	19.3		
24-Oct	9:52	V1-1B	CO2/O2	150	G	311	150	G	309	2.2	4.4	15	19.4		
24-Oct	9:55	V1-1C	CO2/O2	150	G	311	150	G	309	2.25	4.5	14.5	19.0		
24-Oct	10:00	V1-2A	CO2/O2	OPEN			CLOSED			2	2.0	18.5	20.5		
24-Oct	10:02	V1-2B	CO2/O2	OPEN			CLOSED			4.4	4.4	15	19.4		
24-Oct	10:04	V1-2C	CO2/O2	150	G	311	150	G	309	3.5	7.0	12	19.0		
24-Oct	10:06	V1-3A	CO2/O2	OPEN			CLOSED			1.45	1.5	19	20.5		
24-Oct	10:09	V1-3B	CO2/O2	OPEN			CLOSED			4.4	4.4	14.5	18.9		
24-Oct	10:10	V1-3C	CO2/O2	OPEN			CLOSED			3	3.0	16.5	19.5		
NOTE: Readings for V1-3B and V1-3C appear to be reversed.															
24-Oct	10:13	NOTE: Blowers turned off for shutdown test No. 1													
24-Oct	10:47	V1-1A	CO2/O2	150	G	311	150	G	309	2.65	5.3	13.2	18.5		
24-Oct	10:50	V1-1B	CO2/O2	150	G	311	150	G	309	2.2	4.4	14.5	18.9		
24-Oct	10:53	V1-1C	CO2/O2	OPEN			CLOSED			4.75	4.8	14	18.8		
24-Oct	10:56	V1-2A	CO2/O2	OPEN			CLOSED			2.7	2.7	16.5	19.2		
24-Oct	10:58	V1-2B	CO2/O2	OPEN			CLOSED			4.6	4.6	14.5	19.1		
24-Oct	11:00	V1-2C	CO2/O2	150	G	311	150	G	309	3.2	6.4	12	18.4		
24-Oct	11:04	V1-3A	CO2/O2	OPEN			CLOSED			2.1	2.1	17.2	19.3		
24-Oct	11:08	V1-3B	CO2/O2	OPEN			CLOSED			3.2	3.2	16.1	19.3		
24-Oct	11:10	V1-3C	CO2/O2	OPEN			CLOSED			4.7	4.7	13.7	18.4		
24-Oct	11:14	V2-1A	CO2/O2	OPEN			CLOSED			0.6	.6	19.5	20.1		
24-Oct	11:17	V2-1B	CO2/O2	OPEN			CLOSED			4.5	4.5	13.3	17.8		
24-Oct	11:20	V2-1C	CO2/O2	150	G	311	150	G	309	2.8	5.6	12.2	17.8		
24-Oct	11:25	V2-2A	CO2/O2	OPEN			CLOSED			0.15	.2	20.2	20.4		
24-Oct	11:27	V2-2B	CO2/O2	OPEN			CLOSED			3.1	3.1	16	19.1		
24-Oct	11:28	V2-2C	CO2/O2	OPEN			CLOSED			5	5.0	13.2	18.2		

				CO2/THC DATA								Dil.				Calc. Conc.				O2 Data	
Sample		Anal.		Smpl (Lt)		Smpl		Dil. (Rt.)		G/S		Flow		Gastech-CO2 (%)		CO2 (%)		Gastech			
Date	Time	Loc.		Rotameter	G/S	cc/min		Rotameter	G/S	cc/min		cc/min		SIP-THC	(ppm)	THC	(ppm)	Reading	O2 (%)	O2+CO2	(%)
24-Oct	11:30	V2-3A	CO2/O2	OPEN				CLOSED						1.1		1.1		18.5		19.6	
24-Oct	11:32	V2-3B	CO2/O2	OPEN				CLOSED						4.4		4.4		14.2		18.6	
24-Oct	11:34	V2-3C	CO2/O2	150	G	311		150	G	309				3.8		7.6		10		17.6	
24-Oct	11:40	V3A	CO2/O2	OPEN				CLOSED						1.9		1.9		18		19.9	
24-Oct	11:42	V3B	CO2/O2	OPEN				CLOSED						2.2		2.2		17.8		20.0	
24-Oct	11:43	V3C	CO2/O2	OPEN				CLOSED						2.2		2.2		17.7		19.9	
24-Oct	11:45	V4A	CO2/O2	OPEN				CLOSED						0.95		1.0		19		20.0	
24-Oct	11:47	V4B	CO2/O2	OPEN				CLOSED						1.1		1.1		19		20.1	
24-Oct	11:50	V4C	CO2/O2	OPEN				CLOSED						1.3		1.3		18.8		20.1	
24-Oct	11:55	Standard check with atmospheric air												0.03		.0		20.5			
24-Oct	11:55	Standard check with 5.1% CO2/N2												5.1		5.1		0			
24-Oct	12:45	Standard check with atmospheric air												0.03		.0		20.9			
24-Oct	12:45	Standard check with 5.1% CO2/N2												5.1		5.1		0			
24-Oct	13:07	V1-1A	CO2/O2	80	S	350		80	S	337				3		5.9		12		17.9	
24-Oct	13:09	V1-1B	CO2/O2	OPEN				CLOSED						4.8		4.8		13.8		18.6	
24-Oct	13:14	V1-1C	CO2/O2	OPEN				CLOSED						4.9		4.9		13.6		18.5	
24-Oct	13:19	V1-2A	CO2/O2	OPEN				CLOSED						3.8		3.8		13.4		17.2	
24-Oct	13:24	V1-2B	CO2/O2	OPEN				CLOSED						4.85		4.9		13.8		18.7	
24-Oct	13:26	V1-2C	CO2/O2	80	S	350		80	S	337				3.5		6.9		11.5		18.4	
24-Oct	13:29	V1-3A	CO2/O2	OPEN				CLOSED						2.95		3.0		15.8		18.8	
24-Oct	13:31	V1-3B	CO2/O2	OPEN				CLOSED						3.6		3.6		15.5		19.1	
24-Oct	13:33	V1-3C	CO2/O2	OPEN				CLOSED						5.1		5.1		13		18.1	
24-Oct	13:37	V2-1A	CO2/O2	OPEN				CLOSED						1.3		1.3		18.5		19.8	
24-Oct	13:42	V2-1B	CO2/O2	80	S	350		80	S	337				2.85		5.6		12.2		17.8	
24-Oct	13:44	V2-1C	CO2/O2	80	S	350		80	S	337				3.2		6.3		12		18.3	
24-Oct	13:46	V2-2A	CO2/O2	OPEN				CLOSED						0.25		.3		20		20.3	
24-Oct	13:48	V2-2B	CO2/O2	OPEN				CLOSED						3.75		3.8		14.6		18.4	
24-Oct	13:50	V2-2C	CO2/O2	80	S	350		80	S	337				2.95		5.8		12.5		18.3	
24-Oct	13:52	V2-3A	CO2/O2	OPEN				CLOSED						1.6		1.6		17.7		19.3	
24-Oct	13:54	V2-3B	CO2/O2	OPEN				CLOSED						4		4.0		14.8		18.8	
24-Oct	13:57	V2-3C	CO2/O2	80	S	350		80	S	337				4		7.9		8.6		16.5	
24-Oct	14:02	V3A	CO2/O2	OPEN				CLOSED						1.95		2.0		18.2		20.2	

		CO2/THC DATA															
		Smpl (Lt)		Smpl		Dil. (Rt.)		G/S		Dil.		Calc. Conc.		O2 Data			
Sample	Loc.	Anal.	Rotameter	G/S	Flow	cc/min	Rotameter	G/S	Flow	Gastech-CO2 (%)	CO2 (%)	THC (ppm)	O2 (%)	Reading	O2+CO2 (%)		
24-Oct	V3B	CO2/O2	OPEN				CLOSED					2.1	18.2	20.3			
24-Oct	V3C	CO2/O2	OPEN				CLOSED					2.3	18	20.3			
24-Oct	V4A	CO2/O2	OPEN				CLOSED					1.1	19.2	20.3			
24-Oct	V4B	CO2/O2	OPEN				CLOSED					1.2	19.2	20.4			
24-Oct	V4C	CO2/O2	OPEN				CLOSED					1.3	19.2	20.5			
24-Oct	Standard check with atmospheric air																
24-Oct	Standard check with 5.1% CO2/N2																
24-Oct	V1-1A	CO2/O2	80	S	350		80	S	337	3	5.9	5.1	0				
24-Oct	V1-1B	CO2/O2	80	S	350		80	S	337	2.7	5.3	5.9	11	16.9			
24-Oct	V1-1C	CO2/O2	OPEN				CLOSED			4.9	4.9	4.9	13.7	18.6			
24-Oct	V1-2A	CO2/O2	OPEN				CLOSED			4.5	4.5	4.5	12	16.5			
24-Oct	V1-2B	CO2/O2	OPEN				CLOSED			5	5.0	5.0	13.2	18.2			
24-Oct	V1-2C	CO2/O2	80	S	350		80	S	337	3.5	6.9	6.9	12	18.9			
24-Oct	V1-3A	CO2/O2	OPEN				CLOSED			3.4	3.4	3.4	15	18.4			
24-Oct	V1-3B	CO2/O2	OPEN				CLOSED			3.9	3.9	3.9	14.8	18.7			
24-Oct	V1-3C	CO2/O2	80	S	350		80	S	337	2.8	5.5	5.5	13	18.5			
24-Oct	V2-1A	CO2/O2	OPEN				CLOSED			1.2	1.2	1.2	18.5	19.7			
24-Oct	V2-1B	CO2/O2	80	S	350		80	S	337	3	5.9	5.9	11.6	17.5			
24-Oct	V2-1C	CO2/O2	80	S	350		80	S	337	3.3	6.5	6.5	11	17.5			
24-Oct	V2-2A	CO2/O2	OPEN				CLOSED			0.35	.4	.4	20	20.4			
24-Oct	V2-2B	CO2/O2	OPEN				CLOSED			4.65	4.7	4.7	13	17.7			
24-Oct	V2-2C	CO2/O2	80	S	350		80	S	337	3.2	6.3	6.3	11	17.3			
24-Oct	V2-3A	CO2/O2	OPEN				CLOSED			2.2	2.2	2.2	16.5	18.7			
24-Oct	V2-3B	CO2/O2	80	S	350		80	S	337	2.8	5.5	5.5	12	17.5			
24-Oct	V2-3C	CO2/O2	OPEN				CLOSED			5.5	5.5	5.5	13.2	18.7			
NOTE: Valve left open on V2-3C. Disregard last reading.																	
Standard check with atmospheric air																	
Standard check with 5.1% CO2/N2																	
24-Oct	V1-1A	CO2/O2	80	S	350		80	S	337	3.6	7.1	7.1	8.5	15.6			
24-Oct	V1-1B	CO2/O2	80	S	350		80	S	337	2.8	5.5	5.5	12	17.5			
24-Oct	V1-1C	CO2/O2	80	S	350		80	S	337	2.9	5.7	5.7	12.2	17.9			
24-Oct	V1-2A	CO2/O2	80	S	350		80	S	337	2.8	5.5	5.5	8.8	14.3			

		CO2/THC DATA										O2 Data		
		Sample		Anal.		Smpl (Lt)		Smpl		Dil.		Calc. Conc.		O2 Data
Date	Time	Loc.	Rotameter	G/S	Flow	Dil. (Rt.)	Rotameter	G/S	Flow	Dil.	Gastech-CO2 (%)	THC (ppm)	CO2 (%)	
24-Oct	18:16	V1-2B	CO2/O2	80	S	350	80	S	337		2.95	5.8	11.5	17.3
24-Oct	18:19	V1-2C	CO2/O2	80	S	350	80	S	337		3.7	7.3	10.4	17.7
24-Oct	18:22	V1-3A	CO2/O2	80	S	350	80	S	337		2.2	4.3	13	17.3
24-Oct	18:25	V1-3B	CO2/O2	80	S	350	80	S	337		2.6	5.1	12.5	17.6
24-Oct	18:28	V1-3C	CO2/O2	80	S	350	80	S	337		3.35	6.6	10.8	17.4
24-Oct	18:38	V2-1A	CO2/O2	OPEN			CLOSED				1.7	1.7	18	19.7
24-Oct	18:39	V2-1B	CO2/O2	80	S	350	80	S	337		3.65	7.2	9.2	16.4
24-Oct	18:44	V2-1C	CO2/O2	80	S	350	80	S	337		3.75	7.4	10	17.4
24-Oct	18:47	V2-2A	CO2/O2	OPEN			CLOSED				0.45	.5	19	19.5
24-Oct	18:51	V2-2B	CO2/O2	80	S	350	80	S	337		2.75	5.4	12	17.4
24-Oct	18:54	V2-2C	CO2/O2	80	S	350	80	S	337		3.75	7.4	9.8	17.2
24-Oct	18:58	V2-3A	CO2/O2	OPEN			CLOSED				2.3	2.3	16.6	18.9
24-Oct	19:00	V2-3B	CO2/O2	80	S	350	80	S	337		3.2	6.3	11	17.3
24-Oct	19:04	V2-3C	CO2/O2	80	S	350	80	S	337		4.2	8.2	8.5	16.7
24-Oct	19:14	V3A	CO2/O2	OPEN			CLOSED				2.3	2.3	18.2	20.5
24-Oct	19:16	V3B	CO2/O2	OPEN			CLOSED				2.4	2.4	18.1	20.5
24-Oct	19:18	V3C	CO2/O2	OPEN			CLOSED				2.5	2.5	18	20.5
24-Oct	19:20	V4A	CO2/O2	OPEN			CLOSED				1.4	1.4	19.2	20.6
24-Oct	19:22	V4B	CO2/O2	OPEN			CLOSED				1.35	1.4	19.3	20.7
24-Oct	19:25	V4C	CO2/O2	OPEN			CLOSED				1.4	1.4	19.2	20.6
24-Oct	19:29	Standard check with atmospheric air												
24-Oct	19:29	Standard check with 5.1% CO2/N2												
24-Oct	22:16	Standard check with atmospheric air												
24-Oct	22:16	Standard check with 5.1% CO2/N2												
24-Oct	22:26	V1-1A	CO2/O2	80	S	350	80	S	337		4.25	8.3	5.9	14.2
24-Oct	22:32	V1-1B	CO2/O2	80	S	350	80	S	337		3.35	6.6	10.5	17.1
24-Oct	22:35	V1-1C	CO2/O2	80	S	350	80	S	337		3.35	6.6	11.2	17.8
24-Oct	22:40	V1-2A	CO2/O2	80	S	350	80	S	337		3.7	7.3	6	13.3
24-Oct	22:44	V1-2B	CO2/O2	80	S	350	80	S	337		3.4	6.7	10.3	17.0
24-Oct	22:47	V1-2C	CO2/O2	80	S	350	80	S	337		4	7.9	10	17.9
24-Oct	22:50	V1-3A	CO2/O2	80	S	350	80	S	337		2.85	5.6	11	16.6
24-Oct	22:55	V1-3B	CO2/O2	80	S	350	80	S	337		3.2	6.3	10.8	17.1

		CO2/THC DATA														
				Smpl		Dil.		Flow		Gastech-CO2 (%)		Calc. Conc.		O2 Data		
	Sample	Loc.	Anal.	Rotameter	G/S	Flow	Dil. (Rt.)	Rotameter	G/S	Flow	SIP-THC (ppm)	THC (ppm)	CO2 (%)	Reading	02+C02	
Date	Time														(%)	
24-Oct	22:58	V1-3C	CO2/O2	80	S	350	80	CLOSED	S	337	3.85	7.6	9.6	18	17.2	
24-Oct	23:05	V2-1A	CO2/O2	OPEN							1.9	1.9	8	19.9		
24-Oct	23:07	V2-1B	CO2/O2	80	S	350	80		S	337	4.3	8.4	8	16.4		
24-Oct	23:11	V2-1C	CO2/O2	80	S	350	80		S	337	4.2	8.2	8.5	16.7		
24-Oct	23:15	V2-2A	CO2/O2	OPEN				CLOSED			0.5	.5	20	20.5		
24-Oct	23:18	V2-2B	CO2/O2	80	S	350	80		S	337	3.4	6.7	10.5	17.2		
24-Oct	23:23	V2-2C	CO2/O2	80	S	350	80		S	337	4.3	8.4	8.1	16.5		
24-Oct	23:27	V2-3A	CO2/O2	OPEN				CLOSED			2.8	2.8	15.5	18.3		
24-Oct	23:29	V2-3B	CO2/O2	80	S	350	80		S	337	3.8	7.5	9.5	17.0		
24-Oct	23:34	V2-3C	CO2/O2	80	S	350	80		S	337	5.1	10.0	5.5	15.5		
24-Oct	23:40	Standard check with atmospheric air										.0	20.9			
24-Oct	23:40	Standard check with 5.1% CO2/N2										5.1	5.1	0		
25-Oct	3:20	Standard check with atmospheric air										0.03	.0	20.9		
25-Oct	3:20	Standard check with 5.1% CO2/N2										5.1	5.1	0		
25-Oct	3:28	V1-1A	CO2/O2	50	S	169	110		S	516	2.65	10.7	4	14.7		
25-Oct	3:34	V1-1B	CO2/O2	80	S	350	80		S	337	3.7	7.3	9.2	16.5		
25-Oct	3:37	V1-1C	CO2/O2	80	S	350	80		S	337	3.6	7.1	10.2	17.3		
25-Oct	3:42	V1-2A	CO2/O2	80	S	350	80		S	337	4.6	9.0	4.3	13.3		
25-Oct	3:45	V1-2B	CO2/O2	80	S	350	80		S	337	3.8	7.5	9.9	16.4		
25-Oct	3:50	V1-2C	CO2/O2	80	S	350	80		S	337	4.1	8.0	9.2	17.2		
25-Oct	3:54	V1-3A	CO2/O2	80	S	350	80		S	337	3.4	6.7	8.8	15.5		
25-Oct	3:59	V1-3B	CO2/O2	80	S	350	80		S	337	3.8	7.5	9	16.5		
25-Oct	4:03	V1-3C	CO2/O2	80	S	350	80		S	337	4.3	8.4	8.4	16.8		
25-Oct	4:07	V2-1A	CO2/O2	OPEN				CLOSED			2.7	2.7	16	18.7		
25-Oct	4:11	V2-1B	CO2/O2	80	S	350	80		S	337	4.6	9.0	7	16.0		
25-Oct	4:14	V2-1C	CO2/O2	80	S	350	80		S	337	4.4	8.6	8.1	16.7		
25-Oct	4:19	V2-2A	CO2/O2	OPEN				CLOSED			0.9	.9	18.2	19.1		
25-Oct	4:26	V2-2B	CO2/O2	80	S	350	80		S	337	3.7	7.3	8	15.3		
25-Oct	4:31	V2-2C	CO2/O2	80	S	350	80		S	337	4.35	8.5	6.5	15.0		
25-Oct	4:34	V2-3A	CO2/O2	OPEN				CLOSED			4.1	4.1	12.5	16.6		
25 Oct	4:37	V2-3B	CO2/O2	80	S	350	80		S	337	4	7.9	7.2	15.1		
25-Oct	4:42	V2-3C	CO2/O2	80	S	350	110		S	516	4.75	11.8	3.4	15.2		

				CO2/THC DATA								O2 Data			
		Sample	Anal.	Smpl (Lt)	Smpl	Dil.	Rotameter	G/S	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.	Gastech		
Date	Time	Loc.								cc/min	SIP-THC (ppm)	CO2 (%)	Reading	02+CO2	(%)
25-Oct	4:48	Standard	check with atmospheric air								0.03	.0	20.9		
25-Oct	4:48	Standard	check with 5.1% CO2/N2								5.1	5.1	0		
25-Oct	8:45	Standard	check with atmospheric air								0.03	.0	20.9		
25-Oct	8:45	Standard	check with 5.1% CO2/N2								5.1	5.1	0		
25-Oct	8:49	V1-1A	CO2/O2	80	S	350	150	S	769		3.6	11.5	2.5	14.0	
25-Oct	8:52	V1-1B	CO2/O2	80	S	350	150	S	769		2.8	9.0	7	16.0	
25-Oct	8:56	V1-1C	CO2/O2	80	S	350	150	S	769		2.6	8.3	8	16.3	
25-Oct	9:01	V1-2A	CO2/O2	50	S	169	150	S	769		2.1	11.7	2.2	13.9	
25-Oct	9:05	V1-2B	CO2/O2	70	S	290	150	S	769		2.6	9.5	6.5	16.0	
25-Oct	9:10	V1-2C	CO2/O2	50	S	169	150	S	769		1.9	10.5	7.4	17.9	
25-Oct	9:14	V1-3A	CO2/O2	50	S	169	150	S	769		1.75	9.7	6	15.7	
25-Oct	9:19	V1-3B	CO2/O2	110	G	203	150	S	769		2.1	10.1	6.3	16.4	
25-Oct	9:23	V1-3C	CO2/O2	110	G	203	150	S	769		2.35	11.3	6	17.3	
25-Oct	9:28	V2-1A	CO2/O2	OPEN			CLOSED				2.3	2.3	17	19.3	
25-Oct	9:33	V2-1B	CO2/O2	110	G	203	150	S	769		2.6	12.4	5	17.4	
25-Oct	9:37	V2-1C	CO2/O2	50	S	169	150	S	769		2.1	11.7	6	17.7	
25-Oct	9:40	V2-2A	CO2/O2	OPEN			CLOSED				0.65	.7	19.5	20.2	
25-Oct	9:52	V2-2B	CO2/O2	80	S	350	150	S	769		2.9	9.3	6.7	16.0	
25-Oct	9:54	V2-2C	CO2/O2	80	S	350	150	S	769		3.7	11.8	3.6	15.4	
25-Oct	9:58	V2-3A	CO2/O2	OPEN			CLOSED				4	4.0	13.1	17.1	
25-Oct	10:00	V2-3B	CO2/O2	80	S	350	150	S	769		3.3	10.6	5.3	15.9	
25-Oct	10:05	V2-3C	CO2/O2	80	S	350	150	S	769		4.5	14.4	1.5	15.9	
25-Oct	10:11	Standard	check with atmospheric air								0.05	.1	20.5		
25-Oct	10:11	Respanned									0.03	.0	20.9		
25-Oct	10:11	Standard	check with 5.1% CO2/N2								5.1	5.1	0		
25-Oct	11:11	V3A	CO2/O2	OPEN			CLOSED				2.4	2.4	17.8	20.2	
25-Oct	11:14	V3B	CO2/O2	OPEN			CLOSED				2.6	2.6	17.5	20.1	
25-Oct	11:16	V3C	CO2/O2	OPEN			CLOSED				2.7	2.7	17.5	20.2	
25-Oct	11:18	V4A	CO2/O2	OPEN			CLOSED				1.7	1.7	18.8	20.5	
25-Oct	11:20	V4B	CO2/O2	OPEN			CLOSED				1.6	1.6	18.9	20.5	
25-Oct	11:25	V4C	CO2/O2	OPEN			CLOSED				1.7	1.7	18.8	20.5	

		CO2/THC DATA										O2 Data			
		Sample				Smpl						Calc. Conc.			
Date	Time	Loc.	Anal.	Rotameter (Lt)	Smpl	Flow	Dil. (Rt.)	G/S	Dil.	Gastech-CO2 (%)	THC (ppm)	CO2 (%)	Reading	O2 (%)	O2+C02 (%)
25-Oct	11:26	Standard	check with atmospheric air											20.9	
25-Oct	14:46	Standard	check with atmospheric air											20.9	
25-Oct	14:46	Standard	check with 5.1% CO2/N2											0	
25-Oct	14:52	V1-1A	CO2/O2	50	S	169	150	S	769	2.2	12.2	5.1	0		
25-Oct	14:57	V1-1B	CO2/O2	50	S	169	150	S	769	1.8	10.0			4.9	14.9
25-Oct	15:00	V1-1C	CO2/O2	80	S	350	150	S	769	2.7	8.6			6.1	14.7
25-Oct	15:03	V1-2A	CO2/O2	80	S	350	150	S	769	3.5	11.2			0.8	12.0
25-Oct	15:06	V1-2B	CO2/O2	80	S	350	150	S	769	3.1	9.9			3.8	13.7
25-Oct	15:09	V1-2C	CO2/O2	80	S	350	150	S	769	3.2	10.2			5	15.2
25-Oct	15:14	V1-3A	CO2/O2	80	S	350	150	S	769	2.85	9.1			4	13.1
25-Oct	15:16	V1-3B	CO2/O2	80	S	350	150	S	769	3.3	10.6			3.4	14.0
25-Oct	15:19	V1-3C	CO2/O2	80	S	350	150	S	769	3.6	11.5			3	14.5
25-Oct	15:24	V2-1A	CO2/O2	110	S	541	110	S	516	3	5.9			8.6	14.5
25-Oct	15:29	V2-1B	CO2/O2	80	S	350	150	S	769	3.65	11.7			3.5	15.2
25-Oct	15:30	V2-1C	CO2/O2	80	S	350	150	S	769	3.45	11.0			4.8	15.8
25-Oct	15:37	V2-2A	CO2/O2	OPEN			CLOSED			2.2	2.2			13.9	16.1
25-Oct	15:40	V2-2B	CO2/O2	80	S	350	150	S	769	3.2	10.2			4.5	14.7
25-Oct	15:43	V2-2C	CO2/O2	70	S	290	150	S	769	3	11.0			3.5	14.5
25-Oct	15:46	V2-3A	CO2/O2	110	S	541	110	S	516	3.6	7.0			6.5	13.5
25-Oct	15:50	V2-3B	CO2/O2	70	S	290	150	S	769	3	11.0			3.8	14.8
25-Oct	15:55	V2-3C	CO2/O2	70	S	290	150	S	769	3.9	14.2			0.5	14.7
25-Oct	15:58	Standard	check with atmospheric air							0.03	0			20.9	
25-Oct	15:58	Standard	check with 5.1% CO2/N2							5	5.0			0	
25-Oct	20:44	Standard	check with atmospheric air							0.03	0			20.9	
25-Oct	20:44	check with 5.1% CO2/N2								5.1	5.1			0	
25-Oct	20:50	V1-1A	CO2/O2	70	S	290	150	S	769	3.8	13.9			0.5	14.4
25-Oct	21:01	V1-1B	CO2/O2	80	S	350	150	S	769	3.45	11.0			3.3	14.3
25-Oct	21:05	V1-1C	CO2/O2	50	S	169	150	S	769	2.25	12.5			4.3	16.8
25-Oct	21:08	V1-2A	CO2/O2	50	S	169	150	S	769	2.65	14.7			0.5	15.2
25-Oct	21:12	V1-2B	CO2/O2	50	S	169	150	S	769	2.55	14.2			2.1	16.3
25-Oct	21:16	V1-2C	CO2/O2	50	S	169	150	S	769	2.5	13.9			3.4	17.3
25-Oct	21:20	V1-3A	CO2/O2	50	S	169	150	S	769	2.5	13.9			1.2	15.1

CO2/THC DATA										O2 Data			
Date	Time	Sample Loc.	Anal.	Smpl (Lt)		Smpl		Dil. (Rt.)	Flow cc/min	Gastech-CO2 (%)		Calc. Conc.	
				Rotameter	G/S	Flow cc/min	G/S			SIP-THC (ppm)	CO2 (%)	THC (ppm)	O2 (%)
25-Oct	21:24	V1-3B	CO2/O2	50	S	169	S	150	769	2.65		14.7	1.7
25-Oct	21:29	V1-3C	CO2/O2	50	S	169	S	150	769	2.65		14.7	2
25-Oct	21:35	V2-1A	CO2/O2	150	S	777	S	150	769	3.8		7.6	6.2
25-Oct	21:43	V2-1B	CO2/O2	50	S	169	S	150	769	2.45		13.6	3
25-Oct	21:50	V2-1C	CO2/O2	80	S	350	S	150	769	3.6		11.5	4.1
25-Oct	21:58	V2-2A	CO2/O2	OPEN				CLOSED		3.85		3.9	10.8
25-Oct	22:00	V2-2B	CO2/O2	50	S	169	S	150	769	2.3		12.8	2.8
25-Oct	22:05	V2-2C	CO2/O2	50	S	169	S	150	769	2.4		13.3	1.7
25-Oct	22:09	V2-3A	CO2/O2	110	S	541	S	110	516	4.4		8.6	4.9
25-Oct	22:15	V2-3B	CO2/O2	50	S	169	S	150	769	2.5		13.9	2.3
25-Oct	22:18	V2-3C	CO2/O2	50	S	169	S	150	769	2.75		15.3	0.4
25-Oct	22:20	Standard check with atmospheric air										.0	20.9
25-Oct	22:20	Standard check with 5.1% CO2/N2										5.1	0
26-Oct	8:53	Standard check with atmospheric air										.0	20.9
26-Oct	8:53	Standard check with 5.1% CO2/N2										5.1	0
26-Oct	9:02	V1-1A	CO2/O2	50	S	169	S	150	769	2.5		13.9	0.3
26-Oct	9:06	V1-1B	CO2/O2	50	S	169	S	150	769	2.45		13.6	0.8
26-Oct	9:10	V1-1C	CO2/O2	50	S	169	S	150	769	2.35		13.0	1.2
26-Oct	9:14	V1-2A	CO2/O2	50	S	169	S	150	769	2.5		13.9	0.4
26-Oct	9:17	V1-2B	CO2/O2	50	S	169	S	150	769	2.6		14.4	0.2
26-Oct	9:20	V1-2C	CO2/O2	50	S	169	S	150	769	2.6		14.4	0.3
26-Oct	9:23	V1-3A	CO2/O2	50	S	169	S	150	769	2.5		13.9	0.1
26-Oct	9:27	V1-3B	CO2/O2	50	S	169	S	150	769	2.65		14.7	0.1
26-Oct	9:30	V1-3C	CO2/O2	50	S	169	S	150	769	2.75		15.3	0
26-Oct	9:44	V2-1A	CO2/O2	50	S	169	S	150	769	1.9		10.5	2.6
26-Oct	9:50	V2-1B	CO2/O2	50	S	169	S	150	769	2.6		14.4	0.2
26-Oct	9:55	V2-1C	CO2/O2	50	S	169	S	150	769	2.55		14.2	0.2
26-Oct	9:59	V2-2A	CO2/O2	110	S	541	S	110	516	3.1		6.1	5
26-Oct	10:02	V2-2B	CO2/O2	50	S	169	S	150	769	2.5		13.9	0.2
26-Oct	10:07	V2-2C	CO2/O2	50	S	169	S	150	769	2.45		13.6	0.1
26-Oct	10:12	V2-3A	CO2/O2	50	S	169	S	150	769	2.2		12.2	1.1
26-Oct	10:17	V2-3B	CO2/O2	50	S	169	S	150	769	2.6		14.4	0.4
26-Oct	10:17	V2-3B	CO2/O2	50	S	169	S	150	769	2.6		14.4	0.4

CO2/THC DATA														
			Smpl				Dil.					O2 Data		
Sample		Smpl (Lt)		Flow		Dil. (Rt.)		Flow		Calc. Conc.		Gastech		
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	CO2 (%)	THC (ppm)	O2 (%)	O2+C02 (%)
26-Oct	10:20	V2-3C	CO2/O2	50	S	169	150	S	769	2.75	15.3	15.3	0.1	15.4
26-Oct	10:25	Standard check with atmospheric air												
26-Oct	10:25	Standard check with 5.1% CO2/N2												
26-Oct	10:43	V3A	CO2/O2	OPEN			CLOSED			2.55	2.6	2.6	17.5	20.1
26-Oct	10:45	V3B	CO2/O2	OPEN			CLOSED			2.6	2.6	2.6	17.3	19.9
26-Oct	10:47	V3C	CO2/O2	OPEN			CLOSED			2.75	2.8	2.8	17.1	19.9
26-Oct	10:50	V4A	CO2/O2	OPEN			CLOSED			1.7	1.7	1.7	18.5	20.2
26-Oct	10:52	V4B	CO2/O2	OPEN			CLOSED			1.6	1.6	1.6	18.5	20.1
26-Oct	10:54	V4C	CO2/O2	OPEN			CLOSED			1.7	1.7	1.7	18.5	20.2
26-Oct	12:00	Blowers on at 15 L/min treatment and 2.5 L/min. background.												
27-Oct	8:30	Calibration of FID												
										GC counts	Conc. (ppm)			
										1	Background			
										12	101.0			
										80	505.0			
										152	1005.0			
27-Oct	9:00	Standard check with atmospheric air												
27-Oct	9:00	Standard check with 5.1% CO2/N2												
27-Oct	9:10	Background through pump only												
27-Oct	9:20	Background through sampling train and dilution rotameter												
27-Oct	9:30	Background through sampling train and sample rotameter.												
27-Oct	9:40	Background through pump and dedicated sampling line.												
27-Oct	9:45	V4B	CO2/O2	OPEN			CLOSED			1.3	1.3	1.3	19.2	20.5
27-Oct	9:49	V4C	CO2/O2	OPEN			CLOSED			1.5	1.5	1.5	18.8	20.3
27-Oct	9:53	V4 disch	CO2/O2	OPEN			CLOSED			1.6	1.6	1.6	18.8	20.4
27-Oct			THC	OPEN			CLOSED			0	.0			
27-Oct	10:00	V3 disch	CO2/O2	OPEN			CLOSED			2.6	2.6	2.6	17.2	19.8
27-Oct			THC	OPEN			CLOSED			73	73.0			
27-Oct	10:07	V3A	CO2/O2	OPEN			CLOSED			3.5	3.5	3.5	15.5	19.0
27-Oct			THC	OPEN			CLOSED			195	195.0			
27-Oct	10:09	V3B	CO2/O2	OPEN			CLOSED			4.1	4.1	4.1	14.7	18.8

		CO2/THC DATA										O2 Data	
		Sample		Anal.		Smpl (Lt)		Smpl		Dil. (Rt.)		Calc. Conc.	
Date	Time	Loc.				Rotameter	G/S	Flow	cc/min	Rotameter	G/S	Flow	cc/min
27-Oct	10:12	V3C	CO2/O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:15	V3 inlet	CO2/O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:23	V1-1A	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:24	V1-1B	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:26	V1-1C	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:27	V1-2A	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:28	V1-2B	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:31	V1-2C	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:32	V1-3A	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:33	V1-3B	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:34	V1-3C	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:36	V2-1A	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:37	V2-1B	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:38	V2-1C	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:39	V2-2A	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:40	V2-2B	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:41	V2-2C	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:45	V2-3A	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:46	V2-3B	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:47	V2-3C	O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	10:48	V2 disch	CO2/O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	11:11	V1 disch	CO2/O2	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	11:15	Standard check with atmospheric air	THC	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	11:15	Standard check with 5.1% CO2/N2	THC	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min
27-Oct	11:20	Standard check with 1000 ppm std.	THC	THC	OPEN	80	G	122	150	CLOSED	S	769	cc/min

		CO2/THC DATA										O2 Data			
Date/Time	Sample	Anal.	Smpl (L)	Smpl	Dil.		Flow		Gastech		Calc. Conc.	Gastech			
m/d/y/ h:mm	Loc.		Rotameter	G/S	cc/min	Dil. (Rt.)	G/S	cc/min	SIP-THC	THC (ppm)	CO2 (%)	Reading	O2 (%)	02+C02	(%)
10/31/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			1.3	1.3	1.3	19.3	20.6		
		THC	OPEN			CLOSED			0	0.0					
10/31/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			2.8	2.8	2.8	17	19.8		
		THC	OPEN			CLOSED			97	97.0					
10/31/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			3.8	3.8	3.8	16	19.8		
		THC	50	S	169	150	S	769	630	3496.7					
10/31/89 12:00	V2 disch	CO2/02	95	S	429	95	S	416	3.1	6.1	11.2		17.3		
		THC	30	S	102	150	S	769	1000	8539.2					
10/31/89 12:00	V1 disch	CO2/02	100	S	458	100	S	445	3.1	6.1	12.6		18.7		
		THC	30	S	102	150	S	769	730	6233.6					
11/3/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			1.2	1.2	19.4	20.6			
		THC	OPEN			CLOSED			ND	ND					
11/3/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			2.6	2.6	18	20.6			
		THC	OPEN			CLOSED			115	115.0					
11/3/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			2.7	2.7	17.5	20.2			
		THC	100	S	458	100	S	445	680	1340.7					
11/3/89 12:00	V2 disch	CO2/02	100	S	458	100	S	445	4.4	8.7	10	18.7			
		THC	20	S	48	150	S	769	820	13957.1					
11/3/89 12:00	V1 disch	CO2/02	100	S	458	100	S	445	4.4	8.7	10.5	19.2			
		THC	30	S	102	150	S	769	800	6831.4					
11/6/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			1.45	1.5	19.2	20.7			
		THC	OPEN			CLOSED			ND	ND					
11/6/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			1.7	1.7	19	20.7			
		THC	OPEN			CLOSED			150	150.0					
11/6/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			1.7	1.7	19	20.7			
		THC	OPEN			CLOSED			250	250.0					
11/6/89 12:00	V2 disch	CO2/02	100	S	458	100	S	445	3.6	7.1	12.5	19.6			
		THC	20	S	48	150	S	769	7.0	12425.2					
11/6/89 12:00	V1 disch	CO2/02	100	S	458	100	S	445	2.5	5.7	14	19.7			
		THC	40	S	145	150	S	769	950	5988.3					
11/9/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			1.45	1.5	19.5	21.0			
		THC	OPEN			CLOSED			ND	ND					

Date/Time		Sample		Anal.		Smpl (Lt)		CO2/THC DATA		Dil.		Calc. Conc.		O2 Data	
m/d/y/	h:mm	Loc.	disch	CO2/02	THC	Rotameter	G/S	Flow	Dil. (Rt.)	Flow	G/S	Gastech-CO2 (%)	CO2 (%)	Gastech	02+C02 (%)
11/9/89	12:00	V3	disch	CO2/02	THC	OPEN	OPEN		CLOSED			2	2.0	19	21.0
												1050	1050.0		
11/9/89	12:00	V3	inlet	CO2/02	THC	OPEN	OPEN		CLOSED			2.6	2.6	18	20.6
												710	1399.8		
11/9/89	12:00	V2	disch	CO2/02	THC	100	S	445	100	S	S	4.45	8.8	10.7	19.5
												780	8185.2		
11/9/89	12:00	V1	disch	CO2/02	THC	25	S	81	150	S	S	3.7	7.3	13	20.3
												720	6148.2		
11/14/89	15:00	V4	disch	CO2/02	THC	30	S	102	150	S	S	1.4	1.4	19.4	20.8
												ND	ND		
11/14/89	15:00	V3	disch	CO2/02	THC	OPEN	OPEN		CLOSED			2	2.0	19	21.0
												530	530.0		
11/14/89	15:00	V3	inlet	CO2/02	THC	OPEN	OPEN		CLOSED			2.6	2.6	17.6	20.2
												960	3510.6		
11/14/89	15:00	V2	disch	CO2/02	THC	60	S	239	130	S	S	635	4.8	15.8	20.6
												445	7135.8		
11/14/89	15:00	V1	disch	CO2/02	THC	25	S	81	150	S	S	769	6.7	15	21.7
												1.2	6617.9		
11/14/89	15:00	V21C				50	S	169	150	S	S	769	3.8	16	19.8
												775	4.8	14.6	19.4
11/14/89	15:00	V23C				30	S	102	150	S	S	3.8	4.0	15.7	19.7
												3.8	3.8	16	19.8
11/14/89	15:00	V13C													
11/14/89	15:00	NOTE: Rotameter V1 to V3 adjusted to 100													
11/16/89	15:00	Standard check with atmospheric air													
11/16/89	15:00	Standard check with 5.1% CO2/N2													
11/16/89	15:00	Standard check with 1005 ppm std. GC Counts = 138													
11/16/89	15:00	V4	disch	CO2/02	THC	OPEN	OPEN		CLOSED			5.2	5.2	0	
												1005	1005.0		
11/16/89	15:00	V3	disch	CO2/02	THC	OPEN	OPEN		CLOSED			0.9	0.9	20	20.9
												ND	ND		
11/16/89	15:00	V3	disch	CO2/02	THC	OPEN	OPEN		CLOSED			2	2.0	18.5	20.5
												90	90.0		
11/16/89	15:00	V3	inlet	CO2/02	THC	OPEN	OPEN		CLOSED			2.65	2.7	17.8	20.5
												600	1180.6		

Date/Time m/d/y/ h:mm	Sample Loc.	CO2/THC DATA						Dil. Flow cc/min	Gastech-CO2 (%)		Calc. Conc.		O2 Data	
		Anal.	Smpl (Lt)	Rotameter	G/S	Flow cc/min	Dil. (Rt.) Rotameter		G/S	SIP-THC (ppm)	THC (ppm)	CO2 (%)	Gastech Reading O2 (%)	O2+C02 (%)
11/16/89 15:00	V2 disch	CO2/02	100	100	S	458	100	S	S	2.8	5.5	14	14	19.5
		THC	70	70	S	290	140	S	S	1185	4057.6			
11/16/89 15:00	V1 disch	CO2/02	100	100	S	458	100	S	S	2.7	5.3	14.8	14.8	20.1
		THC	80	80	S	122	110	S	S	1040	5438.7			
11/21/89 15:00	Standard check with atmospheric air													
11/21/89 15:00	Standard check with 5.1% CO2/N2													
11/21/89 15:00	Standard check with 1005 ppm std. GC Counts = 124													
11/21/89 15:00	V4 disch	CO2/02	OPEN				CLOSED			1005	1005.0			
		THC	OPEN				CLOSED			1	1.0	19.5	19.5	20.5
11/21/89 15:00	V3 disch	CO2/02	OPEN				CLOSED			1.3	1.3	19.4	19.4	20.7
		THC	OPEN				CLOSED			265	265.0			
11/21/89 15:00	V3 inlet	CO2/02	Inoperable - No flow											
		THC												
11/21/89 15:00	V2 disch	CO2/02	100	100	S	458	100	S	S	2.7	5.3	13.2	13.2	18.5
		THC	50	50	S	169	150	S	S	950	5272.8			
11/21/89 15:00	V1 disch	CO2/02	OPEN				CLOSED			4.3	4.3	15	15	19.3
		THC	50	50	S	169	150	S	S	790	4384.7			
Note: Nutrient shut off from either 18/19 Nov until 1600 hrs. 21 Nov. New tank mixed.														
11/24/89 14:00	Standard check with atmospheric air													
11/24/89 14:00	Standard check with 5.1% CO2/N2													
11/24/89 14:00	Standard check with 1005 ppm std. GC Counts = 139													
11/24/89 14:00	V4 disch	CO2/02	OPEN				CLOSED			1005	1005.0			
		THC	OPEN				CLOSED			0.7	0.7	20.4	20.4	21.1
11/24/89 14:00	V3 disch	CO2/02	OPEN				CLOSED			1.3	1.3	19.7	19.7	21.0
		THC	OPEN				CLOSED			400	400.0			
11/24/89 14:00	V3 inlet	CO2/02	OPEN				CLOSED			2.4	2.4	18.4	18.4	20.8
		THC	100	100	S	458	100	S	S	690	1360.4			
Note: V3 inlet operating as of 1400 hrs today.														
11/24/89 14:00	V2 disch	CO2/02	OPEN				CLOSED			4.9	4.9	13.8	13.8	18.7
		THC	50	50	S	169	150	S	S	712	3951.8			
11/24/89 14:00	V1 disch	CO2/02	OPEN				CLOSED			4.8	4.8	15	15	19.8
		THC	50	50	S	169	150	S	S	487	2703.0			

Date/Time		Sample		CO2/THC DATA				Dil.		Calc. Conc.		O2 Data	
m/d/y/ h:mm		Loc.	Anal.	Smpl (Lt)	Flow	Smpl	Dil. (Rt.)	G/S	Flow	Gastech-CO2 (%)	THC (ppm)	Gastech	O2+CO2 (%)
11/24/89 14:00		V1-1C	CO2/O2	OPEN			CLOSED				5	14.5	19.5
11/24/89 14:00		V1-3C	CO2/O2	150	S	777	150	S	769		4	12.5	20.5
11/24/89 14:00		V2-3C	CO2/O2	NOFLOW									
11/24/89 14:00		V2-3B	CO2/O2	50	S	169	150	S	769	2.4		7.5	20.8
11/24/89 14:00		V2-1C	CO2/O2	OPEN			CLOSED			4.9		13.5	18.4
11/28/89 11:30		Standard check with atmospheric air								0.03		20.9	
11/28/89 11:30		Standard check with 5.1% CO2/N2								5.1		0	
11/28/89 11:30		Standard check with 1005 ppm std. GC Counts = 108								1005			
		Contamination through sampling train- sample side								29			
		Contamination through sampling train- dilution side								18			
11/28/89 11:53		V1-1A	CO2/O2	OPEN			CLOSED			4.6		14.4	19.0
			THC	150	G	311	150	S	769		1040	14.5	19.3
11/28/89 11:57		V1-1B	CO2/O2	OPEN			CLOSED				4.8		
			THC	80	G	122	150	S	769		840		
11/28/89 12:02		V1-1C	CO2/O2	110	S	541	110	S	516		3	13.6	19.5
			THC	110	G	203	150	S	769		920		
11/28/89 12:08		V1-2A	CO2/O2	OPEN			CLOSED			2.3		17.8	20.1
			THC	150	S	777	110	S	516		920		
11/28/89 12:13		V1-2B	CO2/O2	OPEN			CLOSED				3.8	15.8	19.6
			THC	150	G	311	150	S	769		770		
11/28/89 12:18		V1-2C	CO2/O2	110	S	541	110	S	516		3.6	12.4	19.4
			THC	110	G	203	150	S	769		775		
11/28/89 12:24		V1-3A	CO2/O2	OPEN			CLOSED			1.8		18.5	20.3
			THC	50	G	54	150	S	769		970		
11/28/89 12:32		V1-3B	CO2/O2	OPEN			CLOSED			3.3		16.4	16.4
			THC	110	G	203	150	S	769		800		
11/28/89 12:37		V1-3C	CO2/O2	OPEN			CLOSED			4.6		14.6	19.2
			THC	110	S	541	150	S	769		880		
11/28/89 12:43		V1 disch	CO2/O2	OPEN			CLOSED			4.5		14.7	19.2
			THC	110	G	203	150	S	769		1025		
11/28/89 12:50		V2-1A	CO2/O2	OPEN			CLOSED			0.5		19.9	20.4
			THC	OPEN			CLOSED			212			

Date/Time m/d/y/ h:mm	Sample Loc.	Anal.	CO2/THC DATA				Dil. Flow cc/min	Gastech-CO2 (%)		Calc. Conc. CO2 (%)	O2 Data	
			Rotameter	Flow	Dil. (Rt.)	G/S		SIP-THC (ppm)	THC (ppm)		Gastech Reading	O2+C02 (%)
11/28/89 12:55	V2-1B	CO2/02	OPEN		CLOSED			3.6	3.6	3.6	15.2	18.8
		THC	150	311	150	S	769	825	2865.0			
11/28/89 13:00	V2-1C	CO2/02	110	541	110	S	516	3.1	6.1		12.2	18.3
		THC	110	203	150	S	769	650	3112.3			
11/28/89 13:09	V2-2A	CO2/02	OPEN		CLOSED			0.25	0.3		20.5	20.8
		THC	OPEN		CLOSED			185	185.0			
11/28/89 13:18	V2-2B	CO2/02	110	541	110	S	516	3.9	7.6		10	17.6
		THC	110	203	150	S	769	900	4309.4			
11/28/89 13:23	V2-2C	CO2/02	150	311	150	S	769	3.7	12.8		3.2	16.0
		THC	50	54	150	S	769	900	13716.7			
11/28/89 13:33	V2-3A	CO2/02	OPEN		CLOSED			0.7	0.7		19.8	20.5
		THC	OPEN		CLOSED			150	150.0			
11/28/89 13:37	V2-3B	CO2/02	110	541	110	S	516	2.9	5.7		13	18.7
		THC	150	311	150	S	769	730	2535.0			
11/28/89 13:42	V2-3C	CO2/02	110	541	110	S	516	4.4	8.6		9.1	17.7
		THC	69	98	150	S	769	900	7962.2			
11/28/89 13:50	V2 disch	CO2/02	110	541	110	S	516	2.8	5.5		13	18.5
		THC	80	122	150	S	769	870	6353.9			
11/28/89 14:07	V4A	CO2/02	OPEN		CLOSED			0.7	0.7		19.8	20.5
		THC	OPEN		CLOSED			2	2.0			
11/28/89 14:10	V4B	CO2/02	OPEN		CLOSED			0.8	0.8		19.8	20.6
		THC	OPEN		CLOSED			2	2.0			
11/28/89 14:15	V4C	CO2/02	OPEN		CLOSED			0.9	0.9		19.7	20.6
		THC	OPEN		CLOSED			2	2.0			
11/28/89 14:20	V4 disch	CO2/02	OPEN		CLOSED			0.9	0.9		19.6	20.5
		THC	OPEN		CLOSED			2	2.0			
11/28/89 14:25	V3 disch	CO2/02	OPEN		CLOSED			1.6	1.6		18.7	20.3
		THC	OPEN		CLOSED			5	5.0			
11/28/89 14:30	V3A	CO2/02	OPEN		CLOSED			2	2.0		18.1	20.1
		THC	OPEN		CLOSED			6	6.0			
11/28/89 14:33	V3B	CO2/02	OPEN		CLOSED			2.2	2.2		18	20.2
		THC	OPEN		CLOSED			20	20.0			

		CO2/THC DATA										O2 Data			
		Smpl		Dil. (Rt.)		Dil.		Gastech-CO2 (%)		Calc. Conc.		O2 Data			
Date/Time	Sample	Anal.	Smpl (Lt)	Flow	Rotameter	G/S	Flow	SIP-THC (ppm)	CO2 (%)	THC (ppm)	Reading	02 (%)	02+CO2 (%)		
11/28/89 14:36	V3C	CO2/02	OPEN		CLOSED			2.1	2.1	2.1	18.1	20.2			
		THC	OPEN		CLOSED			8	8.0						
11/28/89 14:39	V3 inlet	CO2/02	OPEN		CLOSED			2.2	2.2	2.2	18.1	20.3			
		THC	110	S	110	S	516	830	1621.6						
11/28/89 15:11	Blowers off for shutdown test no. 2														
11/28/89 15:15	Standard check with atmospheric air														
	Standard check with 5.1% CO2/N2														
	Standard check with 1005 ppm std. GC Counts = 124														
	Note: Concentrations could be as much as 20% too high														
11/28/89 16:10	V1-1A	CO2/02	OPEN		CLOSED			4.9	4.9	4.9	13.8	18.7			
11/28/89 16:12	V1-1B	CO2/02	OPEN		CLOSED			4.85	4.9	4.9	14	18.9			
11/28/89 16:14	V1-1C	CO2/02	110	S	110	S	516	3	5.9	5.9	13.5	19.4			
11/28/89 16:18	V1-2A	CO2/02	OPEN		CLOSED			2.95	3.0	3.0	16.2	19.2			
11/28/89 16:21	V1-2B	CO2/02	OPEN		CLOSED			4.1	4.1	4.1	15.5	19.6			
11/28/89 16:24	V1-2C	CO2/02	110	S	110	S	516	3.4	6.6	6.6	13	19.6			
11/28/89 16:28	V1-3A	CO2/02	OPEN		CLOSED			2.5	2.5	2.5	17	19.5			
11/28/89 16:30	V1-3B	CO2/02	OPEN		CLOSED			3.6	3.6	3.6	16.2	19.8			
11/28/89 16:33	V1-3C	CO2/02	OPEN		CLOSED			4.85	4.9	4.9	14.6	19.5			
11/28/89 16:36	V2-1A	CO2/02	OPEN		CLOSED			1.2	1.2	1.2	18.5	19.7			
11/28/89 16:38	V2-1B	CO2/02	OPEN		CLOSED			4.5	4.5	4.5	14	18.5			
11/28/89 16:40	V2-1C	CO2/02	110	S	110	S	516	3.3	6.4	6.4	11.8	13.2			
11/28/89 16:44	V2-2A	CO2/02	OPEN		CLOSED			0.4	0.4	0.4	19.8	20.2			
11/28/89 16:46	V2-2B	CO2/02	110	S	110	S	516	3.8	7.4	7.4	10.5	17.9			
11/28/89 16:52	V2-2C	CO2/02	80	S	150	S	769	4.3	13.7	13.7	3.3	17.0			
11/28/89 16:55	V2-3A	CO2/02	OPEN		CLOSED			1.4	1.4	1.4	18.2	19.6			
11/28/89 16:58	V2-3B	CO2/02	110	S	110	S	516	3.3	6.4	6.4	12.5	18.9			
11/28/89 17:01	V2-3C	CO2/02	110	S	110	S	516	4.7	9.2	9.2	9.2	18.4			
11/28/89 17:10	Standard check with atmospheric air														
	Standard check with 5.1% CO2/N2														
	Respanned														
11/28/89 18:28	V1-1A	CO2/02	110	S	110	S	516	3.1	6.1	6.1	12.4	18.5			
11/28/89 18:32	V1-1B	CO2/02	110	S	110	S	516	2.95	5.8	5.8	13.4	19.2			

		CO2/THC DATA				Dil.		Calc. Conc.		O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Flow	Dil. (Rt.)	G/S	Flow	CO2 (%)	THC (ppm)	Reading	O2-CO2 (%)
m/d/y/ h:mm	Loc.		Rotameter	cc/min	Rotameter	G/S	cc/min	CO2 (%)	SIP-THC (ppm)	O2 (%)	(%)
11/28/89 18:36	V1-1C	CO2/02	110	541	110	S	516	6.1	3.1	13	19.1
11/28/89 18:40	V1-2A	CO2/02	OPEN		CLOSED			4.0	4	13.6	17.6
11/28/89 18:43	V1-2B	CO2/02	OPEN		CLOSED			4.6	4.6	14.6	19.2
11/28/89 18:46	V1-2C	CO2/02	110	541	110	S	516	6.6	3.4	12.9	19.5
11/28/89 18:49	V1-3A	CO2/02	OPEN		CLOSED			3.2	3.2	15.8	19.0
11/28/89 18:51	V1-3B	CO2/02	OPEN		CLOSED			4.1	4.1	15.2	19.3
11/28/89 18:53	V1-3C	CO2/02	OPEN		CLOSED			5.1	5.1	14	19.1
11/28/89 18:55	V2-1A	CO2/02	OPEN		CLOSED			1.8	1.8	17	18.8
11/28/89 18:58	V2-1B	CO2/02	110	541	110	S	516	5.6	2.85	12.2	17.8
11/28/89 19:03	V2-1C	CO2/02	110	541	110	S	516	7.0	3.6	11.2	18.2
11/28/89 19:07	V2-2A	CO2/02	OPEN		CLOSED			0.7	0.65	18.5	19.2
11/28/89 19:09	V2-2B	CO2/02	110	541	110	S	516	7.8	4	9.8	17.6
11/28/89 19:13	V2-2C	CO2/02	80	350	150	S	769	13.4	4.2	3.9	17.3
11/28/89 19:19	V2-3A	CO2/02	OPEN		CLOSED			2.0	2	16.5	18.5
11/28/89 19:21	V2-3B	CO2/02	110	541	110	S	516	7.0	3.6	11.1	18.1
11/28/89 19:25	V2-3C	CO2/02	110	541	110	S	516	9.5	4.85	8.4	17.9
11/28/89 19:27	Standard check with atmospheric air							0.0	0.03	20.9	
11/28/89 21:05	V1-1A	CO2/02	110	541	110	S	516	6.2	3.15	11.3	17.5
11/28/89 21:09	V1-1B	CO2/02	110	541	110	S	516	5.9	3	13	18.9
11/28/89 21:15	V1-1C	CO2/02	110	541	110	S	516	6.1	3.1	13	19.1
11/28/89 21:19	V1-2A	CO2/02	OPEN		CLOSED			4.6	4.6	12	16.6
11/28/89 21:22	V1-2B	CO2/02	OPEN		CLOSED			4.8	4.8	14	18.8
11/28/89 21:26	V1-2C	CO2/02	110	541	110	S	516	6.6	3.4	12.9	19.5
11/28/89 21:30	V1-3A	CO2/02	OPEN		CLOSED			3.7	3.7	14.8	18.5
11/28/89 21:32	V1-3B	CO2/02	OPEN		CLOSED			4.4	4.4	14.8	19.2
11/28/89 21:34	V1-3C	CO2/02	110	541	110	S	516	5.7	2.9	13.7	19.4
11/28/89 21:38	V2-1A	CO2/02	OPEN		CLOSED			2.3	2.3	16	18.3
11/28/89 21:40	V2-1B	CO2/02	110	541	110	S	516	6.4	3.3	11.2	17.6
11/28/89 21:43	V2-1C	CO2/02	110	541	110	S	516	7.6	3.9	10.6	18.4
11/28/89 21:46	V2-2A	CO2/02	OPEN		CLOSED			1.1	1.1	17.6	18.7
11/28/89 21:48	V2-2B	CO2/02	110	541	110	S	516	8.1	4.15	10	18.1
11/28/89 21:52	V2-2C	CO2/02	80	350	150	S	769	13.7	4.3	5	18.7

Date/Time	Sample	CO2/THC DATA					Dil.	O2 Data		
		Anal.	Rotameter	G/S	Flc./	Dil. (Rt.)		Calc. Conc.	Gastech	O2+C02
m/d/y/ h:mm	Loc.	CO2/02	Rotameter	G/S	cc/min	Rotameter	Flow	CO2 (%)	Reading	(%)
11/28/89 21:56	V2-3A	CO2/02	OPEN			CLOSED		2.6	15.4	18.0
11/28/89 21:58	V2-3B	CO2/02	110	S	541	110	516	7.6	10.6	18.2
11/28/89 22:03	V2-3C	CO2/02	110	S	541	110	516	9.6	8.2	17.8
11/28/89 22:09	Standard check with atmospheric air							0.03	20.9	
	Standard check with 5.1% CO2/N2							5.1	0	
11/29/89 1:22	Standard check with atmospheric air							0.03	20.9	
11/29/89 1:29	V1-1A	CO2/02	110	S	541	110	516	7.2	9.5	16.7
11/29/89 1:32	V1-1B	CO2/02	110	S	541	110	516	6.6	12	18.6
11/29/89 1:35	V1-1C	CO2/02	110	S	541	110	516	6.7	12.3	19.0
11/29/89 1:40	V1-2A	CO2/02	110	S	541	110	516	5.9	10.5	16.4
11/29/89 1:43	V1-2B	CO2/02	110	S	541	110	516	5.8	13	18.8
11/29/89 1:47	V1-2C	CO2/02	110	S	541	110	516	7.0	12.6	19.6
11/29/89 1:51	V1-3A	CO2/02	OPEN			CLOSED		4	14.2	18.2
11/29/89 1:54	V1-3B	CO2/02	OPEN			CLOSED		4.9	13.9	18.8
11/29/89 1:57	V1-3C	CO2/02	110	S	541	110	516	6.3	12.9	19.2
11/29/89 2:00	V2-1A	CO2/02	OPEN			CLOSED		3.1	13.5	16.6
11/29/89 2:03	V2-1B	CO2/02	110	S	541	110	516	7.6	9.2	16.8
11/29/89 2:06	V2-1C	CO2/02	110	S	541	110	516	8.2	9.2	17.4
11/29/89 2:09	V2-2A	CO2/02	OPEN			CLOSED		1.6	16	17.6
11/29/89 2:10	V2-2B	CO2/02	110	S	541	110	516	8.6	8.3	16.9
11/29/89 2:15	V2-2C	CO2/02	76	S	322	150	769	14.6	4.5	19.1
11/29/89 2:20	V2-3A	CO2/02	OPEN			CLOSED		3.4	13.2	16.6
11/29/89 2:25	V2-3B	CO2/02	80	S	350	110	516	8.7	8.2	16.9
11/29/89 2:28	V2-3C	CO2/02	80	S	350	110	516	10.6	6.2	16.8
11/29/89 2:32	Standard check with atmospheric air							0.03	20.9	
	Standard check with 5.1% CO2/N2							5.1	0	
11/29/89 7:00	Standard check with atmospheric air							0.03	20.9	
	Standard check with 5.1% CO2/N2							5.1	0	
11/29/89 7:10	V1-1A	CO2/02	110	S	541	110	516	8.0	7.8	15.8
11/29/89 7:13	V1-1B	CO2/02	110	S	541	110	516	7.2	10.8	18.0
11/29/89 7:16	V1-1C	CO2/02	110	S	541	110	516	7.0	11.1	18.1
11/29/89 7:20	V1-2A	CO2/02	110	S	541	110	516	6.8	9	15.8

		CO2/THC DATA										O2 Data			
Date/Time	Sample	Anal.	Smpl (Lt)	Rotameter	G/S	Flow	Dil. (Rt.)	G/S	Dil.	Gastech-CO2 (%)	Calc. Conc.	Gastech		O2+C02	
m/d/y/ h:mm	Loc.					cc/min			cc/min	SIP-THC (ppm)	CO2 (%)	Reading	O2 (%)	(%)	(%)
11/29/89 7:25	V1-2B	CO2/02	110	110	S	541	110	S	516	3.3	6.4	11.5	11.5	17.9	
11/29/89 7:27	V1-2C	CO2/02	110	110	S	541	110	S	516	3.7	7.2	11.5	11.5	18.7	
11/29/89 7:31	V1-3A	CO2/02	OPEN	CLOSED						4.1	4.1	14.2	14.2	18.3	
11/29/89 7:35	V1-3B	CO2/02	110	110	S	541	110	S	516	2.9	5.7	12.5	12.5	18.2	
11/29/89 7:38	V1-3C	CO2/02	110	110	S	541	110	S	516	3.6	7.0	11.1	11.1	18.1	
11/29/89 7:41	V2-1A	CO2/02	110	110	S	541	110	S	516	2.2	4.3	10.5	10.5	14.8	
11/29/89 7:45	V2-1B	CO2/02	110	110	S	541	110	S	516	4.4	8.6	7	7	15.6	
11/29/89 7:48	V2-1C	CO2/02	110	110	S	541	110	S	516	4.5	8.8	7.3	7.3	16.1	
11/29/89 7:51	V2-2A	CO2/02	OPEN	CLOSED						2	2.0	14.3	14.3	16.3	
11/29/89 7:54	V2-2B	CO2/02	110	110	S	541	110	S	516	4.6	9.0	6.2	6.2	15.2	
11/29/89 7:57	V2-2C	CO2/02	80	150	S	350	150	S	769	4.2	13.4	3.1	3.1	16.5	
11/29/89 7:59	V2-3A	CO2/02	OPEN	CLOSED						4	4	11.5	11.5	15.5	
11/29/89 8:03	V2-3B	CO2/02	110	110	S	541	110	S	516	4.75	9.3	6	6	15.3	
11/29/89 8:07	V2-3C	CO2/02	80	150	S	350	150	S	769	3.8	12.1	3.8	3.8	15.9	
11/29/89 8:10	Standard check with atmospheric air										0.0	20.8	20.8		
11/29/89 12:26	Standard check with atmospheric air										0.03	20.9	20.9		
	Standard check with 5.1% CO2/N2										5.1	0	0		
11/29/89 12:34	V1-1A	CO2/02	110	110	S	541	110	S	516	4.3	8.4	7	7	15.4	
11/29/89 12:37	V1-1B	CO2/02	110	110	S	541	110	S	516	3.8	7.4	9.5	9.5	16.9	
11/29/89 12:40	V1-1C	CO2/02	110	110	S	541	110	S	516	3.8	7.4	10	10	17.4	
11/29/89 12:43	V1-2A	CO2/02	110	110	S	541	110	S	516	3.8	7.4	7.7	7.7	15.1	
11/29/89 12:45	V1-2B	CO2/02	110	110	S	541	110	S	516	3.55	6.9	10	10	16.9	
11/29/89 12:48	V1-2C	CO2/02	110	110	S	541	110	S	516	3.9	7.6	10.1	10.1	17.7	
11/29/89 12:52	V1-3A	CO2/02	OPEN	CLOSED						4.1	4.1	13.5	13.5	17.6	
11/29/89 12:55	V1-3B	CO2/02	110	110	S	541	110	S	516	3.6	7.0	10.4	10.4	17.4	
11/29/89 12:58	V1-3C	CO2/02	110	110	S	541	110	S	516	4	7.8	9.2	9.2	17.0	
11/29/89 13:03	V2-1A	CO2/02	110	110	S	541	110	S	516	2.8	5.5	8.2	8.2	13.7	
11/29/89 13:05	V2-1B	CO2/02	110	110	S	541	110	S	516	4.9	9.6	4.2	4.2	13.8	
11/29/89 13:10	V2-1C	CO2/02	110	110	S	541	110	S	516	4.8	9.4	4.8	4.8	14.2	
11/29/89 13:13	V2-2A	CO2/02	OPEN	CLOSED						2.5	2.5	12.8	12.8	15.3	
11/29/89 13:16	V2-2B	CO2/02	110	110	S	541	110	S	516	5	9.8	4.8	4.8	14.6	
11/29/89 13:19	V2-2C	CO2/02	80	150	S	350	150	S	769	4.35	13.9	1.5	1.5	15.4	

		CO2/THC DATA								O2 Data	
		Smpl		Dil.				Calc. Conc.		Gastech	
Date/Time	Sample	Anal.	Smpl (Lt)	Flow	Dil. (Rt.)	G/S	Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.		Rotameter	cc/min	Rotameter		cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/29/89 13:21	V2-3A	CO2/02	OPEN		CLOSED			4.6	4.6	11	15.6
11/29/89 13:24	V2-3B	CO2/02	80	S 350	150	S	769	3.6	11.5	3.5	15.0
11/29/89 13:26	V2-3C	CO2/02	80	S 350	150	S	769	4.2	13.4	1.2	14.6
11/29/89 13:32	V3A	CO2/02	OPEN		CLOSED			1.6	1.6	18.9	20.5
11/29/89 13:36	V3B	CO2/02	OPEN		CLOSED			1.8	1.8	18.5	20.3
11/29/89 13:39	V3C	CO2/02	OPEN		CLOSED			1.9	1.9	18.5	20.4
11/29/89 13:41	V4A	CO2/02	OPEN		CLOSED			0.8	0.8	19.8	20.6
11/29/89 13:43	V4B	CO2/02	OPEN		CLOSED			0.85	0.9	19.7	20.6
11/29/89 13:44	V4C	CO2/02	OPEN		CLOSED			0.9	0.9	19.7	20.6
11/29/89 13:45	Standard check with atmospheric air							0.03	0.0	20.9	
11/29/89 19:20	Standard check with atmospheric air							0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2							5.1	5.1	0	
11/29/89 19:26	V1-1A	CO2/02	110	S 541	110	S	516	4.8	9.4	5.8	15.2
11/29/89 19:30	V1-1B	CO2/02	110	S 541	110	S	516	4.4	8.6	8	16.6
11/29/89 19:33	V1-1C	CO2/02	110	S 541	110	S	516	4.3	8.4	8.5	16.9
11/29/89 19:36	V1-2A	CO2/02	110	S 541	110	S	516	4.3	8.4	6.7	15.1
11/29/89 19:39	V1-2B	CO2/02	110	S 541	110	S	516	4.1	8.0	8.4	16.4
11/29/89 19:42	V1-2C	CO2/02	110	S 541	110	S	516	4.3	8.4	9	17.4
11/29/89 19:45	V1-3A	CO2/02	OPEN		CLOSED			4.85	4.9	12	16.9
11/29/89 19:48	V1-3B	CO2/02	110	S 541	110	S	516	4	7.8	9	16.8
11/29/89 19:52	V1-3C	CO2/02	110	S 541	110	S	516	4.4	8.6	7.8	16.4
11/29/89 19:55	V2-1A	CO2/02	110	S 541	110	S	516	3.35	6.5	9.5	16.0
11/29/89 19:58	V2-1B	CO2/02	80	S 350	150	S	769	3.65	11.7	2.8	14.5
11/29/89 20:02	V2-1C	CO2/02	80	S 350	150	S	769	3.7	11.8	3.2	15.0
11/29/89 20:06	V2-2A	CO2/02	OPEN		CLOSED			3.1	3.1	11.5	14.6
11/29/89 20:09	V2-2B	CO2/02	80	S 350	150	S	769	3.7	11.8	3.9	15.7
11/29/89 20:12	V2-2C	CO2/02	80	S 350	150	S	769	4.4	14.1	1	15.1
11/29/89 20:15	V2-3A	CO2/02	110	S 541	110	S	516	2.9	5.7	9.4	15.1
11/29/89 20:23	V2-3B	CO2/02	80	S 350	150	S	769	4	12.8	2.3	15.1
11/29/89 20:29	V2-3C	CO2/02	80	S 350	150	S	769	4.5	14.4	0.5	14.9
11/29/89 20:33	Standard check with atmospheric air							0.03	0.0	20.9	

Date/Time m/d/y/ h:mm		Sample		Anal.		Smpl (Lt)		CO2/THC DATA		Dil.		Calc. Conc.		O2 Data	
		Loc.	Loc.	Rotameter	G/S	Rotameter	G/S	Flow	Dil. (Rt.)	Flow	G/S	CO2 (%)	THC (ppm)	Reading	O2 (%)
11/30/89	6:47	Standard check with atmospheric air													
		Standard check with 5.1% CO2/N2													
11/30/89	6:58	V1-1A	CO2/02	110	S	541	110	S	516	5	5.1	0	20.9		
11/30/89	7:01	V1-1B	CO2/02	110	S	541	110	S	516	4.8	9.4	5.5	14.9		
11/30/89	7:04	V1-1C	CO2/02	110	S	541	110	S	516	4.7	9.2	6	15.2		
11/30/89	7:08	V1-2A	CO2/02	110	S	541	110	S	516	4.7	9.2	5.2	14.4		
11/30/89	7:11	V1-2B	CO2/02	110	S	541	110	S	516	4.6	9.0	6	15.0		
11/30/89	7:14	V1-2C	CO2/02	110	S	541	110	S	516	4.8	9.4	5.8	15.2		
11/30/89	7:17	V1-3A	CO2/02	110	S	541	110	S	516	2.9	5.7	10	15.7		
11/30/89	7:22	V1-3B	CO2/02	110	S	541	110	S	516	4.7	9.2	6.1	15.3		
11/30/89	7:25	V1-3C	CO2/02	110	S	541	110	S	516	5	9.8	4.9	14.7		
11/30/89	7:29	V2-1A	CO2/02	110	S	541	110	S	516	3.3	6.4	7.8	14.2		
11/30/89	7:35	V2-1B	CO2/02	80	S	350	150	S	769	3.85	12.3	1.3	13.6		
11/30/89	7:42	V2-1C	CO2/02	80	S	350	150	S	769	3.9	12.5	1	13.5		
11/30/89	7:47	V2-2A	CO2/02	OPEN			CLOSED			3.95	4.0	9	13.0		
11/30/89	7:50	V2-2B	CO2/02	80	S	350	150	S	769	3.9	12.5	1.3	13.8		
11/30/89	7:53	V2-2C	CO2/02	80	S	350	150	S	769	4.2	13.4	0.5	13.9		
11/30/89	7:57	V2-3A	CO2/02	110	S	541	110	S	516	3.6	7.0	6	13.0		
11/30/89	8:01	V2-3B	CO2/02	80	S	350	150	S	769	4.1	13.1	1	14.1		
11/30/89	8:08	V2-3C	CO2/02	80	S	350	150	S	769	4.4	14.1	0.3	14.4		
11/30/89	8:16	Standard check with atmospheric air													
		Standard check with 5.1% CO2/N2													
11/30/89	16:22	Standard check with atmospheric air													
		Standard check with 5.1% CO2/N2													
11/30/89	16:27	V1-1A	CO2/02	80	S	350	150	S	769	3.45	11.0	3.4	14.4		
11/30/89	16:31	V1-1B	CO2/02	80	S	350	150	S	769	3.4	10.9	4.1	15.0		
11/30/89	16:34	V1-1C	CO2/02	80	S	350	150	S	769	3.45	11.0	4.5	15.5		
11/30/89	16:37	V1-2A	CO2/02	80	S	350	150	S	769	3.4	10.9	3.5	14.4		
11/30/89	16:42	V1-2B	CO2/02	80	S	350	150	S	769	3.4	10.9	4.2	15.1		
11/30/89	16:44	V1-2C	CO2/02	80	S	350	150	S	769	3.5	11.2	4.1	15.3		
11/30/89	16:47	V1-3A	CO2/02	110	S	541	110	S	516	3.7	7.2	7.8	15.0		
11/30/89	16:52	V1-3B	CO2/02	110	S	541	110	S	516	5.1	10.0	4.6	14.6		

		CO2/THC DATA								O2 Data		
		Smpl					Dil.		Calc. Conc.			
		Smpl (Lt)	Flow	Dil. (Rt.)			Flow		CO2 (%)	Reading		
	Sample Loc.	Rotameter	G/Sec	mIn	Rotameter	G/Sec	mIn	SIP-THC (ppm)	THC (ppm)	O2 (%)	O2+C02 (%)	
12/15/89 11:30	V2 disch	CO2/02	DIRECT					3.3	3.3	17.3	20.6	
12/15/89 11:30	V2 disch	CO2/02	OPEN		CLOSED			2.7	2.7	18	20.7	
	THC		S	458	100	S	445	1060	2089.9			
12/15/89 11:30	V1 disch	CO2/02	DIRECT					4.5	4.5	16	20.5	
12/15/89 11:30	V1 disch	CO2/02	OPEN		CLOSED			3.7	3.7	17	20.7	
	THC		S	458	150	S	769	765	2049.5			
12/15/89 11:30	dewater	CO2/02	DIRECT					0.8	0.8	20	20.8	
	THC		S	777	80	S	337	300	430.1			
NOTE: Direct and sample train readings taken 13, 15 December indicate a leak in the sample train.												
If leak is through the dilution rotameter then THC is unaffected.												
If leak is on the sample line then THC concentrations have received additional dilution. Doug will investigate.												
During the shutdown test on 30 Nov. O2 levels as low as 0.3% were measured indicating no significant leaks.												
On 3 Jan 1990 prior to shutdown test No. 3 the source of the leak was identified as the sampling pump.												
Therefore, from 13 Dec to 2 Jan direct CO2/O2 readings will be used and THC adjusted 10% higher.												
12/20/89 12:00	V4 disch	CO2/02	OPEN		CLOSED			0.35	0.4	20.5	20.9	
	THC		OPEN		CLOSED			ND	ND			
12/20/89 12:00	V3 disch	CO2/02	Inoperative from 16-19 Dec because valve was closed accidentally. Flooded today.									
12/20/89 12:00	V3 inlet	CO2/02	"									
	THC											
12/20/89 12:00	V2 disch	CO2/02	DIRECT					3.1	3.1	17.2	20.3	
	THC		DIRECT					3000	3000.0			
12/20/89 12:00	V1 disch	CO2/02	DIRECT					4.1	4.1	16.5	20.6	
	THC							2700	2700.0			
Note : Direct readings of THC in the 3000 ppm range when calibrated at 1005 ppm are probably 30 % high due to nonlinearity of the Instrumnet above 1500 ppm. Disregard.												
12/22/89 12:00	V4 disch	CO2/02	DIRECT					0.22	0.2	21	21.2	
	THC		OPEN		CLOSED			ND	ND			
12/22/89 12:00	V3 disch	CO2/02	DIRECT					2.6	2.6	17.5	20.1	
	THC		100	S	458	100	S	445	580	1143.5		

		CO2/THC DATA						O2 Data	
Date/Time	Sample	Smpl (Lt)	Flow	Dil. (Rt.)	Flow	Gastech-CO2 (%)	Calc. Conc.	Gastech	
m/d/y/ h:mm	Loc.	Anal.	Rotameter G/Scc/min	Rotameter G/Scc/min	Dil.	SIP-THC (ppm)	CO2 (%)	Reading	O2+C02 (%)
12/22/89 12:00	V3 inlet	CO2/02	DIRECT			3.4	3.4	17	20.4
		THC	100	150	S	650	1741.4		
12/22/89 12:00	V2 disch	CO2/02	DIRECT			2.6	2.6	16.8	19.4
		THC	100	100	S	1060	2089.9		
12/22/89 12:00	V1 disch	CO2/02	DIRECT			3.4	3.4	16.5	19.9
		THC	100	150	S	765	2049.5		
			Note: THC numbers provided by telephone are not in the hard copy.						
12/27/89 12:00	Standard check with atmospheric air								
12/27/89 12:00	Standard check with 5.1% CO2/N2								
12/27/89 12:00	Standard check with 1005 ppm std. reads 1020 ppm. GC counts = 167								
12/27/89 12:00	V4 disch	CO2/02	DIRECT			0.4	0.4	20.8	21.2
		THC	DIRECT			ND	ND		
12/27/89 12:00	V3 disch	CO2/02	DIRECT			1.8	1.8	18.8	20.6
		THC	DIRECT			370	370.0		
12/27/89 12:00	V3 inlet	CO2/02	DIRECT			1.9	1.9	18.8	20.7
		THC	100	100	S	710	1399.8		
12/27/89 12:00	V2 disch	CO2/02	DIRECT			2.6	2.6	17.9	20.5
		THC	100	100	S	1150	2267.4		
12/27/89 12:00	V1 disch	CO2/02	DIRECT			2.9	2.9	17.7	20.6
		THC	100	100	S	760	1498.4		
			Note: Mixed 70 gal of Nutrient solution on 26 Dec and set V3 and V4 at 3 ml/min continuous.						
			Water and nutrient turned off 24-25 Dec due to freeze. Air flow unaffected.						
12/29/89 12:00	Standard check with atmospheric air								
12/29/89 12:00	Standard check with 5.1% CO2/N2								
12/29/89 12:00	Standard check with 1005 ppm std. GC counts = 170								
12/29/89 12:00	V4 disch	CO2/02	DIRECT			0.5	0.5	20	20.5
		THC	DIRECT			ND	ND		
12/29/89 12:00	V3 disch	CO2/02	DIRECT			1.5	1.5	19	20.5
		THC	DIRECT			370	370.0		
12/29/89 12:00	V3 inlet	CO2/02	DIRECT			1.3	1.3	19.4	20.7
		THC	DIRECT			530	530.0		

Date/Time m/d/y/ h:mm	Sample Loc.	CO2/THC DATA				Dil.	O2 Data			
		Anal.	Rotameter G/Scc/min	Smpl (Lt)	Flow	Dil. (Rt.)	Rotameter G/Scc/min	Flow	Calc. Conc.	Gastech
12/29/89 12:00	V2 disch	CO2/02	DIRECT						CO2 (%)	Reading
		THC	100	100	S	445			THC (ppm)	O2 (%)
12/29/89 12:00	V1 disch	CO2/02	DIRECT						CO2 (%)	Reading
		THC	100	100	S	445			THC (ppm)	O2 (%)
Note: a leak in the V1 to V3 line was suspected due to the low reading.										
Bypassing in the building eliminated the problem and V3 inlet readings same ($\pm .2$) as V1 discharge.										
Readings on 27 Dec were OK so apparently a short term problem.										
1/2/90 12:00	Standard check with atmospheric air									
1/2/90 12:00	Standard check with 5.1% CO2/N2									
1/2/90 12:00	Standard check with 1005 ppm std. GC counts = 159									
1/2/90 12:00	V4 disch	CO2/02	DIRECT						0.45	20.2
	THC	DIRECT							ND	20.7
1/2/90 12:00	V3 disch	CO2/02	DIRECT						2.9	17.5
	THC	DIRECT							610.0	20.4
1/2/90 12:00	V3 inlet	CO2/02	DIRECT						3	17.3
	THC	DIRECT							1450.0	20.3
1/2/90 12:00	V2 disch	CO2/02	DIRECT						1.9	18.2
	THC	DIRECT							1600.0	20.1
1/2/90 12:00	V1 disch	CO2/02	DIRECT						2.6	17.3
	THC	DIRECT							1500.0	19.9
1/3/90 10:30	Standard check with atmospheric air								0.0	20.9
1/3/90 10:30	Standard check with 20.1% CO2/N2								20.0	0
Note: Using new CO2/O2 meter with full scale CO2/O2 capability. No dilution required.										
Spanning to 20.1% CO2 standard the 5.12% standard reads 5.4%.										
1/3/90 11:41	Standard check with 1005 ppm std. GC counts = 137									
The leak discussed above was traced to the sampling pump. Using different pump and original sampling train for the following:										
1/3/90 11:45	V1-1A	CO2/02	OPEN			CLOSED			3.8	16.5
	THC	110	S	541	S	150	S	769	1937.2	20.3
1/3/90 11:51	V1-1B	CO2/02	OPEN			CLOSED			3.4	17.1
	THC	80	S	350	S	150	S	769	3133.2	20.5

		CO2/THC DATA										O2 Data		
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Dil. (Rt.)	G/Scc/min	Flow	Dil.	Gastech-CO2 (%)	Calc. Conc.		Gastech		
m/d/y/ h:mm	Loc.	Rotameter	Rotameter	Flow	Rotameter	G/Scc/min	G/Scc/min		SIP-THC (ppm)	CO2 (%)	Reading	O2 (%)		O2+C02 (%)
1/3/90 11:56	V1-1C	CO2/02	OPEN		CLOSED				3.2	3.2		17.2		20.4
		THC	110	S	110	S	516		960	1875.6				
1/3/90 12:01	V1-2A	CO2/02	OPEN		CLOSED				2	2		18.2		20.2
		THC	OPEN		CLOSED				595	595				
1/3/90 12:05	V1-2B	CO2/02	OPEN		CLOSED				2.75	2.75		17.8		20.6
		THC	OPEN		CLOSED				1070	1070				
1/3/90 12:13	V1-2C	CO2/02	OPEN		CLOSED				3.8	3.8		16.5		20.3
		THC	110	S	110	S	516		630	1230.9				
1/3/90 12:18	V1-3A	CO2/02	OPEN		CLOSED				0.6	0.6		20.2		20.8
		THC	OPEN		CLOSED				80	80				
1/3/90 12:22	V1-3B	CO2/02	OPEN		CLOSED				2.5	2.5		18.1		20.6
		THC	110	S	110	S	516		565	1103.9				
1/3/90 12:26	V1-3C	CO2/02	OPEN		CLOSED				3.2	3.2		17.2		20.4
		THC	OPEN		CLOSED				590	590				
1/3/90 12:30	V1 disch	CO2/02	OPEN		CLOSED				2.8	2.8		17.8		20.6
		THC	110	S	110	S	516		650	1270.0				
1/3/90 12:37	V2-1A	CO2/02	OPEN		CLOSED				0.1	0.1		20.8		20.9
		THC	OPEN		CLOSED				30	30				
					Note: Checked sampling train. Approx. 28 ppm. Therfore, V2-1A approx 0.									
1/3/90 12:43	V2-1B	CO2/02	OPEN		CLOSED				1.25	1.25		19.3		20.6
		THC	OPEN		CLOSED				470	470				
1/3/90 12:47	V2-1C	CO2/02	OPEN		CLOSED				1.3	1.3		19.2		20.5
		THC	50	S	150	S	769		450	2497.6				
1/3/90 12:56	V2-2A	CO2/02	OPEN		CLOSED				0.05	0.05		20.9		21.0
		THC	OPEN		CLOSED				22	22				
					Note: Checked sampling train. Approx. 22 ppm. Therfore, V2-2A approx 0.									
1/3/90 13:06	V2-2B	CO2/02	OPEN		CLOSED				1	1		19.7		20.7
		THC	OPEN		CLOSED				940 and rising	940				
1/3/90 13:09	V2-2C	CO2/02	OPEN		CLOSED				1.7	1.7		19		20.7
		THC	50	S	150	S	769		600	3330.2				

		CO2/THC DATA						O2 Data			
Date/Time	Sample	Anal.	Rotameter	G/Scc	Flow	Dil.	Dil.	Calc. Conc.	Gastech		
m/d/y/ h:mm	Loc.	CO2/02	THC	CO2/02	THC	CO2/02	THC	CO2 (%)	Reading	02+C02	
1/3/90 13:12	V2-3A	CO2/02	OPEN			CLOSED		0.1	20.7	20.8	
		THC	OPEN			CLOSED		46			
		Note: Checked sampling train. Approx. 46 ppm. Therefore, V2-3A approx 0.									
1/3/90 13:15	V2-3B	CO2/02	OPEN			CLOSED		0.9	19.5	20.4	
		THC	OPEN			CLOSED		700			
1/3/90 13:18	V2-3C	CO2/02	OPEN			CLOSED		2.2	18.5	20.7	
		THC	50	S	169	150	S	550			
1/3/90 13:22	V2 disch	CO2/02	OPEN			CLOSED		2.25	18.1	20.4	
		THC	110	S	541	110	S	980			
1/3/90 13:49	V4A	CO2/02	DIRECT					0.2	20.6	20.8	
		THC	DIRECT					ND			
1/3/90 13:51	V4B	CO2/02	DIRECT					0.2	20.6	20.8	
		THC	DIRECT					ND			
1/3/90 13:53	V4C	CO2/02	DIRECT					0.3	20.5	20.8	
		THC	DIRECT					ND			
1/3/90 13:55	V4 disch	CO2/02	DIRECT					0.3	20.5	20.8	
		THC	DIRECT					ND			
1/3/90 14:00	V3 disch	CO2/02	DIRECT					2.9	17.8	20.7	
		THC	DIRECT					940			
1/3/90 14:03	V3A	CO2/02	DIRECT					3	17.7	20.7	
		THC	DIRECT					530			
1/3/90 14:05	V3B	CO2/02	DIRECT					3.2	17.3	20.5	
		THC	DIRECT					740			
1/3/90 14:07	V3C	CO2/02	DIRECT					3.2	17.2	20.4	
		THC	DIRECT					630			
1/3/90 14:09	V3 inlet	CO2/02	DIRECT					2.9	17.9	20.8	
		THC	DIRECT					approx. 3200			
		Note: The 3200 direct reading will be too high due to nonlinearity discussed above. See 2188 ppm below.									
1/3/90 14:13	V3 disch	CO2/02	OPEN			CLOSED		2.8	17.9	20.7	
		THC	OPEN			CLOSED		940			

CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Rotameter	Smpl (Lt)	Flow	Dil. (Rt.)	G/Scc/mIn	Dil.	Calc. Conc.	Gastech	
m/d/y/ h:mm	Loc.	CO2/02	THC	CO2/02	CO2/02	CO2/02	CO2/02	CO2/02	CO2 (%)	Reading	O2+C02 (%)
1/3/90 14:15	V3A	CO2/02	THC	CO2/02	CO2/02	CO2/02	CO2/02	CO2/02	CO2 (%)	Reading	O2+C02 (%)
		CO2/02	THC	CO2/02	CO2/02	CO2/02	CO2/02	CO2/02	CO2 (%)	Reading	O2+C02 (%)
1/3/90 14:17	V3B	CO2/02	THC	CO2/02	CO2/02	CO2/02	CO2/02	CO2/02	CO2 (%)	Reading	O2+C02 (%)
1/3/90 14:19	V3C	CO2/02	THC	CO2/02	CO2/02	CO2/02	CO2/02	CO2/02	CO2 (%)	Reading	O2+C02 (%)
1/3/90 14:20	V3 Inlet	CO2/02	THC	CO2/02	CO2/02	CO2/02	CO2/02	CO2/02	CO2 (%)	Reading	O2+C02 (%)
		THC	THC	THC	THC	THC	THC	THC	THC	THC	THC
1/3/90 14:28	V1 disch	CO2/02	THC	CO2/02	CO2/02	CO2/02	CO2/02	CO2/02	CO2 (%)	Reading	O2+C02 (%)
		THC	THC	THC	THC	THC	THC	THC	THC	THC	THC
1/3/90 14:32	V2 disch	CO2/02	THC	CO2/02	CO2/02	CO2/02	CO2/02	CO2/02	CO2 (%)	Reading	O2+C02 (%)
		THC	THC	THC	THC	THC	THC	THC	THC	THC	THC
1/3/90 15:33											
1/3/90 16:15	Standard check with atmospheric air										
	Standard check with 20.1% CO2/N2										
1/3/90 16:20	V1-1A	CO2/02	DIRECT								
1/3/90 16:22	V1-1B	CO2/02	DIRECT								
1/3/90 16:24	V1-1C	CO2/02	DIRECT								
1/3/90 16:26	V1-2A	CO2/02	DIRECT								
1/3/90 16:28	V1-2B	CO2/02	DIRECT								
1/3/90 16:30	V1-2C	CO2/02	DIRECT								
1/3/90 16:32	V1-3A	CO2/02	DIRECT								
1/3/90 16:34	V1-3B	CO2/02	DIRECT								
1/3/90 16:36	V1-3C	CO2/02	DIRECT								
1/3/90 16:37	V2-1A	CO2/02	DIRECT								
1/3/90 16:39	V2-1B	CO2/02	DIRECT								
1/3/90 16:40	V2-1C	CO2/02	DIRECT								
1/3/90 16:42	V2-2A	CO2/02	DIRECT								
1/3/90 16:43	V2-2B	CO2/02	DIRECT								

Note: The disparity in V1 values resulted from a battery change between Initial V1 and V2 readings.

The direct and sample train readings were conducted on V3 to illustrate that the same values were obtainable.

Blowers off for shutdown test No. 3.

Note: All readings during the shutdown test were collected directly with the full-scale instrument.

		CO2/THC DATA															
Date/Time m/d/y/ h:mm	Sample Loc.	Anal.	Smpl (Lt) Rotameter	G/Scc/min	Flow Dil. (Rt.) Rotameter	Dil. Flow G/Scc/min	Gastech-CO2 (%) SIP-THC (ppm)	Calc. Conc. CO2 (%) THC (ppm)	O2 Data								
									Reading	02+C02 (%)							
1/3/90 16:44	V2-2C	CO2/02	DIRECT				2.1		18.6	20.7							
1/3/90 16:47	V2-3A	CO2/02	DIRECT				0.15		20.5	20.7							
1/3/90 16:48	V2-3B	CO2/02	DIRECT				1.1		19.4	20.5							
1/3/90 16:49	V2-3C	CO2/02	DIRECT				2.4		18.2	20.6							
1/3/90 16:58	V3A	CO2/02	DIRECT				3.1		17.5	20.6							
1/3/90 16:59	V3B	CO2/02	DIRECT				3.3		17.2	20.5							
1/3/90 17:00	V3C	CO2/02	DIRECT				3.3		17.2	20.5							
1/3/90 17:01	V4A	CO2/02	DIRECT				0.3		20.5	20.8							
1/3/90 17:02	V4B	CO2/02	DIRECT				0.3		20.5	20.8							
1/3/90 17:03	V4C	CO2/02	DIRECT				0.3		20.5	20.8							
1/3/90 17:12	Standard check with atmospheric air						0.0		20.9								
1/3/90 17:12	Standard check with 20.1% CO2/N2						20.0		0								
1/3/90 19:14	Standard check with atmospheric air						0.0		20.9								
1/3/90 19:14	Standard check with 20.1% CO2/N2						20.0		0								
1/3/90 19:16	V1-1A	CO2/02	DIRECT				4		16.2	20.2							
1/3/90 19:18	V1-1B	CO2/02	DIRECT				3.6		17.1	20.7							
1/3/90 19:20	V1-1C	CO2/02	DIRECT				3.5		17.2	20.7							
1/3/90 19:22	V1-2A	CO2/02	DIRECT				2.7		17.1	19.8							
1/3/90 19:24	V1-2B	CO2/02	DIRECT				3.1		17.5	20.6							
1/3/90 19:26	V1-2C	CO2/02	DIRECT				3.9		16.7	20.6							
1/3/90 19:28	V1-3A	CO2/02	DIRECT				1.6		18.2	19.8							
1/3/90 19:30	V1-3B	CO2/02	DIRECT				2.8		17.7	20.5							
1/3/90 19:32	V1-3C	CO2/02	DIRECT				3.5		17	20.5							
1/3/90 19:34	V2-1A	CO2/02	DIRECT				0.3		20.4	20.7							
1/3/90 19:35	V2-1B	CO2/02	DIRECT				2.1		17.7	19.8							
1/3/90 19:36	V2-1C	CO2/02	DIRECT				2.2		18.5	20.7							
1/3/90 19:38	V2-2A	CO2/02	DIRECT				0.15		20.5	20.7							
1/3/90 19:40	V2-2B	CO2/02	DIRECT				1.3		19.1	20.4							
1/3/90 19:42	V2-2C	CO2/02	DIRECT				2.5		18.4	20.9							
1/3/90 19:44	V2-3A	CO2/02	DIRECT				0.3		20.2	20.5							
1/3/90 19:46	V2-3B	CO2/02	DIRECT				1.4		19	20.4							

		CO2/THC DATA				O2 Data			
		Smpl		Dil.		Calc. Conc.		Gastech	
Date/Time	Sample	Anal.	Rotameter (L/min)	Flow	Dil. (Rt.)	Gastech-CO2 (%)	CO2 (%)	Reading	O2+C02
m/d/y/ h:mm	Loc.	CO2/02	G/Scc/min	G/Scc/min	Rotameter	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/3/90 19:48	V2-3C	CO2/02	DIRECT			2.9		17.6	20.5
1/3/90 19:51	V3A	CO2/02	DIRECT			3.2		17.6	20.8
1/3/90 19:53	V3B	CO2/02	DIRECT			3.3		17.3	20.6
1/3/90 19:55	V3C	CO2/02	DIRECT			3.3		17.3	20.6
1/3/90 19:58	Standard check with atmospheric air					0.0		20.9	
	Standard check with 20.1% CO2/N2					20.0		0	
1/3/90 23:08	Standard check with atmospheric air					0.0		20.9	
	Standard check with 20.1% CO2/N2					20.0		0	
1/3/90 23:12	V1-1A	CO2/02	DIRECT			4.2		15.8	20.0
1/3/90 23:13	V1-1B	CO2/02	DIRECT			3.7		16.8	20.5
1/3/90 23:14	V1-1C	CO2/02	DIRECT			3.6		17.1	20.7
1/3/90 23:16	V1-2A	CO2/02	DIRECT			3.2		16.2	19.4
1/3/90 23:18	V1-2B	CO2/02	DIRECT			3.3		17.1	20.4
1/3/90 23:20	V1-2C	CO2/02	DIRECT			3.9		16.6	20.5
1/3/90 23:22	V1-3A	CO2/02	DIRECT			2.2		17.2	19.4
1/3/90 23:24	V1-3B	CO2/02	DIRECT			3		17.2	20.2
1/3/90 23:26	V1-3C	CO2/02	DIRECT			3.6		16.8	20.4
1/3/90 23:27	V2-1A	CO2/02	DIRECT			0.3		19.8	20.1
1/3/90 23:28	V2-1B	CO2/02	DIRECT			2.7		16.3	19.0
1/3/90 23:30	V2-1C	CO2/02	DIRECT			2.3		17.8	20.1
1/3/90 23:32	V2-2A	CO2/02	DIRECT			0.15		20.2	20.4
1/3/90 23:34	V2-2B	CO2/02	DIRECT			1.7		18.2	19.9
1/3/90 23:35	V2-2C	CO2/02	DIRECT			2.6		17.8	20.4
1/3/90 23:37	V2-3A	CO2/02	DIRECT			0.5		19.2	19.7
1/3/90 23:39	V2-3B	CO2/02	DIRECT			1.8		18.1	19.9
1/3/90 23:40	V2-3C	CO2/02	DIRECT			3.2		16.8	20.0
1/3/90 23:44	V3A	CO2/02	DIRECT			3.1		17.2	20.3
1/3/90 23:45	V3B	CO2/02	DIRECT			3.2		17	20.2
1/3/90 23:47	V3C	CO2/02	DIRECT			3.2		17.1	20.3
1/3/90 23:50	Standard check with atmospheric air					0.0		20.9	
	Standard check with 20.1% CO2/N2					20.0		0	

				CO2/THC DATA								O2 Data			
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Dil. (Rt.)	Flow	Dil.	Gastech-CO2 (%)	Calc. Conc.	O2 Data		Gastech		O2+CO2	
m/d/y/ h:mm	Loc.		Rotameter	G/Scc/mIn	Rotameter	G/Scc/mIn		SIP-THC (ppm)	THC (ppm)	CO2 (%)	Reading	O2 (%)		(%)	
1/4/90 12:16	V1-2B	CO2/02	DIRECT					3.7				15.5		19.2	
1/4/90 12:18	V1-2C	CO2/02	DIRECT					4				15.3		19.3	
1/4/90 12:20	V1-3A	CO2/02	DIRECT					3				15.2		18.2	
1/4/90 12:22	V1-3B	CO2/02	DIRECT					3.5				15.5		19.0	
1/4/90 12:24	V1-3C	CO2/02	DIRECT					3.9				15.2		19.1	
1/4/90 12:26	V2-1A	CO2/02	DIRECT					0.6				17.9		18.5	
1/4/90 12:28	V2-1B	CO2/02	DIRECT					4.2				11.9		16.1	
1/4/90 12:30	V2-1C	CO2/02	DIRECT					3.2				14.8		18.0	
1/4/90 12:32	V2-2A	CO2/02	DIRECT					0.3				18.1		18.4	
1/4/90 12:34	V2-2B	CO2/02	DIRECT					2.7				15.2		17.9	
1/4/90 12:36	V2-2C	CO2/02	DIRECT					3.3				14.7		18.0	
1/4/90 12:38	V2-3A	CO2/02	DIRECT					1.2				16.3		17.5	
1/4/90 12:40	V2-3B	CO2/02	DIRECT					3.1				15.1		18.2	
1/4/90 12:42	V2-3C	CO2/02	DIRECT					4				14		18.0	
1/4/90 12:48	V3A	CO2/02	DIRECT					3.2				16.8		20.0	
1/4/90 12:49	V3B	CO2/02	DIRECT					3.2				16.6		19.8	
1/4/90 12:50	V3C	CO2/02	DIRECT					3.2				16.7		19.9	
1/4/90 12:53	V4A	CO2/02	DIRECT					0.4				20.2		20.6	
1/4/90 12:54	V4B	CO2/02	DIRECT					0.3				20.3		20.6	
1/4/90 12:56	V4C	CO2/02	DIRECT					0.3				20.3		20.6	
1/4/90 13:00	Standard check with atmospheric air							0.0				20.9		20.9	
	Standard check with 20.1% CO2/N2							20.0				0			
1/4/90 17:21	Standard check with atmospheric air							0.0				20.9			
	Standard check with 20.1% CO2/N2							20.0				0			
1/4/90 17:26	V1-1A	CO2/02	DIRECT					4.8				13.3		18.1	
1/4/90 17:28	V1-1B	CO2/02	DIRECT					4.2				15.1		19.3	
1/4/90 17:30	V1-1C	CO2/02	DIRECT					4.1				15.4		19.5	
1/4/90 17:32	V1-2A	CO2/02	DIRECT					4.3				13.2		17.5	
1/4/90 17:34	V1-2B	CO2/02	DIRECT					4				15.1		19.1	
1/4/90 17:36	V1-2C	CO2/02	DIRECT					4.3				15.1		19.4	
1/4/90 17:38	V1-3A	CO2/02	DIRECT					3.6				14.8		18.4	

				CO2/THC DATA								O2 Data			
Date/Time	Sample	Anal.	Smpl (Lt)	Rotameter	Flow	Dil. (Rt.)	Smpl	Dil.	Gastech-CO2 (%)	Calc. Conc.		Gastech			
m/d/y/ h:mm	Loc.			G/Scc/mln	G/Scc/mln				SIP-THC (ppm)	CO2 (%)	THC (ppm)	Reading	O2 (%)	O2+C02 (%)	
1/4/90 17:40	V1-3B	CO2/02	DIRECT						3.9			15.1	19.0		
1/4/90 17:42	V1-3C	CO2/02	DIRECT						4.3			14.8	19.1		
1/4/90 17:44	V2-1A	CO2/02	DIRECT						1.2			17.1	18.3		
1/4/90 17:45	V2-1B	CO2/02	DIRECT						5			10.8	15.8		
1/4/90 17:46	V2-1C	CO2/02	DIRECT						4			13.9	17.9		
1/4/90 17:47	V2-2A	CO2/02	DIRECT						0.75			17.3	18.1		
1/4/90 17:48	V2-2B	CO2/02	DIRECT						3.3			14.4	17.7		
1/4/90 17:50	V2-2C	CO2/02	DIRECT						3.9			13.9	17.8		
1/4/90 17:52	V2-3A	CO2/02	DIRECT						2			15.9	17.9		
1/4/90 17:53	V2-3B	CO2/02	DIRECT						3.6			14.5	18.1		
1/4/90 17:55	V2-3C	CO2/02	DIRECT						4.7			13	17.7		
1/4/90 18:00	V3A	CO2/02	DIRECT						3.5			16.6	20.1		
1/4/90 18:01	V3B	CO2/02	DIRECT						3.6			16.5	20.1		
1/4/90 18:02	V3C	CO2/02	DIRECT						3.5			16.5	20.0		
1/4/90 18:04	Standard check with atmospheric air								.05			20.9			
1/5/90 6:51	Standard check with 20.1% CO2/N2								20.0			0			
1/5/90 6:51	Standard check with atmospheric air								0.0			20.9			
1/5/90 6:51	Standard check with 20.1% CO2/N2								20.0			0			
1/5/90 6:55	V1-1A	CO2/02	DIRECT						5.8			11.2	17.0		
1/5/90 6:57	V1-1B	CO2/02	DIRECT						4.7			13.4	18.1		
1/5/90 6:59	V1-1C	CO2/02	DIRECT						4.5			13.9	18.4		
1/5/90 7:00	V1-2A	CO2/02	DIRECT						5.2			11.1	16.3		
1/5/90 7:02	V1-2B	CO2/02	DIRECT						4.6			13.2	17.8		
1/5/90 7:04	V1-2C	CO2/02	DIRECT						4.7			13.5	18.2		
1/5/90 7:06	V1-3A	CO2/02	DIRECT						4.3			12.7	17.0		
1/5/90 7:08	V1-3B	CO2/02	DIRECT						4.5			13.3	17.8		
1/5/90 7:10	V1-3C	CO2/02	DIRECT						4.8			13.1	17.9		
1/5/90 7:11	V2-1A	CO2/02	DIRECT						2.3			14.2	16.5		
1/5/90 7:13	V2-1B	CO2/02	DIRECT						6.4			7.5	13.9		
1/5/90 7:15	V2-1C	CO2/02	DIRECT						4.8			11.2	16.0		
1/5/90 7:17	V2-2A	CO2/02	DIRECT						1.4			14.8	16.2		

Note: Sucking some water.

		CO2/THC DATA										O2 Data	
				Smpl				Dil.				Calc. Conc.	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)				Gastech-CO2 (%)	CO2 (%)	Reading	
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/Scc/mIn	Rotameter	G/Scc/mIn				SIP-THC (ppm)	THC (ppm)	O2 (%)	O2+CO2 (%)
1/5/90 7:18	V2-2B	CO2/02	DIRECT							4.3		11.2	15.5
1/5/90 7:20	V2-2C	CO2/02	DIRECT							4.8		10.7	15.5
1/5/90 7:24	V2-3A	CO2/02	DIRECT							3.2		13.1	16.3
1/5/90 7:26	V2-3B	CO2/02	DIRECT							4.7		11.9	16.6
1/5/90 7:28	V2-3C	CO2/02	DIRECT							5.9		10.3	16.2
1/5/90 7:32	V3A	CO2/02	DIRECT							3.6		16.1	19.7
1/5/90 7:33	V3B	CO2/02	DIRECT							3.7		16.1	19.8
1/5/90 7:35	V3C	CO2/02	DIRECT							3.7		16	19.7
1/5/90 7:36	V4A	CO2/02	DIRECT							0.6		20.1	20.7
1/5/90 7:37	V4B	CO2/02	DIRECT							0.6		20.1	20.7
1/5/90 7:39	V4C	CO2/02	DIRECT							0.6		20.1	20.7
1/5/90 7:41	Standard check with atmospheric air									.05		20.90	
	Standard check with 20.1% CO2/N2									19.80		0.2	
1/5/90 7:41			Note: Dewatering system turned on.										
1/5/90 7:41	dewater	CO2/02	DIRECT							.70		20.10	20.8
		THC								400-550			
1/5/90 16:34	Standard check with atmospheric air									0.0		20.9	
	Standard check with 20.1% CO2/N2									20.0		0.0	
1/5/90 16:41	V1-1A	CO2/02	DIRECT					Temp °F		64	6.3	9.6	15.9
1/5/90 16:47	V1-1B	CO2/02	DIRECT							64	5.1	12.1	17.2
1/5/90 16:52	V1-1C	CO2/02	DIRECT							64	4.9	12.4	17.3
1/5/90 16:55	V1-2A	CO2/02	DIRECT							64	6	9.5	15.5
1/5/90 16:59	V1-2B	CO2/02	DIRECT							64	5.1	11.9	17.0
1/5/90 17:02	V1-2C	CO2/02	DIRECT							64	5.1	12.1	17.2
1/5/90 17:04	V1-3A	CO2/02	DIRECT								5	11.2	16.2
1/5/90 17:05	V1-3B	CO2/02	DIRECT								5.1	12.1	17.2
1/5/90 17:07	V1-3C	CO2/02	DIRECT								5.4	11.9	17.3
1/5/90 17:09	V2-1A	CO2/02	DIRECT							64	1.7	18.5	20.2
1/5/90 17:16	V2-1B	CO2/02	DIRECT								7.5	5.8	13.3
1/5/90 17:18	V2-1C	CO2/02	DIRECT								6	8.9	14.9
1/5/90 17:20	V2-2A	CO2/02	DIRECT								1.8	15.5	17.3

				CO2/THC DATA								O2 Data	
Date/Time		Sample		Smpl	Flow	Dil. (Rt.)	Dil.	Gastech-CO2 (%)		Calc. Conc.	Gastech		
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/Scc/min	Flow	Rotameter	G/Scc/min	SIP-THC (ppm)	CO2 (%)	THC (ppm)	Reading	O2 (%)	
1/5/90 17:24	V2-2B	CO2/02	DIRECT				64	5.2			9.2	14.4	
1/5/90 17:26	V2-2C	CO2/02	DIRECT					5.7			8.5	14.2	
1/5/90 17:27	V2-3A	CO2/02	DIRECT					3.2			14.4	17.6	
1/5/90 17:30	V2-3B	CO2/02	DIRECT					5.3			10.4	15.7	
1/5/90 17:32	V2-3C	CO2/02	DIRECT					6.7			8.5	15.2	
1/5/90 17:34	V3A	CO2/02	DIRECT					3.8			15.8	19.6	
1/5/90 17:35	V3B	CO2/02	DIRECT					3.9			15.8	19.7	
1/5/90 17:36	V3C	CO2/02	DIRECT					3.9			15.7	19.6	
1/5/90 17:40	Standard check with atmospheric air							0.05			20.9		
	Standard check with 20.1% CO2/N2							20.0			0.0		
1/6/90 7:50	Standard check with atmospheric air							0.0			20.9		
	Standard check with 20.1% CO2/N2							20.0			0.0		
1/6/90 7:55	V1-1A	CO2/02	DIRECT					7.3			6.8	14.1	
1/6/90 7:57	V1-1B	CO2/02	DIRECT					5.9			9.9	15.8	
1/6/90 7:58	V1-1C	CO2/02	DIRECT					5.7			10.3	16.0	
1/6/90 7:59	V1-2A	CO2/02	DIRECT					7.1			7.2	14.3	
1/6/90 8:01	V1-2B	CO2/02	DIRECT					6			9.8	15.8	
1/6/90 8:03	V1-2C	CO2/02	DIRECT					6.1			10.1	16.2	
1/6/90 8:07	V1-3A	CO2/02	DIRECT					6.1			9.1	15.2	
1/6/90 8:09	V1-3B	CO2/02	DIRECT					6.1			10.4	16.5	
1/6/90 8:11	V1-3C	CO2/02	DIRECT					6.2			10.1	16.3	
1/6/90 8:13	V2-1A	CO2/02	DIRECT					0.2			20.7	20.9	
1/6/90 8:15	V2-1B	CO2/02	DIRECT					8.5			6.1	14.6	
1/6/90 8:17	V2-1C	CO2/02	DIRECT	Note: No flow - sucking water									
1/6/90 8:19	V2-2A	CO2/02	DIRECT					3.4			12.2	15.6	
1/6/90 8:21	V2-2B	CO2/02	DIRECT					7.9			5.4	13.3	
1/6/90 8:24	V2-2C	CO2/02	DIRECT					7.9			5.1	13.0	
1/6/90 8:26	V2-3A	CO2/02	DIRECT					0.8			20	20.8	
1/6/90 8:28	V2-3B	CO2/02	DIRECT					5.8			11.3	17.1	
1/6/90 8:30	V2-3C	CO2/02	DIRECT					7.2			8.5	15.7	
1/6/90 8:34	V3A	CO2/02	DIRECT					3.9			15.4	19.3	

Note: No flow - sucking water

		CO2/THC DATA								O2 Data	
		Smpl		Dil.				Calc. Conc.		Gastech	
Date/Time	Sample	Anal.	Smpl (Lt)	Flow	Dil. (Rt.)	G/Scc/mIn	Rotameter	G/Scc/mIn	Flow	Gastech-CO2 (%)	Reading
m/d/y/ h:mm	Loc.	Rotameter	G/Scc/mIn	Flow	Rotameter	G/Scc/mIn	SIP-THC	THC (ppm)	CO2 (%)	O2 (%)	O2+C02 (%)
1/6/90 16:46	V4B	CO2/02	DIRECT				0.9			19.7	20.6
1/6/90 16:47	V4C	CO2/02	DIRECT				1			19.7	20.7
1/6/90 16:50	Standard check with atmospheric air										
	Standard check with 20.1% CO2/N2										
1/7/90 8:13	Standard check with atmospheric air										
	Standard check with 20.1% CO2/N2										
1/7/90 8:32	V1-1A	CO2/02	DIRECT				8.9			3.3	12.2
1/7/90 8:34	V1-1B	CO2/02	DIRECT				7.2			6.2	13.4
1/7/90 8:36	V1-1C	CO2/02	DIRECT				6.8			6.9	13.7
1/7/90 8:38	V1-2A	CO2/02	DIRECT				8.4			4.2	12.6
1/7/90 8:40	V1-2B	CO2/02	DIRECT				7.3			6.2	13.5
1/7/90 8:42	V1-2C	CO2/02	DIRECT				7.2			6.4	13.6
1/7/90 8:44	V1-3A	CO2/02	DIRECT				7.2			6.5	13.7
1/7/90 8:46	V1-3B	CO2/02	DIRECT				7.1			7.5	14.6
1/7/90 8:48	V1-3C	CO2/02	DIRECT				7.3			7.2	14.5
1/7/90 8:50	V2-1A	CO2/02	DIRECT				0.2			20.7	20.9
1/7/90 8:52	V2-1B	CO2/02	DIRECT				8			9.6	17.6
1/7/90 8:54	V2-1C	CO2/02	DIRECT	Note: Water down - sucking air				7		14.5	21.5
1/7/90 8:56	V2-2A	CO2/02	DIRECT				7.1			11.3	18.4
1/7/90 8:58	V2-2B	CO2/02	DIRECT				10.1			5.9	16.0
1/7/90 9:00	V2-2C	CO2/02	DIRECT				10.5			5.1	15.6
1/7/90 9:02	V2-3A	CO2/02	DIRECT				0.6			20.1	20.7
1/7/90 9:04	V2-3B	CO2/02	DIRECT				6.5			12	18.5
1/7/90 9:06	V2-3C	CO2/02	DIRECT				8.3			9.1	17.4
1/7/90 9:09	V3A	CO2/02	DIRECT				4			14.9	18.9
1/7/90 9:11	V3B	CO2/02	DIRECT				4.1			14.7	18.8
1/7/90 9:13	V3C	CO2/02	DIRECT				4.1			14.7	18.8
1/7/90 9:15	V4A	CO2/02	DIRECT				1			19.3	20.3
1/7/90 9:17	V4B	CO2/02	DIRECT				1			19.3	20.3
1/7/90 9:19	V4C	CO2/02	DIRECT				0.9			19.4	20.3

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Rotameter	G/Scc/min	Dil.	Flow	Gastech	CO2 (%)	THC (ppm)	Calc. Conc.	Gastech	Reading	O2+C02
m/d/y/ h:mm	Loc.												(%)
1/7/90 9:21	Standard check with atmospheric air								0.0			20.9	
1/8/90 9:44	Standard check with 20.1% CO2/N2								20.0			0.0	
	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0.0	
1/8/90 10:10	V1-1A CO2/02	DIRECT							10.1			0.8	10.9
1/8/90 10:12	V1-1B CO2/02	DIRECT							8.5			3	11.5
1/8/90 10:14	V1-1C CO2/02	DIRECT							8.1			3.5	11.6
1/8/90 10:17	V1-2A CO2/02	DIRECT							9.9			1.3	11.2
1/8/90 10:19	V1-2B CO2/02	DIRECT							8.9			2.8	11.7
1/8/90 10:21	V1-2C CO2/02	DIRECT							8.7			2.9	11.6
1/8/90 10:23	V1-3A CO2/02	DIRECT							8.7			3.6	12.3
1/8/90 10:25	V1-3B CO2/02	DIRECT							8.3			4.5	12.8
1/8/90 10:27	V1-3C CO2/02	DIRECT							8.7			4.1	12.8
1/8/90 10:29	V2-1A CO2/02	DIRECT							0.4			20.2	20.6
1/8/90 10:31	V2-1B CO2/02	DIRECT							8.1			8.4	16.5
1/8/90 10:33	V2-1C CO2/02	DIRECT											
1/8/90 10:34	V2-2A CO2/02	DIRECT							3.4			18	21.4
1/8/90 10:36	V2-2B CO2/02	DIRECT							10.9			5.9	16.8
1/8/90 10:38	V2-2C CO2/02	DIRECT							11.8			4.4	16.2
1/8/90 10:40	V2-3A CO2/02	DIRECT							0.7			19.4	20.1
1/8/90 10:42	V2-3B CO2/02	DIRECT							7.2			10.7	17.9
1/8/90 10:44	V2-3C CO2/02	DIRECT							9.8			7	16.8
1/8/90 10:49	V3A CO2/02	DIRECT							4.1			14.8	18.9
1/8/90 10:50	V3B CO2/02	DIRECT							4.25			14.2	18.5
1/8/90 10:52	V3C CO2/02	DIRECT							4.2			14.3	18.5
1/8/90 10:53	V4A CO2/02	DIRECT							1.2			19.2	20.4
1/8/90 10:55	V4B CO2/02	DIRECT							1.1			19.2	20.3
1/8/90 10:57	V4C CO2/02	DIRECT							1.2			19.2	20.4
1/8/90 10:59	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0.0	
1/8/90 13:30	Blowers started - V1set at 14.2 and V2 at 15												

Note: No flow - sucking water

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Flow	Dil. (Rt.)	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.		Gastech	
m/d/y/ h:mm	Loc.	Rotameter	G/Secc/mIn	Rotameter	G/Secc/mIn	SIP-THC	(ppm)	CO2 (%)	THC (ppm)	O2 (%)			
1/9/90 9:14	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0.0	
1/9/90 9:20	V1 disch	O2	DIRECT									16.2	
1/9/90 9:25	V2 disch	O2	DIRECT									17.2	
1/9/90 9:30	V3 inlet	O2	DIRECT									16.1	
1/9/90 9:35	V3 disch	O2	DIRECT									16.1	
1/9/90 17:00	V1 disch	O2	DIRECT									17.5	
1/9/90 17:05	V2 disch	O2	DIRECT									17.5	
1/10/90 9:00	V1 disch	O2	DIRECT									17.5	
1/10/90 9:05	V2 disch	O2	DIRECT									17.5	
1/10/90 11:43	V1 disch	CO2/O2	DIRECT						3.2			17.5	20.7
	THC	110		S	541	110	S	516	1023	1998.7			
1/10/90 11:47	V2 disch	CO2/O2	DIRECT						2.9			17.3	20.2
1/10/90 12:03	V3 inlet	CO2/O2	DIRECT						3			17.6	20.6
	THC	110		S	541	110	S	516	1120	2188.2			
1/10/90 12:05	V3 disch	CO2/O2	DIRECT						2.85			18.1	21.0
	THC	110		S	541	110	S	516	630	1230.9			
				Note : THC still higher than prior to shutdown - continue purging									
				Note: Rotameters set at first test position. V1 and V2 @ 8 lpm.									
1/10/90 12:16	V3A	CO2/O2	DIRECT						3.2			17.7	20.9
1/10/90 12:17	V3B	CO2/O2	DIRECT						3.4			17.6	21.0
1/10/90 16:34	V1 disch	CO2/O2	DIRECT						3.2			17.8	21.0
1/10/90 16:40	V2 disch	CO2/O2	DIRECT						3.1			17.6	20.7
1/11/90 8:30	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0.0	
1/11/90 8:33	V1-1A	CO2/O2	DIRECT						3.2			17.6	20.8
1/11/90 8:35	V1-1B	CO2/O2	DIRECT						2.9			17.8	20.7
1/11/90 8:37	V1-1C	CO2/O2	DIRECT						1.5			19	20.5
1/11/90 8:39	V1-2A	CO2/O2	DIRECT						2.8			17.8	20.6
1/11/90 8:41	V1-2B	CO2/O2	DIRECT						4.6			15.7	20.3
1/11/90 8:42	V1-2C	CO2/O2	DIRECT						0.9			19.3	20.2

		CO2/THC DATA								O2 Data	
		Smpl		Dil.		Flow		Calc. Conc.		Gastech	
Date/Time	Sample	Smpl (Lt)	Flow	Dil. (Rt.)	G/Scc/min	Rotameter	G/Scc/min	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/Scc/min	Flow	Rotameter	G/Scc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/11/90 8:44	V1-3A	CO2/02	DIRECT					1.9		18.6	20.5
1/11/90 8:45	V1-3B	CO2/02	DIRECT					2.5		18.1	20.6
1/11/90 8:46	V1-3C	CO2/02	DIRECT					2.9		17.5	20.4
1/11/90 8:50	Standard check with atmospheric air							0.0		20.3	
1/11/90 8:55	Respanned									20.9	
1/11/90 9:02	V1 disch									18.1	
1/11/90 9:04	V1-1B									18	
1/11/90 9:06	V1-2B							2.8		18.2	21.0
1/11/90 9:08	V1-3B							1.9		19.2	21.1
1/11/90 9:08	Standard check with atmospheric air							0.0		20.9	
1/11/90 9:09	V2-1A	CO2/02	DIRECT					0.1		20.9	21.0
1/11/90 9:12	V2-1B	CO2/02	DIRECT					2.1		18.5	20.6
1/11/90 9:15	V2-1C	CO2/02	DIRECT					2.3		18.3	20.6
1/11/90 9:17	V2-2A	CO2/02	DIRECT					0.05		20.9	21.0
1/11/90 9:19	V2-2B	CO2/02	DIRECT					2.2		18.5	20.7
1/11/90 9:20	V2-2C	CO2/02	DIRECT					2.2		17.2	19.4
1/11/90 9:22	V2-3A	CO2/02	DIRECT					0.15		20.8	21.0
1/11/90 9:24	V2-3B	CO2/02	DIRECT					1.8		19	20.8
1/11/90 9:25	V2-3C	CO2/02	DIRECT					2.4		17.3	19.7
1/11/90 9:27	V2 disch	CO2/02	DIRECT					3		17.5	20.5
1/11/90 9:30	Standard check with atmospheric air							0.0		20.9	
1/12/90 7:50	Standard check with atmospheric air							0.0		20.9	
	Standard check with 20.1% CO2/N2							20.0		0.0	
	Standard check with 1005 ppm std. GC counts = 160										
1/12/90 8:12	V1-1A	CO2/02	DIRECT					3.3		17.8	21.1
1/12/90 8:35	V1-1B	CO2/02	DIRECT					3.2		17.7	20.9
1/12/90 8:38	V1-1C	CO2/02	DIRECT					3		17.8	20.8
1/12/90 8:40	V1-2A	CO2/02	DIRECT					1.5		19.4	20.9
1/12/90 8:42	V1-2B	CO2/02	DIRECT					2.8		18.1	20.9
1/12/90 8:44	V1-2C	CO2/02	DIRECT					4.5		16.1	20.6
1/12/90 8:50	V1-3A	CO2/02	DIRECT					0.7		20.2	20.9

		CO2/THC DATA										O2 Data	
Date/Time	Sample			Smpl (Lt)	Flow	Dil. (Rt.)	Dil.					Calc. Conc.	Gastech
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/Sicc	G/min	Rotameter	G/S	cc/min	SIP-THC	CO2 (%)	THC (ppm)	CO2 (%)	Reading
1/16/90 10:00	Standard check with atmospheric air								0.0			20.9	
	Standard check with 5.1% CO2/N2								5.1			0.0	
	Standard check with 1005 ppm std. GC counts = 160												
1/16/90 10:00	V4 disch	CO2/02	OPEN			CLOSED			0.6		0.6	20.2	20.8
	THC		OPEN			CLOSED			ND		ND		
1/16/90 10:00	V3 disch	CO2/02	OPEN			CLOSED			3.3		3.3	17	20.3
	THC		OPEN			CLOSED			905		905		
1/16/90 10:00	V3 inlet	CO2/02	OPEN			CLOSED			3.3		3.3	17	20.3
	THC		110	S	541	110	S	516	1005		1963.6		
1/16/90 10:00	V2 disch	CO2/02	OPEN			CLOSED			3.6		3.6	16.2	19.8
	THC		90	S	400	110	S	516	900		2061.0		
1/16/90 10:00	V1 disch	CO2/02	OPEN			CLOSED			3.3		3.3	16.7	20.0
	THC		60	S	239	120	S	569	950		3211.7		
1/17/90 12:00	Standard check with atmospheric air								0.0			20.9	
	Standard check with 5.12% CO2/N2								5.1			0.0	
	Standard check with 1005 ppm std. GC counts = 150												
1/17/90 12:00	V1 disch	THC	60	S	239	120	S	569	625		2113.0		
1/17/90 12:00	V2 disch	THC	90	S	400	110	S	516	920		2106.8		
1/17/90 12:00	V3 disch	THC	OPEN			CLOSED			1150		1150		
1/17/90 12:00	V3 inlet	THC	110	S	541	110	S	516	1100		2149.2		
1/19/90 8:00	Standard check with atmospheric air								0.0			20.9	
	Standard check with 5.12% CO2/N2								5.1			0.0	
	Standard check with 1005 ppm std. - GC counts = 152												
1/19/90 8:00	V4 disch	CO2/02	OPEN			CLOSED			0.7		0.7	20.2	20.9
	THC		OPEN			CLOSED			2		2		
1/19/90 8:00	V3 disch	CO2/02	OPEN			CLOSED			4		4	16	20.0
	THC		OPEN			CLOSED			1080		1080		
1/19/90 8:00	V3 inlet	CO2/02	OPEN			CLOSED			4.2		4.2	15.9	20.1
	THC		110	S	541	110	S	516	760		1484.9		
1/19/90 8:00	V2 disch	CO2/02	OPEN			CLOSED			4.2		4.2	14.7	18.9
	THC		90	S	400	110	S	516	980		2244.2		

Note: V1 THC appears to be in error. Disregard and use 1/17 data.

		CO2/THC DATA							O2 Data				
Date/Time	Sample	Smpl (Lt)	Smpl	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.	Gastech					
m/d/y/ h:mm	Loc.	Rotameter	G/S	cc/min	Dil. (Rt.)	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	CO2 (%)	Reading	02+C02 (%)
1/19/90 8:00	V1 disch	CO2/02	OPEN		CLOSED				4.1	4.1	15.8	19.9	
	THC		60	S	239	S	569	500	1690.4				
1/19/90 8:00	NOTE : Water levels were measured at V1= 7.45', V2=7.4', V3=5.6'												
1/22/90 10:30	Standard check	with atmospheric air											
1/22/90 10:30	Standard check	with 5.12% CO2/N2											
1/22/90 10:30	Standard check	with 1005 ppm std. - GC counts = 156											
1/22/90 10:30	V4 disch	CO2/02	OPEN		CLOSED				0.7	0.7	20.2	20.9	
	THC		OPEN		CLOSED				ND	ND			
1/22/90 10:30	V3 disch	CO2/02	OPEN		CLOSED				4.5	4.5	15.2	19.7	
	THC		OPEN		CLOSED				1000	1000			
1/22/90 10:30	V3 inlet	CO2/02	OPEN		CLOSED				4.9	4.9	15.5	20.4	
	THC		110	S	541	S	516	915	1787.7				
1/22/90 10:30	V2 disch	CO2/02	OPEN		CLOSED				5.2	5.2	15.4	20.6	
	THC		80	S	350	S	769	710	2270.0				
1/22/90 10:30	V1 disch	CO2/02	OPEN		CLOSED				4.8	4.8	15.5	20.3	
	THC		80	S	350	S	769	570	1822.4				
1/22/90 10:30	NOTE : Water levels were measured at V1= 7.7', V2=7.5', V3=4.9'												
1/22/90 10:30	NOTE: This data used for second flow rate V1=4.22Lpm, V2= 4.32 Lpm												
1/23/90 8:30	Standard check	with atmospheric air											
1/23/90 8:30	Standard check	with 5.12% CO2/N2											
1/23/90 8:30	V3 disch	CO2/02	OPEN		CLOSED				4.2	4.2	15.9	20.1	
1/23/90 8:30	V3 inlet	CO2/02	OPEN		CLOSED				4.8	4.8	15.5	20.3	
1/23/90 8:30	V2 disch	CO2/02	OPEN		CLOSED				5	5	15	20.0	
1/23/90 8:30	V1 disch	CO2/02	OPEN		CLOSED				4.9	4.9	15.2	20.1	
1/24/90 14:00	Standard check	with atmospheric air											
1/24/90 14:00	Standard check	with 5.12% CO2/N2											
1/24/90 14:00	Standard check	with 1005 ppm std. - GC counts = 153											
1/24/90 14:00	V4 disch	CO2/02	OPEN		CLOSED				0.7	0.7	20.2	20.9	
	THC		OPEN		CLOSED				3.8	3.8			
1/24/90 14:00	V3 disch	CO2/02	OPEN		CLOSED				3.9	3.9	16.1	20.0	
	THC		OPEN		CLOSED				1170	1170			

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Flow	Dil. (Rt.)	Dil.	Flow	Calc. Conc.	Gastech	O2 Data		
m/d/y/ h:mm	Loc.		Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	CO2 (%)	Reading	O2 (%)		
1/24/90 14:00	V3 inlet	CO2/02	OPEN			CLOSED			THC (ppm)				
		THC	110	S	541	110	S	516	4.5	1175	4.5	15.2	19.7
1/24/90 14:00	V2 disch	CO2/02	OPEN			CLOSED			4.9			13.2	18.1
		THC	NOTE: Balls stuck on diluter										
1/25/90 6:00	V1-1B	CO2/02	Direct			Ambient		Off-gas	6.2			12.2	18.4
1/25/90 6:00	V1-2B	CO2/02	Direct			Temp °C		Temp°C	4.2			16	20.2
1/25/90 6:00	V1-3B	CO2/02	Direct			19.1			4.6			15.5	20.1
1/25/90 6:00	V2-1B	CO2/02	Direct						5.3			12.3	17.6
1/25/90 6:00	V2-2B	CO2/02	Direct						6.8			9.1	15.9
1/25/90 6:00	V2-3B	CO2/02	Direct						6			12.4	18.4
1/25/90 6:00	V1 disc	CO2/02	Direct					18.5					
1/25/90 6:10	V2 disc	CO2/02	Direct					18.5					
1/25/90 6:00	Blowers off for abbreviated shutdown test.												
1/25/90 7:10	V1-1B	CO2/02	Direct			19.1			6.3			12.1	18.4
1/25/90 7:10	V1-2B	CO2/02	Direct						4.3			15.8	20.1
1/25/90 7:10	V1-3B	CO2/02	Direct						4.7			15.2	19.9
1/25/90 7:10	V2-1B	CO2/02	Direct						6			11.5	17.5
1/25/90 7:10	V2-2B	CO2/02	Direct						6.5			9.2	15.7
1/25/90 7:10	V2-3B	CO2/02	Direct						6.1			12	18.1
1/25/90 8:15	V1-1B	CO2/02	Direct			20.3			6.2			12	18.2
1/25/90 8:17	V1-2B	CO2/02	Direct						4.4			15.3	19.7
1/25/90 8:19	V1-3B	CO2/02	Direct						4.7			15	19.7
1/25/90 8:22	V2-1B	CO2/02	Direct						6.1			11	17.1
1/25/90 8:24	V2-2B	CO2/02	Direct						6.5			9.3	15.8
1/25/90 8:26	V2-3B	CO2/02	Direct						6.1			11.8	17.9
1/25/90 9:15	V1-1B	CO2/02	Direct			23.7			6.2			12	18.2
1/25/90 9:17	V1-2B	CO2/02	Direct						4.5			15	19.5
1/25/90 9:19	V1-3B	CO2/02	Direct						4.7			14.8	19.5
1/25/90 9:21	V2-1B	CO2/02	Direct						6.2			10.3	16.5
1/25/90 9:23	V2-2B	CO2/02	Direct						6.5			9.1	15.6
1/25/90 9:25	V2-3B	CO2/02	Direct						6.2			11.4	17.6
1/25/90 9:55	V1-1B	CO2/02	Direct			24.9			6.2			11.9	18.1

		CO2/THC DATA						O2 Data		
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Flow	Dil.	Flow	Calc. Conc.	Gastech	
m/d/y/ h:mm	Loc.	Rotameter	G/S	cc/min	Rotameter	Dil. (Rt.)	G/S	CO2 (%)	Reading	O2+C02 (%)
1/25/90 9:58	V1-2B	CO2/02	Direct						14.9	19.3
1/25/90 10:00	V1-3B	CO2/02	Direct						14.5	19.3
1/25/90 10:02	V2-1B	CO2/02	Direct						10.1	16.4
1/25/90 10:04	V2-2B	CO2/02	Direct						9	15.5
1/25/90 10:06	V2-3B	CO2/02	Direct						11	17.2
1/25/90 10:37	V2 disc	CO2/02	Direct				18.6			
1/25/90 10:45	V1-1B	CO2/02	Direct		24.4				11.5	17.6
1/25/90 10:47	V1-2B	CO2/02	Direct						14.1	18.5
1/25/90 10:49	V1-3B	CO2/02	Direct						14	18.8
1/25/90 10:51	V2-1B	CO2/02	Direct						9.8	16.1
1/25/90 10:53	V2-2B	CO2/02	Direct						8.8	15.2
1/25/90 10:55	V2-3B	CO2/02	Direct						10.9	17.1
1/25/90 13:26	V1-1B	CO2/02	Direct		21.3				11.5	17.8
1/25/90 13:28	V1-2B	CO2/02	Direct						14.1	18.9
1/25/90 13:30	V1-3B	CO2/02	Direct						14	19.0
1/25/90 13:33	V2-1B	CO2/02	Direct						9	15.9
1/25/90 13:35	V2-2B	CO2/02	Direct						8.5	15.3
1/25/90 13:37	V2-3B	CO2/02	Direct						10.2	17.0
1/25/90 15:05	V1-1B	CO2/02	Direct						11.3	18.1
1/25/90 15:07	V1-2B	CO2/02	Direct						14	19.1
1/25/90 15:09	V1-3B	CO2/02	Direct						13.9	19.2
1/25/90 15:11	V2-1B	CO2/02	Direct						8.7	15.9
1/25/90 15:13	V2-2B	CO2/02	Direct						8	15.1
1/25/90 15:15	V2-3B	CO2/02	Direct						9.9	17.0
1/25/90 16:00	V1-1B	CO2/02	Direct						11.2	18.0
1/25/90 16:02	V1-2B	CO2/02	Direct						13.9	19.0
1/25/90 16:04	V1-3B	CO2/02	Direct		16.5				13.8	19.3
1/25/90 16:06	V2-1B	CO2/02	Direct						8.4	15.8
1/25/90 16:08	V2-2B	CO2/02	Direct						8	15.2
1/25/90 16:10	V2-3B	CO2/02	Direct						9.9	17.0
1/25/90 16:10	V1 disc	Temp°C	Direct				18.5			
1/25/90 23:00	V1-1B	CO2/02	Direct				7.2		10.2	17.4

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Flow	Dil. (Rt.)	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.	O2 Data	Gastech	
m/d/y/ h:mm	Loc.		Rotameter	G/S cc/min	Rotameter	3/S cc/min			SIP-THC (ppm)	THC (ppm)	O2 (%)	Reading	O2+C02 (%)
2/4/90 16:30	V4 disch	CO2/02	OPEN			CLOSED			0.6	8	20.5	21.1	
		THC	OPEN			CLOSED			3.8	6.9			
2/4/90 16:30	V3 disch	CO2/02	OPEN			CLOSED			6.7	12	18.7		
		THC	OPEN			CLOSED			960				
2/4/90 16:30	V3 inlet	CO2/02	OPEN			CLOSED			8	10.5	18.5		
		THC	110	S	541	110	S	516	890	1738.9			
2/4/90 16:30	V2 disch	CO2/02	OPEN			CLOSED			6.9	12.9	19.8		
		THC	100	S	458	150	S	769	940	2518.3			
2/4/90 16:30	V1 disch	CO2/02	OPEN			CLOSED			8	10.8	18.8		
		THC	110	S	541	110	S	516	1150	2246.9			
2/9/90 8:00	Standard check with atmospheric air												
2/9/90 8:00	Standard check with 5.12% CO2/N2												
2/9/90 8:00	Standard check with 1005 ppm std. - GC counts = 159												
2/9/90 8:00	V4 disch	CO2/02	OPEN			CLOSED			0.9	0.9	20	20.9	
		THC	OPEN			CLOSED			2	2			
2/9/90 8:00	V3 disch	CO2/02	OPEN			CLOSED			6.6	6.6	11.7	18.3	
		THC	OPEN			CLOSED			Flame out				
2/9/90 8:00	V3 inlet	CO2/02	OPEN			CLOSED			8	8	10.1	18.1	
		THC	OPEN			CLOSED			Flame out				
2/9/90 8:00	V2 disch	CO2/02	OPEN			CLOSED			8.6	8.6	7.9	16.5	
		THC	80	S	350	150	S	769	860	2749.5			
2/9/90 8:00	V1 disch	CO2/02	OPEN			CLOSED			8	8	10.2	18.2	
		THC	110	S	541	150	S	769	965	2336.7			
2/9/90 8:00	NCTE : Water levels were measured at V1= 7.6', V2=7.62', V3=5.31'												
2/12/90 15:00	Standard check with atmospheric air												
2/12/90 15:00	Standard check with 5.12% CO2/N2												
2/12/90 15:00	Standard check with 1005 ppm std. - GC counts = 155												
2/12/90 15:00	V4 disch	CO2/02	OPEN			CLOSED			0.8	0.8	20.1	20.9	
		THC	OPEN			CLOSED			ND	ND			
2/12/90 15:00	V3 disch	CO2/02	OPEN			CLOSED			7.4	7.4	10.7	18.1	
		THC	110	S	541	110	S	516	145	283.3			

		CO2/THC DATA				Dil.		Calc. Conc.		O2 Data	
Date/Time	Sample Loc.	Anal.	Smpl (Lt)	Smpl	Flow	Dil. (Rt.)	Flow	Gastech-CO2 (%)	CO2 (%)	Gastech Reading	O2+C02 (%)
m/d/y/ h:mm			Rotameter	G/S	cc/min	Rotameter	G/S	SIP-THC (ppm)	THC (ppm)	O2 (%)	
2/12/90 15:00	V3 inlet	CO2/02	OPEN			CLOSED		7.9	7.9	10.8	18.7
		THC	110	S	541	150	S	920	2227.7		
2/12/90 15:00	V2 disch	CO2/02	OPEN			CLOSED		9.1	9.1	7.9	17.0
		THC	80	S	350	150	S	900	2877.4		
2/12/90 15:00	V1 disch	CO2/02	OPEN			CLOSED		7.8	7.8	10.6	18.4
		THC	80	S	350	150	S	525	1678.5		
		Note: V3 inlet looks closer to stable value									
2/12/90 15:00		Note: Water level in V3 = 5.4'									
2/12/90 15:00		Note: Temp measured in V2 = 20.4°C = 69°F									
2/12/90 15:00		Note : Use this data for flow rate no. 3, V1=1.94lpm, V2=2.03 lpm									
2/12/90 15:00	V1-1A	O2	DIRECT							8	
2/12/90 15:00	V1-1B	O2	DIRECT							6.2	
2/12/90 15:00	V1-1C	O2	DIRECT							5.6	
2/12/90 15:00	V1-2A	O2	DIRECT							13.2	
2/12/90 15:00	V1-2B	O2	DIRECT							11.4	
2/12/90 15:00	V1-2C	O2	DIRECT							9.8	
2/12/90 15:00	V1-3A	O2	DIRECT							14.4	
2/12/90 15:00	V1-3B	O2	DIRECT							11.1	
2/12/90 15:00	V1-3C	O2	DIRECT							9.8	
2/12/90 15:00	V1 AVG	O2	DIRECT							9.9	
2/12/90 15:00	V2-1A	O2	DIRECT							13.5	
2/12/90 15:00	V2-1B	O2	DIRECT							5.5	
2/12/90 15:00	V2-1C	O2	DIRECT							4.0	
2/12/90 15:00	V2-2A	O2	DIRECT							17.4	
2/12/90 15:00	V2-2B	O2	DIRECT							3.1	
2/12/90 15:00	V2-2C	O2	DIRECT							0.5	
2/12/90 15:00	V2-3A	O2	DIRECT							13.3	
2/12/90 15:00	V2-3B	O2	DIRECT							6.0	
2/12/90 15:00	V2-3C	O2	DIRECT							1.9	
2/12/90 15:00	V2 AVG	O2	DIRECT							7.2	
2/12/90 15:00	V3A	O2	DIRECT							10.1	
2/12/90 15:00	V3B	O2	DIRECT							9.8	

		CO2/THC DATA										O2 Data	
Date/Time	Sample Loc.	Anal.	Smpl (Lt)	Smpl	Dil. (Rt.)	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.	O2 Data		Gastech	
m/d/y/ h:mm			Rotameter	G/S cc/min	Rotameter	G/S cc/min		SIP-THC (ppm)	CO2 (%)	Reading		O2 (%)	O2+CO2 (%)
2/12/90 15:00	V3C	O2	DIRECT									9.6	
2/12/90 15:00	V3 AVG	O2	DIRECT									9.8	
2/13/90 14:00	Note: flow changed to setting 4, V1= 1.14Lpm, V2= 1.08 lpm												
2/21/90 8:00	Standard	check with atmospheric air						0.0				20.9	
2/21/90 8:00	Standard	check with 5.12% CO2/N2						5.1				0.0	
2/21/90 8:00	Standard	check with 1005 ppm std. - GC counts = 157											
2/21/90 8:00	V4 disch	CO2/02	OPEN		CLOSED			0.6	0.6	20.2		20.8	
		THC	OPEN		CLOSED			1.8	1.8				
2/21/90 8:00	V3 disch	CO2/02	OPEN		CLOSED			9.5	9.5	5.3		14.8	
		THC	110	S 541	110	S 516		13	25.4				
2/21/90 3:00	V3 inlet	CO2/02	OPEN		CLOSED			9.6	9.6	6.5		16.1	
		THC	110	S 541	150	S 769		755	1828.2				
2/21/90 8:00	V2 disch	CO2/02	OPEN		CLOSED			6.7	6.7	11.8		18.5	
		THC	80	S 350	150	S 769		760	2429.8				
2/21/90 8:00	V1 disch	CO2/02	OPEN		CLOSED			9.4	9.4	6.9		16.3	
		THC	80	S 350	150	S 769		590	1886.3				
Note: water trap from V3 full of water and V3 rotameter also full. Trap emptied and rotameter cleaned.													
2/24/90 10:30	Standard	check with atmospheric air						0.0				20.9	
2/24/90 10:30	Standard	check with 5.12% CO2/N2						5.1				0.0	
2/24/90 10:30	Standard	check with 1005 ppm std. - GC counts = 167											
2/24/90 10:30	V4 disch	CO2/02	OPEN		CLOSED			0.3	0.3	20.5		20.8	
		THC	OPEN		CLOSED			1.5	1.5				
2/24/90 10:30	V3 disch	CO2/02	OPEN		CLOSED			6.7	6.7	11.8		18.5	
		THC	OPEN		CLOSED			20	20.0				
2/24/90 10:30	V3 inlet	CO2/02	OPEN		CLOSED			8.5	8.5	9.2		17.7	
		THC	110	S 541	150	S 769		810	1961.4				
2/24/90 10:30	V2 disch	CO2/02	OPEN		CLOSED			6	6	13		19.0	
		THC	80	S 350	150	S 769		640	2046.2				
2/24/90 10:30	V1 disch	CO2/02	OPEN		CLOSED			8.5	8.5	8.9		17.4	
		THC	110	S 541	150	S 769		1050	2542.5				

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl. (Lt)	Smpl	Dil. (Rt.)	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.	O2 Data		Gastech	
m/d/y/ h:mm	Loc.		Rotameter	G/S cc/min	Rotameter	G/S cc/min		SIP-THC (ppm)	THC (ppm)	O2 (%)		Reading	O2+C02 (%)
2/28/90 10:00	Standard check with atmospheric air							0.0		20.9			
2/28/90 10:00	Standard check with 5.12% CO2/N2							5.1		0.0			
2/28/90 10:00	Standard check with 1005 ppm std. - GC counts = 157												
2/28/90 10:00	V4 disch	CO2/02	OPEN		CLOSED			0.7	0.7	20.2		20.9	
		THC	OPEN		CLOSED			4.3	4.3				
2/28/90 10:00	V3 disch	CO2/02	OPEN		CLOSED			6.3	6.3	12		18.3	
		THC	OPEN		CLOSED			56	56.0				
2/28/90 10:00	V3 inlet	CO2/02	OPEN		CLOSED			7.3	7.3	10.3		17.6	
		THC	110	S 541	110	S	516	1215	2373.9				
2/28/90 10:00	V2 disch	CO2/02	OPEN		CLOSED			6.1	6.1	12		18.1	
		THC	110	S 541	150	S	769	870	2106.7				
2/28/90 10:00	V1 disch	CO2/02	OPEN		CLOSED			7.3	7.3	10.2		17.5	
		THC	110	S 541	150	S	769	765	1852.4				
3/1/90 8:00	Standard check with atmospheric air							0.0		20.9			
3/1/90 8:00	Standard check with 5.12% CO2/N2							5.1		0.0			
3/1/90 8:00	V1-1A	O2	DIRECT							3.1			
3/1/90 8:00	V1-1B	O2	DIRECT							3.3			
3/1/90 8:00	V1-1C	O2	DIRECT							3.3			
3/1/90 8:00	V1-2A	O2	DIRECT							8.8			
3/1/90 8:00	V1-2B	O2	DIRECT							8.3			
3/1/90 8:00	V1-2C	O2	DIRECT							7.1			
3/1/90 8:00	V1-3A	O2	DIRECT							11			
3/1/90 8:00	V1-3B	O2	DIRECT							9.5			
3/1/90 8:00	V1-3C	O2	DIRECT							9			
3/1/90 8:00	V2-1A	O2	DIRECT							16.9			
3/1/90 8:00	V2-1B	O2	DIRECT							9.1			
3/1/90 8:00	V2-1C	O2	DIRECT							9.5			
3/1/90 8:00	V2-2A	O2	DIRECT							9.8			
3/1/90 8:00	V2-2B	O2	DIRECT							11			
3/1/90 8:00	V2-2C	O2	DIRECT							8.5			
3/1/90 8:00	V2-3A	O2	DIRECT							15.2			
3/1/90 8:00	V2-3B	O2	DIRECT							11.8			

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl (L)	Smpl	Flow	Dil. (Rt.)	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.	O2 Data	Gastech	
m/d/y/ h:mm	Loc.		Rotameter	G/Scc/min	Rotameter	G/Scc/min			SIP-THC (ppm)	THC (ppm)	O2 (%)	Reading	O2+C02 (%)
3/1/90 8:00	V2-3C	O2	DIRECT								9.2		
3/1/90 8:00	V3A	O2	DIRECT								13.2		
3/1/90 8:00	V3B	O2	DIRECT								13.5		
3/1/90 8:00	V3C	O2	DIRECT								13		
3/1/90 0:00	Note: Water in instrument at V2-2C. Subsequent measurements may be in error.												
3/1/90 16:30	Note: Flow rates increased to, V1 = 4.22 LPM, V2 = 4.32 LPM.												
3/3/90 9:30	Standard check with atmospheric air												
3/3/90 9:30	Standard check with 5.12% CO2/N2												
3/3/90 9:30	Standard check with 505 ppm std. - GC counts = 70												
3/3/90 9:52	V4A	CO2/02	DIRECT						0.5			20.5	21.0
3/3/90 9:54	V4B	CO2/02	DIRECT						0.6			20.3	20.9
3/3/90 9:56	V4C	CO2/02	DIRECT						0.7			20.2	20.9
3/3/90 9:58	V4 disch	CO2/02	DIRECT						0.6			20.3	20.9
3/3/90 10:00	V3A	CO2/02	DIRECT						5.4			14.7	20.1
3/3/90 10:02	V3B	CO2/02	DIRECT						5.8			14.2	20.0
3/3/90 10:04	V3C	CO2/02	DIRECT						6			14.1	20.1
3/3/90 10:06	V3 disch	CO2/02	DIRECT						5.3			14.8	20.1
3/3/90 10:08	V3 inlet	CO2/02	DIRECT						4.9			15.2	20.1
3/3/90 10:22	V4A	CO2/02	OPEN			CLOSED			0.5	0.5		20.5	21.0
	THC	OPEN				CLOSED			2	2			
3/3/90 10:25	V4B	CO2/02	OPEN			CLOSED			0.6	0.6		20.4	21.0
	THC	OPEN				CLOSED			2	2			
3/3/90 10:28	V4C	CO2/02	OPEN			CLOSED			0.7	0.7		20.2	20.9
	THC	OPEN				CLOSED			1	1			
3/3/90 10:32	V4 disch	CO2/02	OPEN			CLOSED			0.6	0.6		20.3	20.9
	THC	OPEN				CLOSED			1	1			
3/3/90 10:35	V3 disch	CO2/02	OPEN			CLOSED			5.1	5.1		15	20.1
	THC	OPEN				CLOSED			290	290			
3/3/90 10:40	V3A	CO2/02	OPEN			CLOSED			5.25	5.25		14.9	20.2
	THC	OPEN				CLOSED			45	45			
3/3/90 10:50	V3B	CO2/02	OPEN			CLOSED			5.5	5.5		14.4	19.9
	THC	OPEN				CLOSED			258	258			

		CO2/THC DATA						O2 Data			
		Smpl		Dil.		Flow		Calc. Conc.		Gastech	
Date/Time	Sample	Smpl (Lt)	Flow	Dil. (Rt.)	Flow	Gastech-CO2 (%)	CO2 (%)	THC (ppm)	Reading	02+CO2	
m/d/y	h:mm	Anal. Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	O2 (%)	(%)	
3/4/90 9:40	Standard check with atmospheric air							0.0	20.9		
3/4/90 9:40	Standard check with 5.12% CO2/N2							5.1	0.0		
3/4/90 9:46	V3A	CO2/02	DIRECT					5.1	14.4	19.5	
3/4/90 9:48	V3B	CO2/02	DIRECT					5.3	14.1	19.4	
3/4/90 9:50	V3C	CO2/02	DIRECT					5.4	14	19.4	
3/4/90 9:53	V4A	CO2/02	DIRECT					0.8	20	20.8	
3/4/90 9:55	V4B	CO2/02	DIRECT					0.8	20	20.8	
3/4/90 9:57	V4C	CO2/02	DIRECT					0.8	20	20.8	
3/4/90 10:03	V1 disc	CO2/02	DIRECT					4.2	16.1	20.3	
3/4/90 10:07	V2 disc	CO2/02	DIRECT					4.5	14.5	19.0	
3/4/90 10:10	Standard check with atmospheric air							0.0	20.9		
3/4/90 10:10	Standard check with 5.12% CO2/N2							5.1	0.0		
3/4/90 17:15	Standard check with atmospheric air							0.0	20.9		
3/4/90 17:15	Standard check with 5.12% CO2/N2							5.1	0.0		
3/4/90 17:23	V3A	CO2/02	DIRECT					5.2	14.4	19.6	
3/4/90 17:25	V3B	CO2/02	DIRECT					5.4	14.1	19.5	
3/4/90 17:27	V3C	CO2/02	DIRECT					5.4	14.1	19.5	
3/4/90 17:29	V4A	CO2/02	DIRECT					0.9	20	20.9	
3/4/90 17:31	V4B	CO2/02	DIRECT					0.9	20	20.9	
3/4/90 17:33	V4C	CO2/02	DIRECT					0.9	20	20.9	
3/4/90 17:35	Standard check with atmospheric air							0.0	20.9		
3/4/90 17:35	Standard check with 5.12% CO2/N2							5.1	0.0		
3/5/90 8:09	Standard check with atmospheric air							0.0	20.9		
3/5/90 8:09	Standard check with 5.12% CO2/N2							5.1	0.0		
3/5/90 8:13	V3A	CO2/02	DIRECT					5	14.3	19.3	
3/5/90 8:16	V3B	CO2/02	DIRECT					5.1	14.1	19.2	
3/5/90 8:18	V3C	CO2/02	DIRECT					5.2	14	19.2	
3/5/90 8:23	V4A	CO2/02	DIRECT					1	19.5	20.5	
3/5/90 8:25	V4B	CO2/02	DIRECT					1	19.5	20.5	
3/5/90 8:27	V4C	CO2/02	DIRECT					1	19.5	20.5	
3/5/90 8:30	V2 disc	CO2/02	DIRECT					4.8	13.5	18.3	
3/5/90 8:34	V1 disc	CO2/02	DIRECT					4.1	15.8	19.9	

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Smpl (Lt)	Flow	Dil. (Rt.)	Flow	Gastech-CO2 (%)	Calc. Conc.	O2 Data					
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/Scc/min	Rotameter	G/Scc/min	THC (ppm)	CO2 (%)	Reading	02 (%)	02+C02 (%)		
3/5/90 9:00	V1 disch	CO2/02	DIRECT							15.3	19.5		
3/5/90 9:02	V2 disch	CO2/02	DIRECT							13	18.0		
3/5/90 9:10	Standard check with atmospheric air									20.9			
3/5/90 9:10	Standard check with 5.12% CO2/N2									0.0			
3/5/90 16:45	Standard check with atmospheric air									20.9			
3/5/90 16:45	Standard check with 5.12% CO2/N2									0.0			
3/5/90 16:48	V3A CO2/02	DIRECT								0.0			
3/5/90 16:50	V3B CO2/02	DIRECT								14.2	19.3		
3/5/90 16:52	V3C CO2/02	DIRECT								14.1	19.2		
3/5/90 16:54	V4A CO2/02	DIRECT								14.1	19.3		
3/5/90 16:56	V4B CO2/02	DIRECT								19.5	20.6		
3/5/90 16:58	V4C CO2/02	DIRECT								19.5	20.6		
3/5/90 17:00	Standard check with atmospheric air									19.4	20.5		
3/5/90 17:00	Standard check with 5.12% CO2/N2									20.9			
3/6/90 10:15	Standard check with atmospheric air									0.0			
3/6/90 10:15	Standard check with 5.12% CO2/N2									20.9			
3/6/90 10:17	V3A CO2/02	DIRECT								0.0			
3/6/90 10:19	V3B CO2/02	DIRECT								14.1	19.1		
3/6/90 10:21	V3C CO2/02	DIRECT								13.9	19.0		
3/6/90 10:24	V4A CO2/02	DIRECT								12	18.4		
3/6/90 10:26	V4B CO2/02	DIRECT								19.2	20.4		
3/6/90 10:28	V4C CO2/02	DIRECT								19.2	20.4		
3/6/90 10:34	V2 disch	CO2/02	DIRECT							19.2	20.4		
3/6/90 10:36	V1 disch	CO2/02	DIRECT							12.8	17.9		
3/6/90 10:37	Standard check with atmospheric air									15.7	19.8		
3/6/90 10:37	Standard check with 5.12% CO2/N2									20.9			
3/6/90 10:56	Standard check with 505 ppm std. - GC counts = 67									0.0			
3/6/90 11:00	Note: Turned on dewatering system.												
3/6/90 12:30	V3 inle	THC	50	G	54	150	S	769		10668.5			
	Note: HC to V3 from air sparged JP-4.												
3/6/90 18:11	V3 inle	THC	50	G	54	150	S	769		10668.5			

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Flow	Dil. (Rt.)	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.		Gastech	
m/d/y/ h:mm	Loc.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC	(ppm)	THC	(ppm)	O2 (%)	O2+C02 (%)
3/8/90 8:30	Standard check with atmospheric air								0.0			20.9	
3/8/90 8:30	Standard check with 5.12% CO2/N2								5.1			0.0	
3/8/90 8:30	Standard check with 505 ppm std. GC Counts = 66.												
3/8/90 9:00	V1 disch	CO2/02	OPEN			CLOSED			4.5			15.3	19.8
		THC	110	S	541	150	S	769	565	1368.1			
		Note: Collected canister sample and isotopic analysis sample.											
3/8/90 9:25	V2 disch	CO2/02	OPEN			CLOSED			4.7			15	19.7
		THC	80	S	350	150	S	769	680	2174.1			
		Note: Collected canister sample and isotopic analysis sample.											
3/8/90 9:46	V1-1A	CO2/02	OPEN			CLOSED			5.8			13.5	19.3
		THC	80	S	350	150	S	769	780	2493.8			
		Note: Collected isotopic analysis sample.											
3/8/90 9:59	V1-1B	CO2/02	OPEN			CLOSED			6.5			11.8	18.3
		THC	50	S	169	150	S	769	670	3718.7			
3/8/90 10:07	V1-1C	CO2/02	OPEN			CLOSED			7.1			11	18.1
		THC	50	S	169	150	S	769	420	2331.1			
3/8/90 10:20	V1-2A	CO2/02	OPEN			CLOSED			3.4			16.8	20.2
		THC	110	S	541	110	S	516	465	908.5			
3/8/90 10:27	V1-2B	CO2/02	OPEN			CLOSED			4.5			15	19.5
		THC	110	S	541	150	S	769	625	1513.4			
3/8/90 10:32	V1-2C	CO2/02	OPEN			CLOSED			4.8			14.7	19.5
		THC	80	S	350	150	S	769	550	1758.4			
3/8/90 10:37	V1-3A	CO2/02	OPEN			CLOSED			1.8			18.3	20.1
		THC	OPEN			CLOSED			200				
3/8/90 10:42	V1-3B	CO2/02	OPEN			CLOSED			4.8			14.2	19.0
		THC	110	S	541	150	S	769	760	1840.3			
3/8/90 10:45	V1-3C	CO2/02	OPEN			CLOSED			6.2			12.4	18.6
		THC	110	S	541	150	S	769	445	1077.5			
3/8/90 10:49	V2-1A	CO2/02	OPEN			CLOSED			0.6			20.3	20.9
		THC	OPEN			CLOSED			60				
3/8/90 10:53	V2-1B	CO2/02	OPEN			CLOSED			4.8			14.3	19.1
		THC	110	S	541	150	S	769	665	1610.3			

		CO2/THC DATA										O2 Data	
					Smpl								
Date/Time	Sample	Anal.	Smpl (Lt)	Rotameter	Flow	Dil. (Rt.)	G/S	cc/min	Flow	Dil.	Gastech-CO2 (%)	Calc. Conc.	O2 Data
m/d/y/ h:mm	Loc.	CO2/02	CO2/02	THC	80	OPEN	CLOSED	150	769	S	760	5550.5	Reading
3/8/90 10:57	V2-1C	CO2/02	OPEN	THC	80	OPEN	CLOSED	150	769	S	760	5550.5	O2 (%)
		THC	80	OPEN	THC	80	OPEN	CLOSED	150	S	760	5550.5	12.9
3/8/90 11:00	V2-2A	CO2/02	OPEN	THC	80	OPEN	CLOSED	150	769	S	760	5550.5	18.7
		THC	80	OPEN	THC	80	OPEN	CLOSED	150	S	760	5550.5	
3/8/90 11:05	V2-2B	CO2/02	OPEN	THC	80	OPEN	CLOSED	150	769	S	760	5550.5	
		THC	80	OPEN	THC	80	OPEN	CLOSED	150	S	760	5550.5	
3/8/90 11:10	V2-2C	CO2/02	OPEN	THC	80	OPEN	CLOSED	150	769	S	760	5550.5	
		THC	80	OPEN	THC	80	OPEN	CLOSED	150	S	760	5550.5	
3/8/90 11:15	V2-3A	CO2/02	OPEN	THC	80	OPEN	CLOSED	150	769	S	760	5550.5	
		THC	80	OPEN	THC	80	OPEN	CLOSED	150	S	760	5550.5	
3/8/90 11:19	V2-3B	CO2/02	OPEN	THC	80	OPEN	CLOSED	150	769	S	760	5550.5	
		THC	80	OPEN	THC	80	OPEN	CLOSED	150	S	760	5550.5	
3/8/90 11:23	V2-3C	CO2/02	OPEN	THC	80	OPEN	CLOSED	150	769	S	760	5550.5	
		THC	80	OPEN	THC	80	OPEN	CLOSED	150	S	760	5550.5	
3/8/90 11:35	Blowers for V1 and V2 off for shutdown test 4. Dewatering system also off.												
3/8/90 11:45	V3 inlet	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 11:50	V3 disc	CO2/02	DIRECT	THC	80	DIRECT		150	769	S	769	3323.0	
		THC	80	DIRECT	THC	80	DIRECT	150	769	S	769	3323.0	
3/8/90 12:30	Standard check with atmospheric air												
3/8/90 12:30	Standard check with 5.12% CO2/N2												
3/8/90 12:30	Standard check with 505 ppm std.												
3/8/90 13:42	V1-1A	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 13:44	V1-1B	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 13:46	V1-1C	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 13:48	V1-2A	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 13:50	V1-2B	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 13:52	V1-2C	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 13:54	V1-3A	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 13:56	V1-3B	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	
3/8/90 13:58	V1-3C	CO2/02	DIRECT	THC	50	DIRECT		150	769	S	769	3323.0	
		THC	50	DIRECT	THC	50	DIRECT	150	769	S	769	3323.0	

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Rotameter	G/S	cc/min	Dil. (Rt.)	Flow	Dil.	Gastech-CO2 (%)	Calc. Conc.	Gastech	
m/d/y/ h:mm	Loc.	CO2/02	THC	50	G	54	150	S	769	SIP-THC (ppm)	CO2 (%)	Reading	O2+C02 (%)
3/8/90 18:02	V3 inle	CO2/02	DIRECT							0.6		20.3	20.9
		THC								500	7620.4		
3/8/90 18:08	V3 disc	CO2/02	DIRECT							2.7		17.8	20.5
		THC		80	S	350	150	S	769	315	1007.1		
3/8/90 18:46	Standard check with atmospheric air												
3/8/90 18:46	Standard check with 5.12% CO2/N2												
3/8/90 18:46	Standard check with 505 ppm std.												
3/8/90 21:50	Standard check with atmospheric air												
3/8/90 21:50	Standard check with 5.12% CO2/N2												
3/8/90 21:50	Standard check with 505 ppm std.												
3/8/90 21:57	V3 inle	CO2/02	DIRECT							0.4		20.6	21.0
		THC		50	G	54	150	S	769	500	7620.4		
3/8/90 22:00	V3 disc	CO2/02	DIRECT							2.7		17.8	20.5
		THC		80	S	350	150	S	769	280	895.2		
3/8/90 22:16	V1-1A	CO2/02	DIRECT							7.4		9	16.4
3/8/90 22:18	V1-1B	CO2/02	DIRECT							7.6		10.2	17.8
3/8/90 22:20	V1-1C	CO2/02	DIRECT							8		10	18.0
3/8/90 22:24	V1-2A	CO2/02	DIRECT							5.6		11.2	16.8
3/8/90 22:26	V1-2B	CO2/02	DIRECT							6		12.4	18.4
3/8/90 22:28	V1-2C	CO2/02	DIRECT							6.6		12.2	18.8
3/8/90 22:30	V1-3A	CO2/02	DIRECT							5		12.4	17.4
3/8/90 22:34	V1-3B	CO2/02	DIRECT							6.3		12.1	18.4
3/8/90 22:36	V1-3C	CO2/02	DIRECT							7		11.5	18.5
3/8/90 22:38	V2-1A	CO2/02	DIRECT							2.6		16.1	18.7
3/8/90 22:40	V2-1B	CO2/02	DIRECT							7.2		9.9	17.1
3/8/90 22:42	V2-1C	CO2/02	DIRECT							6.8		11.2	18.0
3/8/90 22:44	V2-2A	CO2/02	DIRECT							1		18.2	19.2
3/8/90 22:46	V2-2B	CO2/02	DIRECT							5.8		12.7	18.5
3/8/90 22:48	V2-2C	CO2/02	DIRECT							7.3		10.7	18.0
3/8/90 22:50	V2-3A	CO2/02	DIRECT							3.1		15	18.1
3/8/90 22:52	V2-3B	CO2/02	DIRECT							6.2		11.8	18.0
3/8/90 22:54	V2-3C	CO2/02	DIRECT							7.5		10	17.5

		CO2/THC DATA						O2 Data			
		Smpl		Dil.		Dil.		Calc. Conc.		Gastech	
Date/Time	Sample	Smpl (Lt)	Flow	Dil. (Rt.)	Flow	Gastech-CO2 (%)	CO2 (%)	Reading	O2+CO2		
m/d/y/ h:mm	Loc.	Rotameter	G/S cc/min	Rotameter	G/S cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)		
3/8/90 23:15	V3 disc	DIRECT				2.7		17.8	20.5		
			S	150	S	280	895.2				
3/8/90 23:20	V3 inlet	DIRECT				0.7		20.3	21.0		
			G	150	S	170	7163.1				
	NOTE: Collected canister and isotopic samples in V3 and V4.										
3/8/90 23:30	Standard check with atmospheric air					0.0		20.9			
3/8/90 23:30	Standard check with 5.12% CO2/N2					5.1		0.0			
3/8/90 23:30	Standard check with 505 ppm std.					520.0					
3/9/90 7:40	Standard check with atmospheric air					0.0		20.9			
3/9/90 7:40	Standard check with 5.12% CO2/N2					5.1		0.0			
3/9/90 7:40	Standard check with 505 ppm std.					505.0					
3/9/90 7:44	V1-1A	DIRECT				8.2		6.2	14.4		
3/9/90 7:46	V1-1B	DIRECT				7.8		8.5	16.3		
3/9/90 7:48	V1-1C	DIRECT				8.2		8.5	16.7		
3/9/90 7:50	V1-2A	DIRECT				6.6		8.2	14.8		
3/9/90 7:52	V1-2B	DIRECT				6.6		10.2	16.8		
3/9/90 7:54	V1-2C	DIRECT				6.9		10.3	17.2		
3/9/90 7:58	V1-3A	DIRECT				6.1		9.9	16.0		
3/9/90 8:00	V1-3B	DIRECT				6.9		10.1	17.0		
3/9/90 8:02	V1-3C	DIRECT				7.3		9.9	17.2		
3/9/90 8:06	V2-1A	DIRECT				3.3		14.1	17.4		
3/9/90 8:08	V2-1B	DIRECT				8.3		6.9	15.2		
3/9/90 8:10	V2-1C	DIRECT				7.3		9.2	16.5		
3/9/90 8:24	V2-2A	DIRECT				1.9		15.7	17.6		
3/9/90 8:26	V2-2B	DIRECT				6.7		9.3	16.0		
3/9/90 8:28	V2-2C	DIRECT				7.8		7.8	15.6		
3/9/90 8:34	V2-3A	DIRECT				4.2		12	16.2		
3/9/90 8:36	V2-3B	DIRECT				7.1		9.4	16.5		
3/9/90 8:38	V2-3C	DIRECT				8.2		7.5	15.7		
3/9/90 8:50	V3 inlet	DIRECT				0.6		20.4	21.0		
	THC	50	G	150	S	520	7925.2				

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Flow	Dil. (Rt.)	Dil.	Flow	Gastech-CO2 (%)	Calc. Conc.		Gastech	
m/d/y/ h:mm	Loc.	Rotameter	G/S cc/min	Rotameter	G/S cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)					
3/9/90 16:24	V2-1B	CO2/02	DIRECT						9.4			4.7	14.1
3/9/90 16:26	V2-1C	CO2/02	DIRECT						8.2			7.2	15.4
3/9/90 16:28	V2-2A	CO2/02	DIRECT						3.1			13.2	16.3
3/9/90 16:30	V2-2B	CO2/02	DIRECT						7.7			7	14.7
3/9/90 16:32	V2-2C	CO2/02	DIRECT						8.9			5.2	14.1
3/9/90 16:34	V2-3A	CO2/02	DIRECT						5.6			9.8	15.4
3/9/90 16:36	V2-3B	CO2/02	DIRECT						8			7.5	15.5
3/9/90 16:38	V2-3C	CO2/02	DIRECT						9.4			5.5	14.9
3/9/90 16:40	V3 disc	CO2/02	OPEN			CLOSED			2.9			17.3	20.2
	THC		OPEN			CLOSED			654	654.0			
3/9/90 16:50	V3A	CO2/02	OPEN			CLOSED			3.1			17.3	20.4
	THC		OPEN			CLOSED			37	37			
3/9/90 17:00	V3B	CO2/02	OPEN			CLOSED			3.1			17.2	20.3
	THC		OPEN			CLOSED			31	31			
3/9/90 17:10	V3C	CO2/02	OPEN			CLOSED			3.1			17.2	20.3
	THC		OPEN			CLOSED			40	40			
3/9/90 17:15	Standard check with atmospheric air								0.0			20.9	
3/9/90 17:15	Standard check with 5.12% CO2/N2								5.1			0.0	
3/9/90 17:15	Standard check with 505 ppm std.								505.0				
3/10/90 6:30	Standard check with atmospheric air								0.0			20.9	
3/10/90 6:30	Standard check with 5.12% CO2/N2								5.1			0.0	
3/10/90 6:30	Standard check with 505 ppm std.								505.0				
3/10/90 6:42	V1-1A	CO2/02	DIRECT						11			0.8	11.8
3/10/90 6:44	V1-1B	CO2/02	DIRECT						9.8			3.7	13.5
3/10/90 6:46	V1-1C	CO2/02	DIRECT						9.8			4.1	13.9
3/10/90 6:48	V1-2A	CO2/02	DIRECT						9.4			2.3	11.7
3/10/90 6:50	V1-2B	CO2/02	DIRECT						8.8			4.6	13.4
3/10/90 6:52	V1-2C	CO2/02	DIRECT						8.8			5.2	14.0
3/10/90 6:54	V1-3A	CO2/02	DIRECT						8.7			4.2	12.9
3/10/90 6:56	V1-3B	CO2/02	DIRECT						8.9			5.4	14.3
3/10/90 6:58	V1-3C	CO2/02	DIRECT						9			5.3	14.3
3/10/90 7:06	V2-1A	CO2/02	DIRECT						5.5			9	14.5

				CO2/THC DATA								O2 Data			
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Dil. (Rt.)	Flow	Dil.	Gastech-CO2 (%)	Calc. Conc.	O2 Data					
m/d/y/ h:mm	Loc.	CO2/02	Rotameter	G/S cc/min	Rotameter	G/S cc/min		SIP-THC (ppm)	CO2 (%)	THC (ppm)	O2 (%)	Reading	O2+C02		
3/10/90 7:08	V2-1B	CO2/02	DIRECT					10.8			2.3		13.1		
3/10/90 7:10	V2-1C	CO2/02	DIRECT					9.5			4		13.5		
3/10/90 7:12	V2-2A	CO2/02	DIRECT					4.4			9.2		13.6		
3/10/90 7:14	V2-2B	CO2/02	DIRECT					9.5			2.5		12.0		
3/10/90 7:16	V2-2C	CO2/02	DIRECT					10.3			1		11.3		
3/10/90 7:20	V2-3A	CO2/02	DIRECT					7			6.4		13.4		
3/10/90 7:22	V2-3B	CO2/02	DIRECT					9.5			4.2		13.7		
3/10/90 7:24	V2-3C	CO2/02	DIRECT					10.8			2.2		13.0		
3/10/90 7:35	V3 disch	CO2/02	OPEN		CLOSED			3.2			16.5		19.7		
		THC	OPEN		CLOSED			95	95.0						
3/10/90 7:40	V3A	CO2/02	OPEN		CLOSED			3.1			16.5		19.6		
		THC	OPEN		CLOSED			7	7						
3/10/90 7:45	V3B	CO2/02	OPEN		CLOSED			3.2			16.4		19.6		
		THC	OPEN		CLOSED			6	6						
3/10/90 7:50	V3C	CO2/02	OPEN		CLOSED			3.2			16.4		19.6		
		THC	OPEN		CLOSED			10	10						
3/10/90 8:00	Standard check with atmospheric air							0.0			20.9				
3/10/90 8:00	Standard check with 5.12% CO2/N2							5.1			0.0				
3/10/90 8:00	Standard check with 505 ppm std.							505.0							
3/10/90 17:20	Standard check with atmospheric air							0.0			20.9				
3/10/90 17:20	Standard check with 5.12% CO2/N2							5.1			0.0				
3/10/90 17:20	Standard check with 505 ppm std.							505.0							
3/10/90 17:30	V1-1B	CO2/02	DIRECT					10.4			1.9		12.3		
3/10/90 17:32	V1-1C	CO2/02	DIRECT					10.4			2.2		12.6		
3/10/90 17:34	V1-2A	CO2/02	DIRECT					10.5			0.6		11.1		
3/10/90 17:36	V1-2B	CO2/02	DIRECT					9.7			2.4		12.1		
3/10/90 17:38	V1-2C	CO2/02	DIRECT					9.5			3		12.5		
3/10/90 17:40	V1-3A	CO2/02	DIRECT					9.8			2.8		12.6		
3/10/90 17:44	V1-3B	CO2/02	DIRECT					9.8			3.4		13.2		
3/10/90 17:46	V1-3C	CO2/02	DIRECT					9.9			3.3		13.2		
3/10/90 17:48	V2-1A	CO2/02	DIRECT					6.8			7.8		14.6		
3/10/90 17:50	V2-1B	CO2/02	DIRECT					11.3			1.4		12.7		

		CO2/THC DATA										O2 Data	
					Smpl								
Date/Time	Sample	Anal.	Smpl (Lt)	Flow	Dil. (Rt.)	Flow	Dil.	Calc. Conc.	Gastech-CO2 (%)		Gastech		
m/d/y/ h:mm	Loc.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	CO2 (%)	THC (ppm)	SIP-THC (ppm)	O2 (%)	Reading	O2+C02 (%)
3/10/90 17:52	V2-1C	CO2/02	DIRECT						10.5		2.3		12.8
3/10/90 17:54	V2-2A	CO2/02	DIRECT						6.3		6.5		12.8
3/10/90 17:56	V2-2B	CO2/02	DIRECT						10.5		0.7		11.2
3/10/90 17:58	V2-2C	CO2/02	DIRECT						11.1		0		11.1
3/10/90 18:00	V2-3A	CO2/02	DIRECT						8.6		4.2		12.8
3/10/90 18:02	V2-3B	CO2/02	DIRECT						10.6		2.4		13.0
3/10/90 18:04	V2-3C	CO2/02	DIRECT						11.8		0.4		12.2
3/10/90 18:05	Note: Turned on blowers to V1 and V2. Flow rates, V1 = 4.22 LPM, V2 = 4.32 LPM. Nutrients to V1 @ 20 cc/min.												
3/10/90 18:15	V3 disch	CO2/02	OPEN		CLOSED				3.4		15.9		19.3
		THC	OPEN		CLOSED				32		32.0		
3/10/90 18:20	V3A	CO2/02	OPEN		CLOSED				3.4		16.1		19.5
		THC	OPEN		CLOSED				0		0		
3/10/90 18:25	V3B	CO2/02	OPEN		CLOSED				3.3		15.9		19.2
		THC	OPEN		CLOSED				2		2		
3/10/90 18:30	V3C	CO2/02	OPEN		CLOSED				3.3		16		19.3
		THC	OPEN		CLOSED				2		2		
3/10/90 18:40	V1 disch	CO2/02	DIRECT						8.8		4.9		13.7
		THC	110	S	150	S	769		850		2058.2		
3/10/90 18:45	V2 disch	CO2/02	DIRECT						9.8		3.1		12.9
		THC	80	S	150	S	769		960.0		3069.3		
3/10/90 18:55	Standard check with atmospheric air												
3/10/90 18:55	Standard check with 5.12% CO2/N2												
3/10/90 18:55	Standard check with 505 ppm std.												
3/11/90 2:50	Standard check with atmospheric air												
3/11/90 2:50	Standard check with 5.12% CO2/N2												
3/11/90 2:50	Standard check with 505 ppm std.												
3/11/90 3:00	V3 disch	CO2/02	DIRECT						3.5		15.3		18.8
		THC	DIRECT						22				
3/11/90 3:05	V3A	CO2/02	DIRECT						3.4		15.5		18.9
		THC	DIRECT						1				
3/11/90 3:10	V3B	CO2/02	DIRECT						3.5		15.3		18.8
		THC	DIRECT						2				

		CO2/THC DATA						O2 Data			
		Smpl		Dil. (Rt.)		Dil.		Calc. Conc.		O2 Data	
Date/Time	Sample	Smpl (Lt)	Flow	Dil. (Rt.)	Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02		
m/d/y/ h:mm	Loc.	Rotameter	G/Scc/min	Rotameter	G/Scc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)		
3/11/90 3:15	V3C	CO2/02				3.5		15.4	18.9		
		THC				1					
		DIRECT									
3/11/90 3:24	Standard check with atmospheric air					0.0		20.9			
3/11/90 3:24	Standard check with 5.12% CO2/N2					5.1		0.0			
3/11/90 3:24	Standard check with 505 ppm std.					505.0					
3/11/90 17:45	Standard check with atmospheric air					0.0		20.9			
3/11/90 17:45	Standard check with 5.12% CO2/N2					5.1		0.0			
3/11/90 17:45	Standard check with 505 ppm std.					505.0					
3/11/90 17:53	V3 disch	CO2/02				3.8		14.7	18.5		
		THC				7					
		DIRECT									
3/11/90 18:10	V3A	CO2/02				3.8		14.9	18.7		
		THC				0					
		DIRECT									
3/11/90 18:15	V3B	CO2/02				3.8		14.8	18.6		
		THC				2					
		DIRECT									
3/11/90 18:20	V3C	CO2/02				3.8		14.9	18.7		
		THC				1					
		DIRECT									
3/11/90 18:25	V1 disch	CO2/02				6.8		12.5	19.3		
		THC	110	S	541	150	S	1307.6			
3/11/90 18:30	V2 disch	CO2/02				7.7		10.1	17.8		
		THC	80	S	350	150	S	2333.9			
3/11/90 18:35	Standard check with atmospheric air					0.0		20.9			
3/11/90 18:35	Standard check with 5.12% CO2/N2					5.1		0.0			
3/11/90 18:35	Standard check with 505 ppm std.					502.0					
3/11/90 18:35	Standard check with atmospheric air					0.0		20.9			
3/11/90 18:35	Standard check with 5.12% CO2/N2					5.1		0.0			
3/12/90 8:00	Standard check with 505 ppm std.					505.0					
3/12/90 8:15	V3 disch	CO2/02				3.9		14.3	18.2		
		THC				8					
		DIRECT									
3/12/90 8:25	V3A	CO2/02				3.8		14.4	18.2		
		THC				1					
		DIRECT									
3/12/90 8:30	V3B	CO2/02				3.8		14.2	18.0		
		THC				3					
		DIRECT									

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Rotameter	G/S	cc/min	Dil. (Rt.)	Flow	Gastech-CO2 (%)	Calc. Conc.			Gastech	
m/d/y/ h:mm	Loc.	CO2/02	DIRECT					SIP-THC (ppm)	CO2 (%)	THC (ppm)		Reading	02+CO2 (%)
3/12/90 8:35	V3C	CO2/02	DIRECT					3.8				14.2	18.0
		THC	DIRECT					2					
3/12/90 8:45	V1 disc	CO2/02	DIRECT					6.4				12.8	19.2
		THC	110	S	541	150	S	800		1937.2			
3/12/90 8:55	V2 disc	CO2/02	DIRECT					7.2				10.7	17.9
		THC	80	S	350	150	S	870.0		2781.5			
3/12/90 9:00	Standard check with atmospheric air							0.0				20.9	
3/12/90 9:00	Standard check with 5.12% CO2/N2							5.1				0.0	
3/12/90 9:00	Standard check with 505 ppm std.							480.0					
3/12/90 9:15	Note: Started blower to V3. Flowrate = .67 LPM.												
3/12/90 10:00	Note: Ambient Temp = 25.9°C; V1-1 @ 4' = 21.5°C; @ 2' = 22.5°C; V2-1 @ 4' = 21.7°C; @ 2' = 22.3°C.												
3/13/90 7:40	Standard check with atmospheric air							0.0				20.9	
3/13/90 7:40	Standard check with 5.12% CO2/N2							5.1				0.0	
3/13/90 7:40	Standard check with 505 ppm std. GC Counts = 65.							505.0					
3/13/90 7:48	V4 disc	CO2/02	DIRECT					1.1				19.8	20.9
		THC	DIRECT					ND					
3/13/90 7:53	V3 disc	CO2/02	DIRECT					2.2				16.3	18.5
		THC	DIRECT					6					
3/13/90 8:00	V1 disc	CO2/02	DIRECT					6				13.4	19.4
		THC	110	S	541	150	S	875		2118.8			
3/13/90 8:10	V2 disc	CO2/02	DIRECT					6.8				11.2	18.0
		THC	80	S	350	150	S	825		2637.6			
	Note: V3 Inlet is Atmospheric air since 3/12												

CO ₂ /THC DATA										Dil.			Calc. Conc.			O ₂ Data	
Date/Time	Sample	Anal.	Rotameter	G/S	Flow	Dil. (Rt.)	Rotameter	G/S	Flow	Flow	Gastech-CO ₂ (%)	THC (ppm)	CO ₂ (%)	THC (ppm)	O ₂ (%)	O ₂ Reading	O ₂ +CO ₂ (%)
m/d/y/ h:mm	Loc.																
3/13/90 8:10	Standard	check with atmospheric air														20.9	
3/13/90 8:10	Standard	check with 5.12% CO ₂ /N ₂														0.0	
3/13/90 8:10	Standard	check with 505 ppm std.															
3/20/90 9:00	Standard	check with atmospheric air														20.9	
3/20/90 9:00	Standard	check with 5.12% CO ₂ /N ₂														0.0	
3/20/90 9:00	V1 disc	CO ₂ /O ₂	DIRECT													16	20.2
3/20/90 9:00	V2 disc	CO ₂ /O ₂	DIRECT													15	19.8
3/20/90 9:00	V3 disc	CO ₂ /O ₂	DIRECT													19.5	20.7
3/20/90 9:00	V4 disc	CO ₂ /O ₂	DIRECT													20.5	20.8
3/25/90 8:30	Standard	check with atmospheric air														20.9	
3/25/90 8:30	Standard	check with 5.12% CO ₂ /N ₂														0.0	
3/25/90 8:30	Standard	check with 505 ppm std.															
3/25/90 8:30	V4 disc	CO ₂ /O ₂	DIRECT													20	21.0
		THC	DIRECT														
3/25/90 8:30	V3 disc	CO ₂ /O ₂	DIRECT													19	20.5
		THC	DIRECT														
3/25/90 8:30	V2 disc	CO ₂ /O ₂	DIRECT													14.8	19.4
		THC	80	S	350					S	769			2110.1			
3/25/90 8:30	V1 disc	CO ₂ /O ₂	DIRECT													14.5	19.1
		THC	80	S	350					S	769			1470.7			
3/30/90 8:30	Standard	check with atmospheric air														20.9	
3/30/90 8:30	Standard	check with 5.12% CO ₂ /N ₂														0.0	
3/30/90 8:30	Standard	check with 505 ppm std.															
3/30/90 8:30	V4 disc	CO ₂ /O ₂	DIRECT													20	21.0
		THC	OPEN														
3/30/90 8:30	V3 disc	CO ₂ /O ₂	DIRECT													19	20.8
		THC	OPEN														
3/30/90 8:30	V2 disc	CO ₂ /O ₂	DIRECT													12.5	18.4
		THC	80	S	350					S	769			2238.0			

		CO2/THC DATA										O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Rotameter	G/S	cc/min	Dil. (Rt.)	Flow	Gastech-CO2 (%)	Calc. Conc.		Gastech	
m/d/y/ h:mm	Loc.	CO2/02	80	DIRECT				cc/min	SIP-THC (ppm)	CO2 (%)	THC (ppm)	Reading	O2+C02 (%)
3/30/90 8:30	V1 disc	CO2/02	80	DIRECT					5.9			13.2	19.1
		THC	80		S	350	150	S	425	1358.8			
4/9/90 10:00	Standard check with atmospheric air								0.0			20.9	
4/9/90 10:00	Standard check with 5.12% CO2/N2								5.1			0.0	
4/9/90 10:00	Standard check with 505 ppm std. GC Counts = 59.								505.0				
4/9/90 10:00	V4 disc	CO2/02	DIRECT						0.8			20.1	20.9
		THC	OPEN				CLOSED		1.7				
4/9/90 10:00	V3 disc	CO2/02	DIRECT						1.4			19.1	20.5
		THC	OPEN				CLOSED		2.5				
4/9/90 10:00	V2 disc	CO2/02	DIRECT						5			14.7	19.7
		THC	80		S	350	150	S	615	1966.2			
4/9/90 10:00	V1 disc	CO2/02	DIRECT						4.7			15	19.7
		THC	80		S	350	150	S	425	1358.8			
4/13/90 9:30	Standard check with atmospheric air								0.0			20.9	
4/13/90 9:30	Standard check with 5.12% CO2/N2								5.1			0.0	
4/13/90 9:30	Standard check with 505 ppm std. GC Counts = 62.								505.0				
4/13/90 9:30	V4 disc	CO2/02	DIRECT						0.8			20	20.8
		THC	OPEN				CLOSED		2.5	2.5			
4/13/90 9:30	V3 disc	CO2/02	DIRECT						1.3			19.2	20.5
		THC	OPEN				CLOSED		2.5	2.5			
4/13/90 9:30	V2 disc	CO2/02	DIRECT						4.9			13.8	18.7
		THC	80		S	350	150	S	650	2078.1			
4/13/90 9:30	V1 disc	CO2/02	DIRECT						4.6			15.2	19.8
		THC	80		S	350	150	S	500	1598.6			
4/24/90 9:00	Standard check with atmospheric air								0.0			20.9	
4/24/90 9:00	Standard check with 5.12% CO2/N2								5.1			0.0	
4/24/90 9:00	Standard check with 505 ppm std. GC Counts = 53.								505.0				
4/24/90 9:06	V1-1A	CO2/02	DIRECT						9.1			7.7	16.8
		THC	50		S	169	150	S	530	2941.7			

Date/Time m/d/y/ h:mm	Sample Loc.	Anal.	CO2/THC DATA				Dil.	Gastech-CO2 (%)		Calc. Conc.	O2 Data	
			Smpl (Lt)	Smpl	Flow	Dil. (Rt.)		Rotameter	G/S		CO2 (%)	Gastech Reading O2 (%)
4/24/90 9:08	V1-1B	CO2/02	DIRECT									
		THC	80	G	122	150	S		S		4016.8	7.6
4/24/90 9:10	V1-1C	CO2/02	DIRECT									
		THC	80	G	122	150	S		S		2811.8	7.5
4/24/90 9:12	V1-2A	CO2/02	DIRECT									
		THC	110	S	541	110	S		S		1025.7	13.3
4/24/90 9:14	V1-2B	CO2/02	DIRECT									
		THC	80	S	350	150	S		S		1774.4	12.1
4/24/90 9:16	V1-2C	CO2/02	DIRECT									
		THC	50	S	169	150	S		S		1887.1	10.2
4/24/90 9:18	V1-3A	CO2/02	DIRECT									
		THC	OPEN			CLOSED					475	14.2
4/24/90 9:20	V1-3B	CO2/02	DIRECT									
		THC	50	S	169	150	S		S		2220.1	10.5
4/24/90 9:22	V1-3C	CO2/02	DIRECT									
		THC	110	S	541	150	S		S		1452.9	10
4/24/90 9:26	V1 disch	CO2/02	DIRECT									
		THC	80	S	350	150	S		S		1598.6	12.7
4/24/90 9:30	V2-1A	CO2/02	DIRECT									
		THC	OPEN			CLOSED					50	18.5
4/24/90 9:32	V2-1B	CO2/02	DIRECT									
		THC	80	S	350	150	S		S		1918.3	9.2
4/24/90 9:34	V2-1C	CO2/02	DIRECT									
		THC	50	G	54	150	S		S		6065.8	6.2
4/24/90 9:36	V2-2A	CO2/02	DIRECT									
		THC	OPEN			CLOSED					35	20.2
4/24/90 9:38	V2-2B	CO2/02	DIRECT									
		THC	50	G	54	150	S		S		3048.1	8.3

CO2/THC DATA										Dil.		Gastech-CO2 (%)		Calc. Conc.		O2 Data	
Date/Time	Sample	Anal.	Smpl (Lt)	Flow	Dil. (Rt.)	Flow	G/S	cc/min	Rotameter	Flow	cc/min	SIP-THC	CO2 (%)	THC (ppm)	CO2 (%)	Reading	O2+CO2 (%)
4/24/90 9:40	V2-2C	CO2/02	DIRECT									12.8				3.3	16.1
		THC	50	G	150	S						340		5181.9			
4/24/90 9:42	V2-3A	CO2/02	DIRECT									0.9				19.5	20.4
		THC	OPEN		CLOSED							45		45			
4/24/90 9:44	V2-3B	CO2/02	DIRECT									6.5				12.4	18.9
		THC	80	S	150	S						400		1278.9			
4/24/90 9:46	V2-3C	CO2/02	DIRECT									10.2				7.2	17.4
		THC	50	G	150	S						230		3505.4			
4/24/90 9:49	V2 disch	CO2/02	DIRECT									7.5				10.8	18.3
		THC	80	S	150	S						720		2301.9			
4/24/90 9:53	dewater	CO2/02	DIRECT									1.2				19.8	21.0
		THC	DIRECT									380-460		380-460			
4/24/90 9:55	V3A	CO2/02	DIRECT									1.5				19.2	20.7
		THC	DIRECT									4		4			
4/24/90 9:58	V3B	CO2/02	DIRECT									1.5				19.2	20.7
		THC	DIRECT									5		5			
4/24/90 10:00	V3C	CO2/02	DIRECT									1.6				19.2	20.8
		THC	DIRECT									3		3			
4/24/90 10:02	V3 disch	CO2/02	DIRECT									1.3				19.3	20.6
		THC	DIRECT									6		6			
4/24/90 10:04	V4A	CO2/02	DIRECT									1.3				19.5	20.8
		THC	DIRECT									2		2			
4/24/90 10:06	V4B	CO2/02	DIRECT									1.4				19.4	20.8
		THC	DIRECT									2		2			
4/24/90 10:08	V4C	CO2/02	DIRECT									1.6				19.2	20.8
		THC	DIRECT									1		1			
4/24/90 10:10	V4 disch	CO2/02	DIRECT									1.2				19.5	20.7
		THC	DIRECT									1		1			

				CO2/THC DATA								O2 Data			
Date/Time	Sample	Smpl (Lt)	Smpl	Flow	Dil. (Rt.)	Flow	Dil.	Calc. Conc.	Reading	02-CO2					
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC	(ppm)	THC	(ppm)	O2 (%)		(%)
4/24/90 13:00	Standard check with atmospheric air								0.0				20.9		
4/24/90 13:00	Standard check with 5.12% CO2/N2								5.1				0.0		
4/24/90 13:00	Standard check with 505 ppm std = 520 ppm.								505.0						
4/24/90 13:00	Bowers off for shutdown test no. 5														
4/24/90 15:55	Standard check with atmospheric air								0.0				20.9		
4/24/90 15:55	Standard check with 5.12% CO2/N2								5.1				0.0		
4/24/90 16:00	V1-1A CO2/02	DIRECT							9.4				7.1		16.5
4/24/90 16:04	V1-1B CO2/02	DIRECT							9.4				7.6		17.0
4/24/90 16:06	V1-1C CO2/02	DIRECT							9.5				7.5		17.0
4/24/90 16:08	V1-2A CO2/02	DIRECT							6.5				10.9		17.4
4/24/90 16:10	V1-2B CO2/02	DIRECT							7				11		18.0
4/24/90 16:12	V1-2C CO2/02	DIRECT							8.2				9.7		17.9
4/24/90 16:14	V1-3A CO2/02	DIRECT							6.3				11.2		17.5
4/24/90 16:16	V1-3B CO2/02	DIRECT							7.7				10.3		18.0
4/24/90 16:18	V1-3C CO2/02	DIRECT							8.2				9.9		18.1
4/24/90 16:20	V2-1A CO2/02	DIRECT							3.1				16.2		19.3
4/24/90 16:22	V2-1B CO2/02	DIRECT							9				7		16.0
4/24/90 16:24	V2-1C CO2/02	DIRECT							10.2				6.1		16.3
4/24/90 16:26	V2-2A CO2/02	DIRECT							1.2				18.3		19.5
4/24/90 16:28	V2-2B CO2/02	DIRECT							8.4				9.5		17.9
4/24/90 16:30	V2-2C CO2/02	DIRECT							12.6				4.5		17.1
4/24/90 16:32	V2-3A CO2/02	DIRECT							2.8				16.5		19.3
4/24/90 16:34	V2-3B CO2/02	DIRECT							6.7				12		18.7
4/24/90 16:36	V2-3C CO2/02	DIRECT							9.5				8.2		17.7
4/24/90 16:40	Standard check with atmospheric air								0.0				20.9		
	Standard check with 5.12% CO2/N2								5.1				0.0		
4/24/90 22:00	Standard check with atmospheric air								0.0				20.9		
	Standard check with 5.12% CO2/N2								5.1				0.0		

		CO2/THC DATA										O2 Data	
		Smpl		Dil. (Rt.)		Dil.		Gastech-CO2 (%)		Calc. Conc.		Gastech	
Date/Time	Sample	Anal.	Smpl (Lt)	Flow	Rotameter	G/S	Flow	SIP-THC (ppm)	CO2 (%)	THC (ppm)	O2 (%)	02+C02 (%)	
m/d/y/ h:mm	Loc.		Rotameter	cc/min			cc/min						
4/24/90 22:08	V1-1A	CO2/02	DIRECT					10.4			4.4	14.8	
4/24/90 22:10	V1-1B	CO2/02	DIRECT					9.7			6.9	16.6	
4/24/90 22:12	V1-1C	CO2/02	DIRECT					9.8			7.1	16.9	
4/24/90 22:14	V1-2A	CO2/02	DIRECT					7.9			6.3	14.2	
4/24/90 22:16	V1-2b	CO2/02	DIRECT					7.8			8.9	16.7	
4/24/90 22:20	V1-2C	CO2/02	DIRECT					8.6			8.8	17.4	
4/24/90 22:24	V1-3A	CO2/02	DIRECT					7.9			8.5	16.3	
4/24/90 22:26	V1-3B	CO2/02	DIRECT					8.3			9	17.3	
4/24/90 22:28	V1-3C	CO2/02	DIRECT					8.7			9.1	17.8	
4/24/90 22:30	V2-1A	CO2/02	DIRECT					4.1			13.3	17.4	
4/24/90 22:32	V2-1B	CO2/02	DIRECT					10.6			4.2	14.8	
4/24/90 22:34	V2-1C	CO2/02	DIRECT					10.8			5	15.8	
4/24/90 22:36	V2-2A	CO2/02	DIRECT					2.8			15.8	18.6	
4/24/90 22:38	V2-2B	CO2/02	DIRECT					9.5			7.5	17.0	
4/24/90 22:40	V2-2C	CO2/02	DIRECT					12.7			3.7	16.4	
4/24/90 22:42	V2-3A	CO2/02	DIRECT					4.2			13.9	18.1	
4/24/90 22:44	V2-3B	CO2/02	DIRECT					7.6			10.2	17.8	
4/24/90 22:46	V2-3C	CO2/02	DIRECT					10			7.1	17.1	
4/24/90 22:50	Standard check with atmospheric air												20.9
4/25/90 7:55	Standard check with 5.12% CO2/N2												0.0
	Standard check with atmospheric air												20.9
	Standard check with 5.12% CO2/N2												0.0
4/25/90 8:04	V1-1A	CO2/02	DIRECT					11.5			1.4	12.9	
4/25/90 8:06	V1-1B	CO2/02	DIRECT					10.4			4.6	15.0	
4/25/90 8:08	V1-1C	CO2/02	DIRECT					10.3			5.1	15.4	
4/25/90 8:10	V1-2A	CO2/02	DIRECT					9.5			2.2	11.7	
4/25/90 8:12	V1-2B	CO2/02	DIRECT					9.1			5.5	14.6	
4/25/90 8:14	V1-2C	CO2/02	DIRECT					9.3			6.2	15.5	
4/25/90 8:16	V1-3A	CO2/02	DIRECT					9.1			5.1	14.2	

		CO2/THC DATA								O2 Data	
Date/Time m/d/y/ h:mm	Sample Loc.	Anal.	Smpl (Lt) Rotameter	G/S	Smpl Flow cc/min	Dil. (Rt.) Rotameter	Dil. Flow cc/min	Gastech-CO2 (%) SIP-THC (ppm)	Calc. Conc. CO2 (%) THC (ppm)	Gastech Reading O2 (%)	O2+C02 (%)
4/25/90 8:18	V1-3B	CO2/02	DIRECT					9.3		6.2	15.5
4/25/90 8:20	V1-3C	CO2/02	DIRECT					9.2		6.8	16.0
4/25/90 8:22	V2-1A	CO2/02	DIRECT					5.4		10.5	15.9
4/25/90 8:24	V2-1B	CO2/02	DIRECT					11.9		1.9	13.8
4/25/90 8:26	V2-1C	CO2/02	DIRECT					11.5		2.6	14.1
4/25/90 8:28	V2-2A	CO2/02	DIRECT					4.2		11.9	16.1
4/25/90 8:30	V2-2B	CO2/02	DIRECT					10.6		3.9	14.5
4/25/90 8:32	V2-2C	CO2/02	DIRECT					13.1		1.1	14.2
4/25/90 8:34	V2-3A	CO2/02	DIRECT					5.5		10.3	15.8
4/25/90 8:36	V2-3B	CO2/02	DIRECT					8.8		6.8	15.6
4/25/90 8:38	V2-3C	CO2/02	DIRECT					10.8		4.1	14.9
4/25/90 8:40	V3A	CO2/02	DIRECT					1.7		18.6	20.3
4/25/90 8:42	V3B	CO2/02	DIRECT					1.8		18.6	20.4
4/25/90 8:44	V3C	CO2/02	DIRECT					1.8		18.6	20.4
4/25/90 8:50	V4A	CO2/02	DIRECT					1.3		19.3	20.6
4/25/90 8:52	V4B	CO2/02	DIRECT					1.4		19.2	20.6
4/25/90 8:54	V4C	CO2/02	DIRECT					1.5		19.2	20.7
4/25/90 8:56	Standard check with atmospheric air							0.0		20.9	
	Standard check with 5.12% CO2/N2							5.1		0.0	
4/25/90 16:10	Standard check with atmospheric air							0.0		20.9	
	Standard check with 5.12% CO2/N2							5.1		0.0	
4/25/90 16:17	V1-1A	CO2/02	DIRECT					12		0.1	12.1
4/25/90 16:18	V1-1B	CO2/02	DIRECT					10.8		2.9	13.7
4/25/90 16:20	V1-1C	CO2/02	DIRECT					10.8		3.3	14.1
4/25/90 16:22	V1-2A	CO2/02	DIRECT					10.3		0	10.3
4/25/90 16:24	V1-2B	CO2/02	DIRECT					10		3.1	13.1
4/25/90 16:26	V1-2C	CO2/02	DIRECT					9.8		4	13.8
4/25/90 16:28	V1-3A	CO2/02	DIRECT					10		2.9	12.9
4/25/90 16:30	V1-3B	CO2/02	DIRECT					10		4.2	14.2

				CO2/THC DATA				O2 Data			
Date/Time	Sample	Anal.	Smpl (Lt)	Smpl	Dil. (Rt.)	Flow	Dil.	Calc. Conc.	Gastech		
m/d/y/ h:mm	Loc.		Rotameter	G/S cc/mIn	Rotameter	G/S cc/mIn		CO2 (%)	Reading	02+C02	
								THC (ppm)	O2 (%)	(%)	
4/25/90 16:32	V1-3C	CO2/02	DIRECT					9.8	4.6	14.4	
4/25/90 16:34	V2-1A	CO2/02	DIRECT					6.5	9	15.5	
4/25/90 16:35	V2-1B	CO2/02	DIRECT					12.2	0.9	13.1	
4/25/90 16:36	V2-1C	CO2/02	DIRECT					12.2	1.1	13.3	
4/25/90 16:38	V2-2A	CO2/02	DIRECT					5.4	9.7	15.1	
4/25/90 16:40	V2-2B	CO2/02	DIRECT					11.2	1.7	12.9	
4/25/90 16:42	V2-2C	CO2/02	DIRECT					13	0	13.0	
4/25/90 16:44	V2-3A	CO2/02	DIRECT					6.8	8.2	15.0	
4/25/90 16:46	V2-3B	CO2/02	DIRECT					9.5	4.6	14.1	
4/25/90 16:48	V2-3C	CO2/02	DIRECT					11.5	1.9	13.4	
4/25/90 16:56	V3A	CO2/02	DIRECT					2	18.4	20.4	
4/25/90 16:58	V3B	CO2/02	DIRECT					1.9	18.4	20.3	
4/25/90 17:00	V3C	CO2/02	DIRECT					1.9	18.4	20.3	
4/25/90 17:02	V4A	CO2/02	DIRECT					1.2	19.8	21.0	
4/25/90 17:04	V4B	CO2/02	DIRECT					1.3	19.6	20.9	
4/25/90 17:06	V4C	CO2/02	DIRECT					1.5	19.4	20.9	
4/25/90 17:15	Standard check with atmospheric air							0.0	20.9		
4/25/90 21:45	Standard check with 5.12% CO2/N2							5.1	0.0		
	Standard check with atmospheric air							0.0	20.9		
	Standard check with 5.12% CO2/N2							5.1	0.0		
4/25/90 21:54	V1-1B	CO2/02	DIRECT					11.5	1.8	13.3	
4/25/90 21:56	V1-1C	CO2/02	DIRECT					11.4	2.2	13.6	
4/25/90 21:58	V1-2B	CO2/02	DIRECT					10.9	1.4	12.3	
4/25/90 22:00	V1-2C	CO2/02	DIRECT					10.8	2.3	13.1	
4/25/90 22:02	V1-3A	CO2/02	DIRECT					11.2	1.2	12.4	
4/25/90 22:04	V1-3B	CO2/02	DIRECT					10.8	2.8	13.6	
4/25/90 22:06	V1-3C	CO2/02	DIRECT					10.7	3.2	13.9	
4/25/90 22:08	V2-1A	CO2/02	DIRECT					7.7	6.5	14.2	
4/25/90 22:10	V2-2A	CO2/02	DIRECT					6.5	7.8	14.3	

Appendix C
Operational Data

Table 16. Operational data for Treatment Plot V1

Date m/d/y h:mm	Venting Time (days)	O2+C02			Average Rotameter Flow (LPM)	Int Vol Air (L)	Cumul Vol Air (L)	Cumul O2 Prov (g)	Inter O2 Disch (g)	Cumul O2 Disch (g)	Cumul O2 Used (g)
		CO2 (%)	O2 (%)	THC (ppm)							
10/4/89 10:05	0.00	15.60	1.4	20640	17.0						
10/5/89 8:07	0.92	6.50	11	21261	17.5	12.9	12962	3244	1070	1070	2174
10/10/89 14:00	6.16	13.89	4.2	27891	18.1	9.0	53375	13357	4088	5158	8199
10/12/89 12:00	8.08	15.54	3.8	8087	19.3	6.7	62360	15606	478	5637	9969
10/16/89 12:00	12.08	9.46	9	15919	18.5	11.9	111790	27975	4211	9848	18128
10/20/89 12:00	16.08	7.49	12.6	13106	20.1	11.9	161358	40380	7126	16974	23406
10/24/89 9:35	19.98	5.58	13	10516	18.6	14.1	224976	56300	10840	27813	28487
10/24/89 10:13	20.01	Blowers off for Shutdown Test 1									
10/26/89 12:00	20.01	Blowers on									
10/27/89 11:11	20.97	8.99	9.1	10288	18.1	13.4	239862	60025	1748	29640	30386
10/31/89 12:00	25.01	6.11	12.6	6234	18.7	13.3	299988	77197	8684	38324	38873
11/3/89 12:00	28.01	8.68	10.5	6831	19.2	13.3	344648	89149	6866	45190	43959
11/6/89 12:00	31.01	5.72	14	5988	19.7	12.9	386952	99060	6898	52088	46972
11/9/89 12:00	34.01	7.29	13	6148	20.3	12.7	427963	111270	7370	59458	51813
11/14/89 15:00	39.13	6.66	15	6618	21.7	11.6	488678	126405	11315	70772	55633
11/16/89 15:00	41.13	5.32	14.8	5439	20.1	10.9	510051	136014	4239	75011	61002
11/21/89 15:00	46.13	4.30	15	4385	19.3	11.1	565284	146974	10955	85966	61008
11/24/89 14:00	49.09	4.80	15	2703	19.8	9.3	589550	160358	4845	90811	69547
11/28/89 12:43	53.04	4.50	14.7	4908	19.2	9.1	620992	162286	6215	97026	65260
11/28/89 15:11	53.14	Blowers off for Shutdown Test 2									
12/1/89 14:00	53.14	Blowers on									
12/2/89 17:58	54.30	9.18	10	3389	19.2	7.8	628744	169342	934	98104	71237
12/7/89 12:00	59.05	4.40	15.8	2920	20.2	7.7	657213	177009	4888	102993	74017
12/11/89 12:00	63.05	4.50	15.5	2304	20.0	7.6	680487	181463	4849	107841	73622
12/13/89 14:30	65.16	4.40	15.8	2103	20.2	7.9	693433	189538	2697	110538	79000
12/15/89 11:30	67.03	4.50	16	2049	20.5	7.9	705071	189899	2463	113001	76898
12/22/89 12:00	74.05	3.40	16.5	2049	19.9	7.7	746950	209146	9059	122060	87086
12/27/89 12:00	79.05	2.90	17.7	1498	20.6	7.6	775844	215167	6577	128637	86531
12/29/89 12:00	81.05	2.80	17.5	1183	20.3	7.5	787270	209939	2677	131314	78625

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:m:m	Venting Time (days)	O2+CO2			Average Rotameter Flow (LPM)	Avg Air	Int Vol Air (L)	Cumul Vol Air (L)	Cumul O2 Prov (g)	Inter O2 Disch (g)	Cumul O2 Disch (g)	Cumul O2 Used (g)
		CO2 (%)	O2 (%)	THC (ppm)								
1/2/90 12:00	85.05	2.60	17.3	1500	7.8	3.3	18889	806158	217125	4375	135689	81437
1/3/90 14:28	86.16	2.80	18.1	1856	7.9	3.3	5286	811445	221795	1245	136934	84861
1/3/90 15:33	86.20	Blowers off for Shutdown Test 3			7.9	3.3	216	811661	221854	52	136986	84868
1/8/90 13:30	86.20	Blowers on										
1/10/90 11:43	88.13	3.20	17.5	1999	14.2	8.1	22401	834062	224641	5218	142204	82436
1/12/90 8:56	90.01		17.8	1583	14.2	8.1	21917	855979	230544	5149	147354	83190
1/16/90 10:00	94.06	3.30	16.7	2113	9.0	4.2	24577	880556	237163	5643	152997	84166
1/19/90 8:00	96.97	4.10	15.8	1690	9.0	4.2	17724	898280	241937	3834	156831	85106
1/22/90 10:30	100.08	4.80	15.5	1822	9.0	4.2	18863	917144	247017	3930	160760	86257
1/25/90 6:00	102.89	Blowers off for Shutdown Test 3A			9.0	4.2	17091	934235	251621	3526	164287	87334
1/26/90 15:00	102.89	Blowers on										
2/1/90 16:30	108.95	7.00	12.3	1934	5.5	2.0	17085	951320	257491	2797	167084	90407
2/4/90 16:30	111.95	8.00	10.8	2247	5.5	2.0	8454	959774	262338	1300	168384	93955
2/9/90 8:00	116.60	8.00	10.2	2337	5.5	2.0	13093	972867	262025	1830	170214	91812
2/12/90 15:00	119.89	7.80	10.6	1679	5.5	2.0	9276	982143	263214	1284	171498	91717
2/21/90 8:00	128.60	9.40	6.9	1886	3.7	1.1	13625	995769	266866	1587	173085	93781
2/24/90 10:30	131.70	8.50	8.9	2543	3.7	1.1	4857	1000625	268168	511	173596	94572
2/28/90 10:00	135.68	7.30	10.2	1852	3.7	1.1	6226	1006851	269836	791	174387	95449
3/3/90 10:35	138.71	4.80	15.3	1489	7.5	3.1	13429	1020280	273435	2279	176666	96769
3/7/90 11:49	142.76	4.10	15.6	1550	9.0	4.0	23560	1043840	279749	4845	181511	98238
3/8/90 9:00	143.64	4.50	15.3	1368	9.0	4.0	5133	1048972	281125	1056	182567	98558
3/8/90 11:35	143.75	Blowers off for Shutdown Test 4			9.0	4.0	626	1049598	281292	127	182694	98598
3/10/90 18:05	143.75	Blowers on										
3/10/90 18:40	143.77	8.80	4.9	2058	9.0	4.0	141	1049740	281330	9	182704	98627
3/11/90 18:25	144.76	6.80	12.5	1308	9.0	4.0	5755	1055494	282872	666	183370	99502
3/12/90 8:45	145.36	6.40	12.8	1937	9.0	4.0	3473	1058967	283803	585	183955	99848
3/13/90 8:00	146.33	6.00	13.4	2119	9.0	4.0	5633	1064601	285313	982	184937	100376
3/25/90 8:30	158.35	4.60	14.5	1471	9.0	4.0	69904	1134504	304047	12980	197918	106130
3/30/90 8:30	163.35	5.90	13.2	1359	9.0	4.0	29076	1163580	311839	5360	203278	108562
4/9/90 10:00	173.41	4.70	15	1359	9.0	4.0	58515	1222096	327522	10983	214261	113261
4/13/90 9:30	177.39	4.60	15.2	1599	9.0	4.0	23140	1245235	333723	4651	218912	114811
4/24/90 9:30	188.39	6.10	12.7	1599	9.0	4.0	63967	1309202	350866	11878	230790	120077
4/24/90 13:00	188.54	Blowers off for Shutdown Test 5			9.0	4.0	848	1310051	351094	143	230933	120160
5/2/90 9:30	196.39	Blowers on										

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Hexane Eq. CO ₂ (g)	Hexane Eq. O ₂ (g)	Hexane Eq. THC (g)	% CO ₂ Basis	% Biol Deg	% Biol Deg O ₂ Basis	Cum Hex Eq CO ₂ (g)	Cum Hex Eq O ₂ (g)	Cum Hex Eq THC (g)	Cum Hex Eq O ₂ &THC (g)	Cum Hex Eq CO ₂ &THC (g)	Cum % Bio Deg CO ₂ Basis	Cum % Biol Deg O ₂ Basis
10/4/89 10:05													
10/5/89 8:07	730	615	971	42.9	38.8		730	615	971	1587	1702	42.9	38.8
10/10/89 14:00	2071	1704	3553	36.8	32.4		2801	2319	4524	6844	7326	38.2	33.9
10/12/89 12:00	703	501	578	54.9	46.4		3504	2820	5103	7923	8607	40.7	35.6
10/16/89 12:00	3213	2308	2122	60.2	52.1		6717	5128	7225	12353	13942	48.2	41.5
10/20/89 12:00	2033	1493	2573	44.1	36.7		8750	6622	9799	16420	18548	47.2	40.3
10/24/89 9:35	1873	1437	2688	41.1	34.8		10623	8059	12487	20545	23109	46.0	39.2
10/24/89 10:13	11	10	17	38.7	36.7		10633	8069	12504	20572	23137	46.0	39.2
10/26/89 12:00													
10/27/89 11:11	636	527	531	54.5	49.8		11269	8596	13035	21631	24304	46.4	39.7
10/31/89 12:00	2240	1913	1777	55.8	51.8		13509	10509	14812	25321	28321	47.7	41.5
11/3/89 12:00	1649	1320	1044	61.2	55.8		15159	11829	15855	27685	31014	48.9	42.7
11/6/89 12:00	1437	1107	970	59.7	53.3		16595	12937	16825	29762	33421	49.7	43.5
11/9/89 12:00	1224	927	890	57.9	51.0		17820	13863	17716	31579	35535	50.1	43.9
11/14/89 15:00	2019	1257	1386	59.3	47.6		19839	15121	19102	34223	38941	50.9	44.2
11/16/89 15:00	649	410	461	58.5	47.1		20488	15531	19563	35094	40050	51.2	44.3
11/21/89 15:00	1255	957	970	56.4	49.6		21743	16488	20533	37021	42276	51.4	44.5
11/24/89 14:00	557	493	308	64.4	61.6		22300	16981	20841	37822	43141	51.7	44.9
11/28/89 12:43	703	562	428	62.2	56.8		23003	17544	21269	38813	44272	52.0	45.2
11/28/89 15:11	16	14	13	55.0	51.2		23019	17557	21282	38839	44301	52.0	45.2
12/1/89 14:00													
12/2/89 17:58	355	269	85	80.7	76.0		23373	17827	21367	39194	44740	52.2	45.5
12/7/89 12:00	1034	783	321	76.3	70.9		24407	18609	21688	40298	46096	52.9	46.2
12/11/89 12:00	548	381	217	71.6	63.7		24955	18990	21906	40896	46861	53.3	46.4
12/13/89 14:30	305	236	102	74.9	69.9		25260	19227	22008	41235	47268	53.4	46.6
12/15/89 11:30	281	188	86	76.5	68.6		25541	19415	22094	41510	47636	53.6	46.8
12/22/89 12:00	936	749	307	75.3	70.9		26478	20164	22401	42566	48879	54.2	47.4
12/27/89 12:00	474	403	183	72.1	68.7		26951	20567	22585	43152	49536	54.4	47.7
12/29/89 12:00	160	103	55	74.5	65.3		27112	20670	22639	43310	49751	54.5	47.7

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Hexane Eq. CO ₂ (g/day)	Hexane Eq. O ₂ (g/day)	Hexane Eq. THC (g/day)	Hexane Eq. CO ₂ (g/day)	Tot Hexane Eq. O ₂ &THC (g/day)	Hexane Eq. CO ₂ (mg/(kg day))	Hexane Eq. O ₂ (mg/(kg day))	Hexane Eq. THC (mg/(kg day))	Tot Hexane Eq. O ₂ &THC (mg/(kg day))
10/4/89 10:05									
10/5/89 8:07	795.5	669.9	1058.2	1728.1	1853.8	27.7	23.3	36.8	60.1
10/10/89 14:00	394.9	325.0	677.4	1002.3	1072.2	13.7	11.3	23.5	34.8
10/12/89 12:00	366.6	261.3	301.7	562.9	668.3	12.7	9.1	10.5	19.6
10/16/89 12:00	803.3	577.0	530.6	1107.6	1333.9	27.9	20.1	18.4	38.5
10/20/89 12:00	508.2	373.3	643.3	1016.6	1151.5	17.7	13.0	22.4	35.3
10/24/89 9:35	480.3	368.6	689.4	1058.0	1169.6	16.7	12.8	24.0	36.8
10/24/89 10:13	406.6	374.1	644.3	1018.4	1051.0	14.1	13.0	22.4	35.4
10/26/89 12:00									
10/27/89 11:11	658.1	545.8	549.9	1095.7	1208.0	22.9	19.0	19.1	38.1
10/31/89 12:00	555.4	474.3	440.5	914.7	995.9	19.3	16.5	15.3	31.8
11/3/89 12:00	549.7	440.0	347.9	787.9	897.6	19.1	15.3	12.1	27.4
11/6/89 12:00	478.9	369.0	323.3	692.4	802.3	16.6	12.8	11.2	24.1
11/9/89 12:00	408.0	308.9	296.8	605.6	704.8	14.2	10.7	10.3	21.1
11/14/89 15:00	394.0	245.4	270.5	515.9	664.5	13.7	8.5	9.4	17.9
11/16/89 15:00	324.4	205.2	230.5	435.7	554.9	11.3	7.1	8.0	15.1
11/21/89 15:00	251.0	191.3	194.1	385.4	445.1	8.7	6.7	6.7	13.4
11/24/89 14:00	188.3	166.8	104.0	270.8	292.3	6.5	5.8	3.6	9.4
11/28/89 12:43	178.1	142.5	108.5	251.0	286.6	6.2	5.0	3.8	8.7
11/28/89 15:11	154.3	132.7	126.2	258.9	280.5	5.4	4.6	4.4	9.0
12/1/89 14:00									
12/2/89 17:58	304.4	231.2	73.0	304.1	377.4	10.6	8.0	2.5	10.6
12/7/89 12:00	217.6	164.7	67.6	232.3	285.2	7.6	5.7	2.4	8.1
12/11/89 12:00	137.0	95.3	54.4	149.7	191.4	4.8	3.3	1.9	5.2
12/13/89 14:30	144.9	112.4	48.5	160.9	193.4	5.0	3.9	1.7	5.6
12/15/89 11:30	149.9	100.5	46.1	146.6	196.0	5.2	3.5	1.6	5.1
12/22/89 12:00	133.4	106.7	43.7	150.4	177.1	4.6	3.7	1.5	5.2
12/27/89 12:00	94.8	80.5	36.7	117.2	131.4	3.3	2.8	1.3	4.1
12/29/89 12:00	80.0	51.6	27.4	79.0	107.4	2.8	1.8	1.0	2.7

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Tot Hexane Eq. CO ₂ & THC (mg/(kg day))	Ambient Mean Temp °C	Soil Mean Temp °C
10/4/89 10:05		25.0	
10/5/89 8:07	64.4	23.6	
10/10/89 14:00	37.3	19.4	
10/12/89 12:00	23.2	23.3	
10/16/89 12:00	46.4	26.1	
10/20/89 12:00	40.0	9.2	
10/24/89 9:35	40.7	19.2	
10/24/89 10:13	36.5	19.2	
10/26/89 12:00			
10/27/89 11:11	42.0	20.0	
10/31/89 12:00	34.6	20.6	
11/3/89 12:00	31.2	15.6	
11/6/89 12:00	27.9	18.3	
11/9/89 12:00	24.5	17.8	
11/14/89 15:00	23.1	20.0	
11/16/89 15:00	19.3	15.0	
11/21/89 15:00	15.5	20.6	
11/24/89 14:00	10.2	11.1	
11/28/89 12:43	10.0	20.0	
11/28/89 15:11	9.8	20.0	
12/1/89 14:00			
12/2/89 17:58	13.1	12.8	
12/7/89 12:00	9.9	20.6	
12/11/89 12:00	6.7	13.9	
12/13/89 14:30	6.7	8.3	
12/15/89 11:30	6.8	13.9	
12/22/89 12:00	6.2	0.6	
12/27/89 12:00	4.6	12.8	
12/29/89 12:00	3.7	13.9	

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Tot Hexane Eq.		Ambient Mean		Soil Mean	
	CO2&THC (mg/(kg day))	Temp °C	Temp °C	Temp °C	Temp °C	
1/2/90 12:00	2.9	8.9				
1/3/90 14:28	3.4	15.0				
1/3/90 15:33	3.6	15.0			17.7	
1/8/90 13:30		13.3				
1/10/90 11:43	9.6	14.4				
1/12/90 8:56	5.5	11.1				
1/16/90 10:00	2.7	16.7				
1/19/90 8:00	5.2	18.3				
1/22/90 10:30	6.1	11.1				
1/25/90 6:00	6.5	16.1			18.5	
1/26/90 15:00		8.9				
2/1/90 16:30	4.4	16.7				
2/4/90 16:30	4.8	15.0				
2/9/90 8:00	5.0	20.0				
2/12/90 15:00	4.9	15.0				
2/21/90 8:00	2.9	16.7				
2/24/90 10:30	3.2	11.7				
2/28/90 10:00	2.8	15.0				
3/3/90 10:35	5.9	13.9				
3/7/90 11:49	5.7	21.7				
3/8/90 9:00	5.5	20.0				
3/8/90 11:35	5.7	20.0				
3/10/90 18:05		20.6				
3/10/90 18:40	10.3	20.6				
3/11/90 18:25	9.3	21.7				
3/12/90 8:45	7.8	21.1			22.0	
3/13/90 8:00	7.6	21.1				
3/25/90 8:30	6.5	20.0				
3/30/90 8:30	6.2	22.2				
4/9/90 10:00	6.4	18.9				
4/13/90 9:30	5.7	17.2				
4/24/90 9:30	6.2	22.2				
4/24/90 13:00	7.1	22.2			26.0	
5/2/90 9:30						

Table 17. Operational data for Treatment Plot V2

Date m/d/y h:mm	Venting Time (days)	O ₂ +CO ₂			Average Rotameter Flow (LPM)	Int Vol Air (L)	Cumul Vol Air (L)	Cumul O ₂ Prov (g)	Inter O ₂ Disch (g)	Cumul O ₂ Disch (g)	Cumul O ₂ Used (g)
		CO ₂ (%)	O ₂ (%)	THC (ppm)							
10/4/89 10:40	0.00	16.17	6	6414	22.2						
10/5/89 12:00	1.08	7.00	11	10528	18.0	15970	15970	3996	1807	1807	2189
10/10/89 14:00	6.16	10.42	6.5	23623	16.9	35172	51142	12798	4097	5904	6895
10/12/89 12:00	8.08	10.77	7.5	10262	18.3	8294	59435	14874	773	6676	8197
10/16/89 12:00	12.08	6.90	12.3	24233	19.2	49272	108707	27204	6493	13169	14035
10/20/89 12:00	16.08	4.65	14.9	14298	19.6	43804	152511	38166	7930	21099	17067
10/24/89 8:57	19.95	5.10	13.5	11583	18.6	24726	177238	44354	4674	25773	18581
10/24/89 10:13	20.01	Blowers off for Shutdown Test 1									
10/26/89 12:00	20.01	Blowers on									
10/27/89 10:48	20.96	8.21	9	13869	17.2	13814	191389	47895	1655	27489	20406
10/31/89 12:00	25.01	6.11	11.2	8539	17.3	57977	249366	64170	7795	35283	28887
11/3/89 12:00	28.01	8.68	10	13957	18.7	42890	292256	75597	6052	41335	34262
11/6/89 12:00	31.01	7.10	12.5	12425	19.6	43284	335540	85898	6482	47817	38082
11/9/89 12:00	34.01	8.77	10.7	8185	19.5	43341	378881	98509	6692	54509	44000
11/14/89 15:00	39.13	4.79	15.8	7136	20.6	73078	451959	116907	12889	67398	49509
11/16/89 15:00	41.13	5.52	14	4058	19.5	28969	480928	128247	5746	73143	55104
11/21/89 15:00	46.13	5.32	13.2	5273	18.5	73276	554204	144093	13265	86409	57684
11/24/89 14:00	49.09	4.90	13.8	3952	18.7	43299	597503	162521	7781	94190	68331
11/28/89 13:50	53.08	5.47	13	6354	18.5	58367	655870	171401	10411	104600	66800
11/28/89 15:11	53.14	Blowers off for Shutdown Test 2									
12/1/89 14:00	53.14	Blowers on									
12/2/89 17:46	54.30	6.84	13	4142	19.8	16889	673572	181415	2923	107664	73752
12/7/89 12:00	59.05	4.90	15	3517	19.9	69393	742965	200105	12932	120596	79510
12/11/89 12:00	63.05	3.40	16.7	2893	20.1	57411	800376	213434	12113	132708	80725
12/13/89 14:30	65.16	2.90	17.1	2813	20.0	29925	830301	226949	6732	139440	87509
12/15/89 11:30	67.03	3.30	17.3	2090	20.6	26982	857283	230895	6178	145618	85277
12/22/89 12:00	74.05	2.60	16.8	2090	19.4	100242	957526	268107	22750	168368	99739
12/27/89 12:00	79.05	2.60	17.9	2267	20.5	71670	1029196	285430	16552	184920	100510
12/29/89 12:00	81.05	2.30	17.7	1518	20.0	28969	1058165	282177	6864	191784	90393

Table 17 Cont. Operational data for Treatment Plot V2.

Date	Venting	O2+C02	Average	Avg Air	Int Vol	Cumul	Cumul	Inter O2	Cumul O2	Cumul O2
m/d/y h:m	Time (days)	CO2 (%)	Rotameter	Flow (LPM)	Air (L)	Vol Air (L)	O2 Prov (g)	Disch (g)	Disch (g)	Used (g)
1/2/90 12:00	85.05	1.90	13.3	10.0	57788	1115953	300563	13808	205592	94971
1/3/90 14:32	86.16	2.40	13.3	10.0	15868	1131821	309364	3855	209447	99918
1/3/90 15:33	86.20	Blowers off for Shutdown Test 3		9.6	588	1132409	309525	143	209590	99935
1/8/90 13:30	86.20	Blowers on								
1/12/90 9:40	90.04	3.00	13.8	8.0	44480	1176889	316975	10361	219951	97024
1/16/90 10:00	94.06	3.60	9.0	4.3	24820	1201709	323660	5567	225518	98142
1/19/90 8:00	96.97	4.20	9.0	4.3	18212	1219922	328566	3745	229264	99302
1/22/90 10:30	100.08	5.20	9.0	4.3	19414	1239336	333795	3889	233153	100641
1/25/90 6:00	102.89	Blowers off for Shutdown Test 3A		4.3	17505	1256841	338509	3588	236742	101768
1/26/90 15:00	102.89	Blowers on								
2/1/90 16:30	108.95	6.80	5.5	2.1	17954	1274795	345045	2916	239657	105387
2/4/90 16:30	111.95	6.90	5.5	2.1	8885	1283680	350872	1484	241141	109731
2/9/90 8:00	116.60	8.60	5.5	2.1	13759	1297439	345984	1905	243046	102937
2/12/90 15:00	119.89	9.10	5.5	2.1	9748	1307187	350326	1025	244071	106255
2/21/90 8:00	128.60	6.70	3.7	1.0	13022	1320209	353816	1707	245779	108037
2/24/90 10:36	131.70	6.00	3.7	1.0	4642	1324851	355060	766	246545	108515
2/28/90 10:00	135.68	6.10	3.7	1.0	5950	1330801	356655	990	247535	109120
3/3/90 10:35	138.71	4.70	7.5	3.3	14393	1345194	360512	2606	250141	110372
3/7/90 11:53	142.76	4.90	9.0	4.3	25233	1370428	367275	4937	255078	112197
3/8/90 9:25	143.66	4.70	9.0	4.3	5584	1376012	363771	1085	256163	112608
3/8/90 11:35	143.75	Blowers off for Shutdown Test 4		4.3	562	1376574	368922	112	256275	112646
3/10/90 18:05	143.75	Blowers on								
3/10/90 18:45	143.78	9.80	9.0	4.3	173	1376747	368968	7	256283	112686
3/11/90 18:30	144.77	7.70	9.0	4.3	6159	1382906	370619	541	256824	113795
3/12/90 8:55	145.37	7.20	9.0	4.3	3739	1386645	371621	518	257341	114279
3/13/90 8:10	146.33	6.80	9.0	4.3	6029	1392674	373237	879	258220	115017
3/25/90 8:30	158.35	4.60	9.0	4.3	74774	1467448	393276	12939	271159	122117
3/30/90 8:30	163.35	5.90	9.0	4.3	31120	1498568	401616	5654	276814	124803
4/9/90 10:00	173.41	5.00	9.0	4.3	62629	1561197	418401	11338	288152	130249
4/13/90 9:30	177.39	4.90	9.0	4.3	24766	1585964	425038	4698	292849	132189
4/24/90 9:30	188.39	7.50	9.0	4.3	68464	1654428	443387	11209	304059	139328
4/24/90 13:00	188.54	Blowers off for Shutdown Test 5		4.3	908	1655335	443630	130	304189	139441
5/2/90 9:30	196.39	Blowers on								

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Hexane Eq. CO2 (g)	Hexane Eq. O2 (g)	Hexane Eq. THC (g)	% CO2 Basis	% O2 Basis	% Biol Deg	Cum Hex Eq CO2 (g)	Cum Hex Eq O2 (g)	Cum Hex Eq THC (g)	Cum Hex Eq O2&THC (g)	Cum Hex Eq CO2&THC (g)	Cum % Bio Deg CO2 Basis	Cum % Biol Deg O2 Basis
10/4/89 10:05													
10/5/89 8:07	951	619	484	66.3	56.1		951	619	484	1103	1435	66.3	56.1
10/10/89 14:00	1491	1331	2148	41.0	38.3		2442	1950	2632	4583	5074	48.1	42.6
10/12/89 12:00	445	369	503	46.9	42.3		2886	2319	3135	5454	6021	47.9	42.5
10/16/89 12:00	2125	1651	3040	41.1	35.2		5011	3970	6175	10146	11186	44.8	39.1
10/20/89 12:00	1090	858	3019	26.5	22.1		6102	4828	9194	14022	15296	39.9	34.4
10/24/89 9:35	483	428	1145	29.7	27.2		6584	5256	10339	15595	16923	38.9	33.7
10/24/89 10:13	7	7	14	33.5	32.5		6592	5263	10353	15616	16944	38.9	33.7
10/26/89 12:00													
10/27/89 11:11	544	510	685	44.3	42.7		7136	5773	11038	16811	18174	39.3	34.3
10/31/89 12:00	2024	2009	2324	46.6	46.4		9160	7781	13362	21143	22522	40.7	36.8
11/3/89 12:00	1583	1421	1726	47.8	45.2		10743	9203	15088	24290	25831	41.6	37.9
11/6/89 12:00	1648	1296	2043	44.7	38.8		12391	10499	17130	27629	29521	42.0	38.0
11/9/89 12:00	1663	1289	1598	51.0	44.7		14054	11788	18728	30516	32782	42.9	38.6
11/14/89 15:00	2345	1720	2003	53.9	46.2		16399	13508	20731	34239	37130	44.2	39.5
11/16/89 15:00	735	556	580	55.9	49.0		17134	14064	21311	35375	38445	44.6	39.8
11/21/89 15:00	1932	1628	1223	61.2	57.1		19066	15692	22534	38226	41600	45.8	41.1
11/24/89 14:00	1139	1125	714	61.5	61.2		20205	16817	23248	40065	43453	46.5	42.0
11/28/89 12:43	1491	1363	1076	58.1	55.9		21697	18180	24324	42504	46021	47.1	42.8
11/28/89 15:11	22	20	18	54.5	52.2		21719	18200	24343	42543	46061	47.2	42.8
12/1/89 14:00													
12/2/89 17:58	618	458	250	71.2	64.7		22337	18658	24593	43251	46930	47.6	43.1
12/7/89 12:00	2139	1620	951	69.2	63.0		24475	20278	25543	45821	50019	48.9	44.3
12/11/89 12:00	1249	897	658	65.5	57.7		25725	21175	26202	47377	51927	49.5	44.7
12/13/89 14:30	473	406	305	60.8	57.0		26198	21581	26507	48088	52705	49.7	44.9
12/15/89 11:30	434	305	237	64.7	56.3		26632	21886	26744	48629	53376	49.9	45.0
12/22/89 12:00	1644	1491	749	68.7	66.5		28276	23377	27493	50870	55769	50.7	46.0
12/27/89 12:00	940	931	559	62.7	62.5		29216	24308	28052	52360	57268	51.0	46.4
12/29/89 12:00	337	240	196	63.2	55.0		29553	24548	28248	52796	57800	51.1	46.5

Table 17 Cont. Operational data for Treatment Plot V2.

Date	Hexane Eq. CO2 (g/day)	Hexane Eq. O2 (g/day)	Hexane Eq. THC (g/day)	Hexane Eq. THC (g/day)	Tot Hexane Eq. O2&THC (g/day)	Hexane Eq. CO2 (mg/(kg day))	Hexane Eq. THC (mg/(kg day))	Hexane Eq. THC (mg/(kg day))	Tot Hexane Eq. O2&THC (mg/(kg day))
10/4/89 10:05									
10/5/89 8:07	880.6	573.6	448.1	1021.7	1328.7	30.6	19.9	15.6	35.5
10/10/89 14:00	293.3	261.8	422.7	684.5	715.5	10.2	9.1	14.7	23.8
10/12/89 12:00	232.0	192.3	262.3	454.5	494.2	8.1	6.7	9.1	15.8
10/16/89 12:00	531.2	412.8	760.0	1172.9	1291.2	18.5	14.4	26.4	40.8
10/20/89 12:00	272.6	214.4	754.7	969.2	1027.4	9.5	7.5	26.2	33.7
10/24/89 9:35	124.7	110.6	295.5	406.1	420.2	4.3	3.8	10.3	14.1
10/24/89 10:13	133.2	127.4	264.5	392.0	397.8	4.6	4.4	9.2	13.6
10/26/89 12:00									
10/27/89 11:11	572.7	536.6	721.5	1258.1	1294.2	19.9	18.7	25.1	43.7
10/31/89 12:00	499.8	495.9	573.8	1069.7	1073.6	17.4	17.2	19.9	37.2
11/3/89 12:00	527.7	473.8	575.3	1049.0	1103.0	18.3	16.5	20.0	36.5
11/6/89 12:00	549.4	431.9	680.9	1112.8	1230.2	19.1	15.0	23.7	38.7
11/9/89 12:00	554.4	429.8	532.6	962.4	1086.9	19.3	14.9	18.5	33.5
11/14/89 15:00	457.6	335.6	390.8	726.4	848.4	15.9	11.7	13.6	25.3
11/16/89 15:00	367.5	278.2	290.0	568.2	657.5	12.8	9.7	10.1	19.8
11/21/89 15:00	386.4	325.6	244.6	570.2	631.0	13.4	11.3	8.5	19.8
11/24/89 14:00	385.0	380.3	241.5	621.8	626.5	13.4	13.2	8.4	21.6
11/28/89 12:43	373.5	341.3	269.4	610.7	642.9	13.0	11.9	9.4	21.2
11/28/89 15:11	393.7	359.1	328.4	687.4	722.1	13.7	12.5	11.4	23.9
12/1/89 14:00									
12/2/89 17:58	534.3	395.8	216.3	612.1	750.6	18.6	13.8	7.5	21.3
12/7/89 12:00	449.3	340.4	199.7	540.1	649.0	15.6	11.8	6.9	18.8
12/11/89 12:00	312.4	224.3	164.6	388.9	476.9	10.9	7.8	5.7	13.5
12/13/89 14:30	224.7	192.8	145.2	338.0	369.9	7.8	6.7	5.0	11.7
12/15/89 11:30	237.7	162.6	126.2	288.8	357.9	8.1	5.7	4.4	10.0
12/22/89 12:00	234.1	212.4	106.7	319.1	340.9	8.1	7.4	3.7	11.1
12/27/89 12:00	188.0	186.2	111.7	297.9	299.7	6.5	6.5	3.9	10.4
12/29/89 12:00	168.4	120.0	98.1	218.1	266.5	5.9	4.2	3.4	7.6

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Tot Hexane Eq. CO2&THC (mg/(kg day))	Ambient Mean		Soil Mean	
		Temp °C	Temp °C	Temp °C	Temp °C
10/4/89 10:05			25.0		
10/5/89 8:07	46.2		23.6		
10/10/89 14:00	24.9		19.4		
10/12/89 12:00	17.2		23.3		
10/16/89 12:00	44.9		26.1		
10/20/89 12:00	35.7		9.2		
10/24/89 9:35	14.6		19.2		
10/24/89 10:13	13.8		19.2		
10/26/89 12:00					
10/27/89 11:11	45.0		20.0		
10/31/89 12:00	37.3		20.6		
11/3/89 12:00	38.3		15.6		
11/6/89 12:00	42.8		18.3		
11/9/89 12:00	37.8		17.8		
11/14/89 15:00	29.5		20.0		
11/16/89 15:00	22.9		15.0		
11/21/89 15:00	21.9		20.6		
11/24/89 14:00	21.8		11.1		
11/28/89 12:43	22.4		20.0		
11/28/89 15:11	25.1		20.0		
12/1/89 14:00					
12/2/89 17:58	26.1		12.8		
12/7/89 12:00	22.6		20.6		
12/11/89 12:00	16.6		13.9		
12/13/89 14:30	12.9		8.3		
12/15/89 11:30	12.4		13.9		
12/22/89 12:00	11.8		0.6		
12/27/89 12:00	10.4		12.8		
12/29/89 12:00	9.3		13.9		

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Tot Hexane Eq.		Ambient Mean		Soil Mean	
	CO2&THC (mg/kg day))	Temp °C	Temp °C	Temp °C		
1/2/90 12:00	7.6	8.9				
1/3/90 14:28	8.6	15.0				
1/3/90 15:33	9.4	15.0		17.7		
1/8/90 13:30		13.3				
1/10/90 11:43	8.8	14.4				
1/12/90 8:56	4.9	11.1				
1/16/90 10:00	5.8	16.7				
1/19/90 8:00	6.9	18.3				
1/22/90 10:30	6.7	11.1				
1/25/90 6:00		16.1		18.5		
1/26/90 15:00	4.2	8.9				
2/1/90 16:30	4.7	16.7				
2/4/90 16:30	5.1	15.0				
2/9/90 8:00	6.0	20.0				
2/12/90 15:00	2.8	15.0				
2/21/90 8:00	2.3	16.7				
2/24/90 10:30	2.0	11.7				
2/28/90 10:00	5.9	15.0				
3/3/90 10:35	6.9	13.9				
3/7/90 11:49	7.0	21.7				
3/8/90 9:00	7.0	20.0				
3/8/90 11:35		20.0				
3/10/90 18:05	13.6	20.6				
3/10/90 18:40	12.0	20.6				
3/11/90 18:25	10.2	21.7				
3/12/90 8:45	9.7	21.1		22.0		
3/13/90 8:00	7.9	21.1				
3/25/90 8:30	7.2	20.0				
3/30/90 8:30	7.6	22.2				
4/9/90 10:00	6.9	18.9				
4/13/90 9:30	8.2	17.2				
4/24/90 9:30	9.9	22.2				
5/2/90 9:30						

Table 19. Operational data for Off-Gas Treatment Plot V3 inlet.

Date	Venting				O2+CO2	Avg Air	Int Vol	Cumul	Hexane Eq	Cum Hex Eq
m/d/y h:mm	Time (days)	CO2 (%)	O2 (%)	THC (µL/L)	(%)	Flow (L/min)	Air (L)	Vol Air (L)	THC (g)	THC (g)
10/4/89	11:25	0.06	13.8	4.6	12048	18.4				
10/10/89	14:00	6.16	3.6	15.5	7139	19.1	1.26	11082	11082	380.3
10/12/89	12:00	8.08	2.9	17.5	2425	20.4	0.54	1497	12579	25.6
10/16/89	12:00	12.08	4.3	15.2	8410	19.5	1.43	8238	20818	159.7
10/20/89	12:00	16.08	3.7	16.5	5717	20.2	1.43	8261	29079	208.8
10/24/89	7:28	19.89	2.4	18.0	150	20.4	1.89	10363	39442	108.8
10/24/89	10:13	20.01	Blowers off for Shutdown Test 1				1.98	327	39769	0.2
10/26/89	12:00	20.01	Blowers on							
10/27/89	10:15	20.93	4.6	14.5	4528	19.1	1.73	2309	42078	37.4
10/31/89	12:00	25.01	3.9	16.0	3497	19.8	1.73	10118	52196	145.2
11/3/89	12:00	28.01	2.7	17.5	1341	20.2	1.72	7443	59639	64.4
11/6/89	12:00	31.01	1.7	19.0	250	20.7	1.63	7051	66690	20.1
11/9/89	12:00	34.01	2.6	18.0	1400	20.6	1.58	6835	73525	20.2
11/14/89	15:00	39.13	2.6	17.6	3511	20.2	1.37	10119	83644	88.9
11/16/89	15:00	41.13	2.7	17.8	1181	20.5	1.24	3562	87206	29.9
11/24/89	14:00	49.09	2.4	18.4	1360	20.8	0.95	10880	98086	49.4
11/28/89	14:39	53.12	2.2	18.1	1622	20.3	0.92	5347	103433	28.5
11/28/89	15:11	53.14	Blowers off for Shutdown Test 2				0.83	27	103460	0.2
12/1/89	14:00	53.14	Blowers on							
12/2/89	16:46	54.25	9.2	9.6	2558	18.8	4.18	6712	110172	61.4
12/7/89	12:00	59.05	5.0	14.7	2335	19.7	4.16	28768	138940	251.7
12/11/89	12:00	63.05	4.5	15.5	2545	20.0	4.04	23274	162215	203.1
12/13/89	14:30	65.16	4.4	16.0	2178	20.4	4.27	12946	175161	109.4
12/15/89	11:30	67.03	4.5	14.5	1741	19.0	4.31	11638	186799	81.6
12/22/89	12:00	74.05	3.4	17.0	1741	20.4	4.14	41879	228677	260.9
12/27/89	12:00	79.05	1.9	18.8	1400	20.7	4.01	28894	257572	162.3
12/29/89	12:00	81.05	1.3	19.4	530	20.7	3.97	11426	268997	39.4
1/2/90	12:00	85.05	3.0	17.3	1450	20.3	3.28	18889	287886	66.9
1/3/90	14:20	86.15	2.8	18.0	2188	20.8	3.33	5260	293146	34.2
1/3/90	15:33	86.20	Blowers off for Shutdown Test 3				3.33	243	293389	1.9
1/8/90	13:30	86.20	Blowers on							
1/10/90	12:03	88.14	3.0	17.6	2188	20.6	8.08	22563	315952	176.6
1/12/90	10:05	90.06	3.0	17.6	1495	20.6	8.08	22313	338264	147.0
1/16/90	10:00	94.06	3.3	17.0	1964	20.3	4.22	24286	362550	150.2
1/19/90	8:00	96.97	4.2	15.9	1485	20.1	4.22	17724	380274	109.3
1/22/90	10:30	100.08	4.9	15.5	1788	20.4	4.22	18863	399138	110.4
1/24/90	14:00	102.22	4.5	15.2	2296	19.7	4.22	13040	412178	95.2
1/25/90	6:00	102.89	Blowers off for Shutdown Test 3A				4.22	4051	416229	33.3
1/26/90	15:00	102.89	Blowers on							
2/1/90	16:30	108.95	6.8	12.1	1710	18.9	1.96	17085	433314	104.5
2/4/90	16:30	111.95	8.0	10.5	1739	18.5	1.96	8454	441768	52.1
2/12/90	15:00	119.89	7.9	10.8	2228	18.7	1.96	22369	464137	158.7
2/21/90	8:00	128.60	9.6	6.5	1828	16.1	1.09	13669	477806	99.2
2/24/90	10:30	131.70	8.5	9.2	1961	17.7	1.09	4857	482663	32.9
2/28/90	10:00	135.68	7.3	10.3	2374	17.6	1.09	6226	488889	48.3
3/3/90	11:00	138.72	4.7	15.5	1133	20.2	3.08	13490	502379	84.6
3/3/90	11:06	138.73	Blowers off (V3&V4) for Shutdown Test				3.08	19	502397	0.1
3/6/90	12:30	138.73	Blowers on (V3 & V4) Direct JP-4 injection							
3/7/90	11:05	139.67	0.2	20.3	10668	20.5	1.20	1626	504023	62.1
3/7/90	13:54	139.79	0.5	20.1	10668	20.6	1.20	203	504226	7.7
3/8/90	11:45	140.70	0.6	20.2	7316	20.8	1.20	1573	505799	50.6
3/8/90	15:26	140.85	0.5	20.5	8230	21.0	1.20	265	506065	7.4
3/8/90	18:02	140.96	0.6	20.3	7620	20.9	1.20	187	506252	5.3
3/8/90	21:57	141.12	0.4	20.6	7620	21.0	1.20	282	506534	7.7
3/8/90	23:20	141.18	0.7	20.3	7163	21.0	1.20	100	506633	2.6
3/9/90	8:50	141.58	0.6	20.4	7925	21.0	1.20	684	507317	18.5
3/9/90	9:20	141.60	Blowers off (V3) for Shutdown Test 4a				1.20	36	507353	1.0
3/12/90	9:15	141.60	Blowers on (V3)							
3/13/90	7:53	142.54	0.0	20.9	0	20.9				
3/25/90	8:30	154.57	0.0	20.9	0	20.9				
3/30/90	8:30	159.57	0.0	20.9	0	20.9				
4/9/90	10:00	169.63	0.0	20.9	0	20.9				
4/13/90	9:30	173.61	0.0	20.9	0	20.9				
4/24/90	9:30	184.61	0.0	20.9	0	20.9				
4/24/90	13:00	184.76	Blowers off for Shutdown Test 5							
5/2/90	9:30	184.76	Blowers on							

Table 20 Cont. Calculated operational data for Off-Gas Treatment Plot V3.

Date	mv/dy h:mm	Calc. O ₂ /O ₂ = a	Calc. Q ₂ (L/min)	Int Vol Air (L)	Cumulative Vol Air (L)	Hexane Eq. THC (g)	Calc K %O ₂ /min	% THC Biodegraded	Air Flow Void Vol/day	Cum % THC Biodegraded	Biodegradation (mg/kg day)	Biodegradation (g/(m ³ day))	loading rate g/(m ³ day)
2/1/90	16:30	.71	0.96	8337	210188	51.0	.00059	37	1.85	33	0.66	0.95	2.53
2/4/90	16:30	.79	1.06	4570	214758	28.2	.00054	37	1.85	33	0.72	1.04	2.83
2/12/90	15:00	.84	1.13	12884	227642	91.4	.00206	63	1.85	35	1.51	2.18	3.47
2/21/90	8:00	.97	0.68	8483	236125	61.5	.00118	92	0.97	37	1.36	1.96	2.13
2/24/90	10:30	.66	0.50	2214	238338	15.0	.00092	98	1.04	37	0.99	1.43	1.46
2/28/90	10:00	.68	0.51	2937	241275	22.8	.00113	97	1.05	38	1.16	1.68	1.72
3/3/90	11:00	.96	2.92	12773	254048	80.1	.00205	87	4.19	40	4.77	6.88	7.93
3/3/90	11:06	.96	2.91	17	254066	0.1			4.19	40			
3/6/90	12:30												
3/7/90	11:05	.31	0.22	294	254359	11.2	.00077	34	0.97	40	0.85	1.22	3.59
3/7/90	13:54	.30	0.21	36	254395	1.4	.00070	31	0.97	40	0.75	1.08	3.52
3/8/90	11:45	.42	0.30	389	254784	12.5	.00128	55	0.97	41	1.58	2.28	4.14
3/8/90	15:26	.39	0.28	61	254845	1.7	.00146	66	0.97	41	1.52	2.19	3.33
3/8/90	18:02	.40	0.28	43	254889	1.2	.00137	63	0.97	41	1.48	2.14	3.43
3/8/90	21:57	.41	0.29	68	254956	1.8	.00151	70	0.97	41	1.65	2.37	3.40
3/8/90	23:20	.42	0.29	24	254981	0.6	.00143	74	0.97	41	1.73	2.49	3.37
3/9/90	8:50	.43	0.30	170	255151	4.6	.00168	72	0.97	41	1.73	2.49	3.49
3/9/90	9:20	.43	0.30	9	255160	0.3			0.97	41			

Table 21. Operational data for Background Plot V4.

Date m/d/y h:mm	Venting Time (days)	CO2 (%)	O2 (%)	THC (µL/L)	O2+CO2 (%)
10/4/89 12:04	0.08	2.6	17.5	44.0	20.1
10/10/89 14:00	6.16	2.0	18.5	380.0	20.5
10/12/89 12:00	8.08	2.2	18.4	410.0	20.6
10/16/89 12:00	12.08	2.3	18.0	180.0	20.3
10/20/89 12:00	16.08	1.0	20.0	9.0	21.0
10/24/89 8:31	19.93	1.5	19.0	8.5	20.5
10/24/89 10:13	20.01	Blowers off for Shutdown Test 1			
10/26/89 12:00	20.01	Blowers on			
10/27/89 9:53	20.92	1.6	18.8	0.0	20.4
10/31/89 12:00	25.01	1.3	19.3	0.0	20.6
11/3/89 12:00	28.01	1.2	19.4	ND	20.6
11/6/89 12:00	31.01	1.5	19.2	ND	20.7
11/9/89 12:00	34.01	1.5	19.5	ND	21.0
11/14/89 15:00	39.13	1.4	19.4	ND	20.8
11/16/89 15:00	41.13	0.9	20.0	ND	20.9
11/21/89 15:00	46.13	1.0	19.5	ND	20.5
11/24/89 14:00	49.09	0.7	20.4	ND	21.1
11/28/89 14:20	53.10	0.9	19.6	2.0	20.5
11/28/89 15:11	53.14	Blowers off for Shutdown Test 2			
12/1/89 14:00	53.14	Blowers on			
12/2/89 16:02	54.22	0.7	20.2	2.0	20.9
12/5/89 12:00	57.05	0.6	20.2	4.0	
12/7/89 12:00	59.05	0.7	20.2	ND	20.9
12/11/89 12:00	63.05	0.5	20.0	ND	20.5
12/13/89 14:30	65.16	0.5	20.5	2.0	21.0
12/15/89 11:30	67.03	0.4	20.2	ND	20.6
12/22/89 12:00	74.05	0.2	21.0	ND	21.2
12/27/89 12:00	79.05	0.4	20.8	ND	21.2
12/29/89 12:00	81.05	0.5	20.0	ND	20.5
1/2/90 12:00	85.05	0.5	20.2	ND	20.7
1/3/90 13:55	86.13	0.3	20.5	ND	20.8
1/3/90 15:33	86.20	Blowers off for Shutdown Test 3			
1/8/90 13:30	86.20	Blowers on			
1/16/90 10:00	94.06	0.6	20.2	ND	20.8
1/19/90 8:00	96.97	0.7	20.2	2.0	20.9
1/22/90 10:30	100.08	0.7	20.2	ND	20.9
1/24/90 14:00	102.22	0.7	20.2	3.8	20.9
1/25/90 6:00	102.89	Blowers off for Shutdown Test 3A			
1/26/90 15:00	102.89	Blowers on			
2/1/90 16:30	108.95	0.7	20.3	1.0	21.0
2/4/90 16:30	111.95	0.6	20.5	3.8	21.1
2/9/90 8:00	116.60	0.9	20.0	2.0	20.9
2/12/90 15:00	119.89	0.8	20.1	ND	20.9
2/21/90 8:00	128.60	0.6	20.2	2.0	20.8
2/24/90 10:30	131.70	0.3	20.5	2.0	20.8
2/28/90 10:00	135.68	0.7	20.2	4.3	20.9
3/3/90 11:00	138.72	0.6	20.3	1.0	20.9
3/3/90 11:06	138.73	Blowers off (V3&V4) for Shutdown Test 4			
3/6/90 12:30	138.73	Blowers on (V3 & V4) Direct JP-4 injection			
3/9/90 9:20	141.60	Blowers off (V3) for Shutdown Test 4a			
3/12/90 9:15	141.60	Blowers on (V3)			
3/13/90 7:53	142.54	1.1	19.8	ND	20.9
3/25/90 8:30	154.57	1.0	20.0	0.8	21.0
3/30/90 8:30	159.57	1.0	20.0	0.9	21.0
4/9/90 10:00	169.63	0.8	20.1	1.7	20.9
4/13/90 9:30	173.61	0.8	20.0	2.5	20.8
4/24/90 9:30	184.61	1.2	19.5	1.0	20.7
4/24/90 13:00	184.76	Blowers off for Shutdown Test 5			
5/2/90 9:30	184.76	Blowers on			

Appendix D
Physical, Nutrient, and Hydrocarbon Data
for Soil and Water Samples

Table 22. Summary of physical analyses of soil samples from Tyndall AFB.

Location	Sand			% Hydrometer			Texture	pH		O.C.		O.C.		CEC	
	Jul/Sep/89	Jul/Sep/89	Jul/Sep/89	Silt	Clay			Jul/Sep/89	Dec-89	Apr-90	Jul/Sep/89	Dec-89	Apr-90	Jul/Sep/89	Apr-90
	95	92	96	2	3	6.3	Sand	6.3	6.5	0.82	0.88	0.81	0.88	2.8	7.7
V1-1, 1'															
V1-1, 2'				5	3	5.3	Sand	5.3	5.5	0.27	0.4			<DL	
V1-1, 3'				2	2	5.6	Sand	5.6	5.6	0.15	0.21			0.5	<DL
V1-1, 4'				2	2	5.3	Sand	5.3	5.9	0.09	0.1			0.4	2.28
V1-1, 5'				1	2	5.4	Sand	5.4	6	0.18	0.03			0.6	<DL
V1-3, 1'				4	4	6.1	Sand	6.1	6.3	0.91	0.57	0.81		3.4	2.2
V1-3, 2'				2	2	6.4	Sand	6.4	6.5	0.22	0.29	0.36		0.4	1.69
V1-3, 3'				1	2	6.4	Sand	6.4	6.5	0.16	0.12	0.2		0.4	<DL
V1-3, 4'				2	2	5.8	Sand	5.8	6.5	0.16	0.16	0.1		0.3	0.47
V1-3, 5'				1	1	6	Sand	6	6.5	0.04	0.04	0.08		0.1	9.98
V2-1, 1'				3	3	6.2	Sand	6.2	6.1	0.86	0.57			3.3	4.05
V2-1, 2'				2	2	5.7	Sand	5.7	5.6	0.26	0.21			0.6	4.02
V2-1, 3'				2	2	5.7	Sand	5.7	5.4	0.33	0.17			0.8	0.53
V2-1, 4'				1	1	5.9	Sand	5.9	5.2	0.11	0.07			0.1	
V2-1, 5'				-	-	-	Sand	-	5.9	-	0.15			-	<DL
V2-3, 1'				3	2	6.2	Sand	6.2	6.1	0.68	0.53	0.72		2.3	3.83
V2-3, 2'				2	2	6	Sand	6	6.1	0.26	0.92	0.41		0.7	3.56
V2-3, 3'				1	2	6.1	Sand	6.1	6	0.2	0.25	0.13		0.3	1.93
V2-3, 4'				1	2	6	Sand	6	5.2	0.12	0.93	0.93		0.2	1.28
V2-3, 5'				1	2	5.4	Sand	5.4	5.1	0.44	0.45	0.45		1.6	
V3, 1'				2	2	5.4	Sand	5.4	7.1	0.53	0.53			1.7	<DL
V3, 2'				2	2	5.2	Sand	5.2	5.7	0.73	0.45			1.9	0.14
V3, 3'				3	2	4.6	Sand	4.6	6.6	0.43	0.41			1	1.64
V4, 1'				1	2	6	Sand	6	5.5	0.49	0.45			1.1	2.59
V4, 2'				2	2	5	Sand	5	5.3	0.85	0.5			2.4	4.16
V4, 3'				1	2	4.1	Sand	4.1	5.7	0.78	0.46			1.7	2.1

Table 23. Summary of nutrient analyses and acetylene reduction tests for soil and water samples from Tyndall AFB.

Location of Soil Samples	PO4-P		PO4-P		Tot-P		Tot-P		NO3+NO2-N		NO3+NO2-N		NH4-N		NH4-N	
	mg P/kg		mg P/kg		mg P/kg		mg P/kg		mg N/kg		mg N/kg		mg N/kg		mg N/kg	
	Jul/89	Dec-89	Apr-90	Jul/89	Dec-89	Apr-90	Jul/89	Dec-89	Apr-90	Jul/89	Dec-89	Apr-90	Jul/89	Dec-89	Apr-90	Jul/89
V1-1, 1'	<0.7	<0.7	<0.7	24		40	1.45		0.7	2.3		61.91				
V1-1, 2'	<0.7		1.91	17		25	1.23		1.25	2		3.45				
V1-1, 3'	<0.7		<0.7	17		<20	1.05		<0.5	2.8		4.82				
V1-1, 4'	<0.7		<0.7	22		<20	<0.5		<0.5	2.3		1.95				
V1-1, 5'	<0.7			22		21	<0.5			3.2		7.42				
V1-3, 1'	<0.7	<0.7	<0.7	30	39.3	<20	0.96	<0.5	1.48	1.3	2.3	5.37				
V1-3, 2'	<0.7	<0.7	<0.7	<15	14.5	<20	0.97	<0.5	1.38	1.3	1	3.45				
V1-3, 3'	4.45	<0.7	<0.7	<15	10.3	<20	0.83	<0.5	0.51	1.4	30.8	1.14				
V1-3, 4'	<0.7	<0.7	<0.7	41.7	<7.5	<20	<0.5	1.5	<0.5	1	3.2	13.03				
V1-3, 5'	<0.7	<0.7	<0.7	<15	19	<20	<0.5	<0.5	1.59	1.6	1.3	2.36				
V2-1, 1'	<0.7	<0.7	<0.7	25		29	1.42		1.54	2.8		2.36				
V2-1, 2'	<0.7	<0.7	<0.7	<15		<20	4.58		0.72	0.7		4.82				
V2-1, 3'	<0.7	<0.7	<0.7	15		<20	13.98		0.84	1.3		4.14				
V2-1, 4'	<0.7	<0.7	<0.7	21.3		<20	<0.5		1.45	1.3		2.09				
V2-1, 5'	<0.7					25	<0.5			1.7		45.88				
V2-3, 1'	<0.7	<0.7	<0.7	21	29.9	23	0.97	4.9	5.54	1.2	1.11	4.96				
V2-3, 2'	<0.7	<0.7	<0.7	<15	14.1	29	<0.5	<0.5	<0.5	2.3	46.5	63.28				
V2-3, 3'	<0.7	<0.7	<0.7	<15	11.6	32	0.85	<0.5	<0.5	1.1	5.2	78.33				
V2-3, 4'	<0.7	<0.7	<0.7	20.3	41.3	<20	<0.5	<0.5	<0.5	1.2	12.1	8.93				
V2-3, 5'	<0.7	<0.7	<0.7	<15	13.2	<20	1.2	<0.5	<0.5	2.6	32.3	4.82				
V3, 1'	<0.7	<0.7	<0.7	30		36	0.98		1.76	1.3		8.24				
V3, 2'	<0.7	<0.7	<0.7	27		36	0.34		0.63	1.3		6.88				
V3, 3'	<0.7	1.83	<0.7	22		70	1.93		0.93	0.6		3.45				
V4, 1'	<0.7	14.57	<0.7	27		61	2.39		2.25	1.2		495.9				
V4, 2'	<0.7	9.83	<0.7	36		106	3.32		1.24	1.4		2.77				
V4, 3'	<0.7	<0.7	<0.7	42		29	3.53		3.71	0.6		6.19				
Water Samples																
V1-1	<0.07		14				0.17		<1.0	0.19		961				
V1-2	<0.07		<4.2				0.13		<3.0	0.23		1372				
V1-3	<0.07		68.3				<0.05		18.3	0.25		10623				
V2-1	<0.07	<0.07	87.5				0.27	<3.9*	33.2	0.66	1086	4177				
V2-2	<0.07						<3.9*			6.17		19861				
V2-3	<0.07		<21				0.11		<15	0.33		1645				
V3	<0.07		66.18				0.17		1.54	0.17		59				
V4	<0.07		<2.1				8.01		4.37	8.61		17				

Table 23 Cont. Summary of nutrient analyses and acetylene reduction tests for soil and water samples from Tyndall AFB.

Location of Soil Samples	TKN		Organic-N		Acet. Reduc.		Acet. Reduc.	
	mg N/kg Jul/Sep/89	mg N/kg Dec-89	mg N/kg Apr-90	mg N/kg Jul/Sep/89	mmole/kg•h Dec-89	mmole/kg•h Jul/Sep/89	mmole/kg•h Dec-89	mmole/kg•h Apr-90
V1-1, 1'	39.1		36.8			743		13
V1-1, 2'	51.3		49.3			1007		8
V1-1, 3'	73		70.2			1		11
V1-1, 4'	60.8		58.5					12
V1-1, 5'	86.5		83.3					12
V1-3, 1'	181.3	205.7	180	203.4	581	371	581	11
V1-3, 2'	71.6	45.9	70.3	44.9	16	118	16	10
V1-3, 3'	60.8	79.7	59.4	48.9	21	1	21	67
V1-3, 4'	43.2	32.3	42.2	29.1	2		2	12
V1-3, 5'	45.9	55.3	44.3	54	3		3	8
V2-1, 1'	194.8		192			2		11
V2-1, 2'	52.6		51.9			2		12
V2-1, 3'	31		29.7			7		11
V2-1, 4'	45.9		44.6					5
V2-1, 5'	45.9		44.2					12
V2-3, 1'	128.5	167.7	127.3	166.59		2		13
V2-3, 2'	70.2	132.5	67.9	86		66		106
V2-3, 3'	56.7	109.5	55.6	104.3		85		15
V2-3, 4'	63.5	540.8	62.3	528.7				15
V2-3, 5'	114.9	85.1	112.3	52.8				9
V3, 1'	104.1		102.8			15		10
V3, 2'	142		140.7			24		9
V3, 3'	59.4		58.8			29		7
V4, 1'	93.3		92.1			28		13
V4, 2'	161		159.6			24		10
V4, 3'	142		141.4			36		10
Water Samples	mg N/L	mg N/L	mg N/L	mg N/L	mg N/L			
V1-1	3.2							
V1-2	3.1							
V1-3	-							
V2-1	4.8	1062						
V2-2	2.7							
V2-3	-							
V3	-							
V4	9.3							

Table 24. Hydrocarbon concentrations determined from methylene chloride extracts.

Location of Soil Samples	Hexane Equivalent (mg/kg)		Weighted Average (mg/kg)		Combined Average (mg/kg)	
	Initial Sep-89	Final Apr-90	Initial Sep-89	Final Apr-90	Initial Sep-89	Final Apr-90
V1-1, 1'	6,430	4,540	4,796	4,556	5,892	4,542
V1-1, 2'	95	2,467	85	2,484	87	2,468
V1-1, 3'	475	2,069	359	2,100	435	2,070
V1-1, 4'	80	2,032	63	2,038	72	2,033
V1-1, 5'	60	28	51	32	55	29
V1-1, 6'	35	11	31	14	32	12
V1-1, 7'	100	23,716	87	24,035	92	23,717
V1-2, 1'	11,803	184	8,826	186	10,815	185
V1-2, 2'	9,933	3,230	7,589	3,229	9,102	3,231
V1-2, 3'	8,371	2,519	6,732	2,529	8,129	2,520
V1-2, 4'	10,272	1,687	7,842	1,689	9,413	1,688
V1-2, 5'	274	11	206	12	251	13
V1-2, 6'	1,491	117	1,123	128	1,366	118
V1-2, 7'	75	24	61	29	69	26
V1-3, 1'	13,046	5,202	9,538	5,174	11,955	5,203
V1-3, 2'	8,323	6,015	6,124	6,022	7,627	6,016
V1-3, 3'	7,432	2,417	5,507	2,424	6,811	2,418
V1-3, 4'	324	490	263	493	297	491
V1-3, 5'	109	6	99	6	100	7
V1-3, 6'	218	74	181	78	200	76
V1-3, 7'	157	17	140	19	144	18
V2-1, 1'	153	13	115	15	138	13
V2-1, 2'	8,828	10,846	6,529	10,821	8,449	10,847
V2-1, 3'	11,652	929	8,719	935	4,430	931
V2-1, 4'	20,700	5,231	15,478	5,246	19,289	5,232
V2-1, 5'	1,912	63	1,134	67	892	64
V2-1, 6'	102	24	78	28	94	25
V2-1, 7'	84	39	65	44	77	41
V2-2, 1'	155	20	108	21	142	22
V2-2, 2'	8,435	3,057	6,183	3,054	7,729	3,059
V2-2, 3'	18,469	7,106	13,797	7,106	16,924	7,107
V2-2, 4'	20,350	23,216	15,250	23,431	18,648	23,257
V2-2, 5'	975	6,192	2,120	6,291	2,613	6,194
V2-2, 6'	562	25	408	30	515	26
V2-2, 7'	81	22	62	42	75	23
V2-3, 1'	35	21	25	24	32	22
V2-3, 2'	6,601	5,559	4,861	5,554	6,049	5,560
V2-3, 3'	3,372	1,626	2,468	1,631	3,090	1,627
V2-3, 4'	13,601	4,757	10,118	4,765	12,464	4,758
V2-3, 5'	121	3,885	86	3,935	111	3,886
V2-3, 6'	2,215	13	1,640	20	2,030	14
V2-3, 7'	36	31	26	38	33	32
V3, 1'	58	16	67	16		17
V3, 2'	381	64	284	67		65
V3, 3'	9	18	284	18		20
V3, 4'	39	15	14	15		16
V3, 5'		622	45	625		623
V4, 1'	120	27	95	27		28
V4, 2'	236	44	205	48		45
V4, 3'	32	27	29	27		28
V4, 4'	95	85	107	86		86
V4, 5'	42	25	40	26		26
Location of Water Samples	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$
V1-1		13,053		14,361		13,253
V1-2						
V1-3		7,341		8,450		7,511
V2-1		2,249,101		2,264,438		2,249,278
V2-2		920,037		926,460		920,335
V2-3		311,780		313,393		311,955
V3		13,944		16,177		14,430
V4		3,010		2,975		3,180

Appendix E
Respiration Test 1 Data

Table 25. Summarized data for Respiration Test 1.

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89	10:13	Blowers Off							
10/24/89	9:42	0	V1-1A	5.4	13.9	2.632	19.3	1	1
10/24/89	10:47	34	V1-1A	5.3	13.2	2.580	18.5	0.98	0.95
10/24/89	13:07	174	V1-1A	5.9	12	2.485	17.9	1.09	0.863
10/24/89	15:25	312	V1-1A	5.9	11	2.398	16.9	1.09	0.791
10/24/89	18:03	470	V1-1A	7.1	8.5	2.140	15.6	1.31	0.612
10/24/89	22:26	733	V1-1A	8.3	5.9	1.775	14.2	1.55	0.424
10/25/89	3:28	1035	V1-1A	10.7	4	1.386	14.7	2	0.288
10/25/89	8:49	1356	V1-1A	11.5	2.5	0.916	14.0	2.14	0.18
10/25/89	14:52	1719	V1-1A	12.2	0.8	-0.223	13.0		
10/25/89	20:50	2077	V1-1A	13.9	0.5	-0.693	14.4		
10/26/89	9:02	2809	V1-1A	13.9	0.3	-1.204	14.2		
10/24/89	9:52	0	V1-1B	4.4	15	2.708	19.4	1	1
10/24/89	10:50	37	V1-1B	4.4	14.5	2.674	18.9	1	0.967
10/24/89	13:09	176	V1-1B	4.8	13.8	2.625	18.6	1.09	0.92
10/24/89	15:27	314	V1-1B	5.3	13.5	2.603	18.8	1.21	0.9
10/24/89	18:07	474	V1-1B	5.5	12	2.485	17.5	1.25	0.8
10/24/89	22:32	739	V1-1B	6.6	10.5	2.351	17.1	1.5	0.7
10/25/89	3:34	1041	V1-1B	7.3	9.2	2.219	16.5	1.66	0.613
10/25/89	8:52	1359	V1-1B	9.0	7	1.946	16.0	2.04	0.467
10/25/89	14:57	1724	V1-1B	10.0	4.9	1.589	14.9	2.28	0.327
10/25/89	21:01	2088	V1-1B	11.0	3.3	1.194	14.3	2.51	0.22
10/26/89	9:06	2813	V1-1B	13.6	0.8	-0.223	14.4		
10/24/89	9:55	0	V1-1C	4.5	14.5	2.674	19.0	1	1
10/24/89	10:53	40	V1-1C	4.8	14	2.639	18.8	1.06	0.966
10/24/89	13:14	181	V1-1C	4.9	13.6	2.610	18.5	1.09	0.938
10/24/89	15:30	317	V1-1C	4.9	13.7	2.617	18.6	1.09	0.945
10/24/89	18:09	476	V1-1C	5.7	12.2	2.501	17.9	1.27	0.841
10/24/89	22:35	742	V1-1C	6.6	11.2	2.416	17.8	1.47	0.772
10/25/89	3:37	1044	V1-1C	7.1	10.2	2.322	17.3	1.58	0.703
10/25/89	8:56	1363	V1-1C	8.3	8	2.079	16.3	1.85	0.552
10/25/89	15:00	1727	V1-1C	8.6	6.1	1.808	14.7	1.92	0.421
10/25/89	21:05	2092	V1-1C	12.5	4.3	1.459	16.8	2.78	0.297
10/26/89	9:10	2817	V1-1C	13.0	1.2	0.182	14.2	2.91	0.083
10/24/89	10:00	0	V1-2A	2.0	18.5	2.918	20.5	1	1
10/24/89	10:56	43	V1-2A	2.7	16.5	2.803	19.2	1.35	0.892
10/24/89	13:19	186	V1-2A	3.8	13.4	2.595	17.2	1.9	0.724
10/24/89	15:33	320	V1-2A	4.5	12	2.485	16.5	2.25	0.649
10/24/89	18:13	480	V1-2A	5.5	8.8	2.175	14.3	2.75	0.476
10/24/89	22:40	747	V1-2A	7.3	6	1.792	13.3	3.63	0.324
10/25/89	3:42	1049	V1-2A	9.0	4.3	1.459	13.3	4.51	0.232
10/25/89	9:01	1368	V1-2A	11.7	2.2	0.788	13.9	5.83	0.119
10/25/89	15:03	1730	V1-2A	11.2	0.8	-0.223	12.0		
10/25/89	21:08	2095	V1-2A	14.7	0.5	-0.693	15.2		
10/26/89	9:14	2821	V1-2A	13.9	0.4	-0.916	14.3		

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89 10:02	0	V1-2B	4.4	15	2.708	19.4	1	1
10/24/89 10:58	45	V1-2B	4.6	14.5	2.674	19.1	1.05	0.967
10/24/89 13:24	191	V1-2B	4.9	13.8	2.625	18.7	1.1	0.92
10/24/89 15:36	323	V1-2B	5.0	13.2	2.580	18.2	1.14	0.88
10/24/89 18:16	483	V1-2B	5.8	11.5	2.442	17.3	1.32	0.767
10/24/89 22:44	751	V1-2B	6.7	10.3	2.332	17.0	1.52	0.687
10/25/89 3:45	1052	V1-2B	7.5	8.9	2.186	16.4	1.7	0.593
10/25/89 9:05	1372	V1-2B	9.5	6.5	1.872	16.0	2.16	0.433
10/25/89 15:06	1733	V1-2B	9.9	3.8	1.335	13.7	2.25	0.253
10/25/89 21:12	2099	V1-2B	14.2	2.1	0.742	16.3	3.22	0.14
10/26/89 9:17	2824	V1-2B	14.4	0.2	-1.609	14.6		
10/24/89 10:04	0	V1-2C	7.0	12	2.485	19.0	1	1
10/24/89 11:00	47	V1-2C	6.4	12	2.485	18.4	0.91	1
10/24/89 13:26	193	V1-2C	6.9	11.5	2.442	18.4	0.98	0.958
10/24/89 15:38	325	V1-2C	6.9	12	2.485	18.9	0.98	1
10/24/89 18:19	486	V1-2C	7.3	10.4	2.342	17.7	1.04	0.867
10/24/89 22:47	754	V1-2C	7.9	10	2.303	17.9	1.13	0.833
10/25/89 3:50	1057	V1-2C	8.0	9.2	2.219	17.2	1.15	0.767
10/25/89 9:10	1377	V1-2C	10.5	7.4	2.001	17.9	1.51	0.617
10/25/89 15:09	1736	V1-2C	10.2	5	1.609	15.2	1.47	0.417
10/25/89 21:16	2103	V1-2C	13.9	3.4	1.224	17.3	1.99	0.283
10/26/89 9:20	2827	V1-2C	14.4	0.3	-1.204	14.7		
10/24/89 10:06	0	V1-3A	1.5	19	2.944	20.5	1	1
10/24/89 11:04	51	V1-3A	2.1	17.2	2.845	19.3	1.45	0.905
10/24/89 13:29	196	V1-3A	3.0	15.8	2.760	18.8	2.03	0.832
10/24/89 15:43	330	V1-3A	3.4	15	2.708	18.4	2.34	0.789
10/24/89 18:22	489	V1-3A	4.3	13	2.565	17.3	2.98	0.684
10/24/89 22:50	757	V1-3A	5.6	11	2.398	16.6	3.86	0.579
10/25/89 3:54	1061	V1-3A	6.7	8.8	2.175	15.5	4.6	0.463
10/25/89 9:14	1381	V1-3A	9.7	6	1.792	15.7	6.7	0.316
10/25/89 15:14	1741	V1-3A	9.1	4	1.386	13.1	6.28	0.211
10/25/89 21:20	2107	V1-3A	13.9	1.2	0.182	15.1	9.57	0.063
10/26/89 9:23	2830	V1-3A	13.9	0.1	-2.303	14.0		
10/24/89 10:09	0	V1-3B	4.4	14.5	2.674	18.9	1	1
10/24/89 11:08	55	V1-3B	3.2	16.1	2.779	19.3	0.73	1.11
10/24/89 13:31	198	V1-3B	3.6	15.5	2.741	19.1	0.82	1.069
10/24/89 15:46	333	V1-3B	3.9	14.8	2.695	18.7	0.89	1.021
10/24/89 18:25	492	V1-3B	5.1	12.5	2.526	17.6	1.16	0.862
10/24/89 22:55	762	V1-3B	6.3	10.8	2.380	17.1	1.43	0.745
10/25/89 3:59	1066	V1-3B	7.5	9	2.197	16.5	1.7	0.621
10/25/89 9:19	1386	V1-3B	10.1	6.3	1.841	16.4	2.29	0.434
10/25/89 15:16	1743	V1-3B	10.6	3.4	1.224	14.0	2.4	0.234
10/25/89 21:24	2111	V1-3B	14.7	1.7	0.531	16.4	3.34	0.117
10/26/89 9:27	2834	V1-3B	14.7	0.1	-2.303	14.8		

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89	10:10	0	V1-3C	3.0	16.5	2.803	19.5	1	1
10/24/89	11:10	57	V1-3C	4.7	13.7	2.617	18.4	1.57	0.83
10/24/89	13:33	200	V1-3C	5.1	13	2.565	18.1	1.7	0.788
10/24/89	15:48	335	V1-3C	5.5	13	2.565	18.5	1.83	0.788
10/24/89	18:28	495	V1-3C	6.6	10.8	2.380	17.4	2.19	0.655
10/24/89	22:58	765	V1-3C	7.6	9.6	2.262	17.2	2.52	0.582
10/25/89	4:03	1070	V1-3C	8.4	8.4	2.128	16.8	2.81	0.509
10/25/89	9:23	1390	V1-3C	11.3	6	1.792	17.3	3.75	0.364
10/25/89	15:19	1746	V1-3C	11.5	3	1.099	14.5	3.84	0.182
10/25/89	21:29	2116	V1-3C	14.7	2	0.693	16.7	4.9	0.121
10/26/89	9:30	2837	V1-3C	15.3	0.1	-2.303	15.4		
10/24/89	9:04	0	V2-1A	0.5	19.8	2.986	20.3	1	1
10/24/89	11:14	61	V2-1A	0.6	19.5	2.970	20.1	1.33	0.985
10/24/89	13:37	204	V2-1A	1.3	18.5	2.918	19.8	2.89	0.934
10/24/89	15:50	337	V2-1A	1.2	18.5	2.918	19.7	2.67	0.934
10/24/89	18:38	505	V2-1A	1.7	18	2.890	19.7	3.78	0.909
10/24/89	23:05	772	V2-1A	1.9	18	2.890	19.9	4.22	0.909
10/25/89	4:07	1074	V2-1A	2.7	16	2.773	18.7	6	0.808
10/25/89	9:28	1395	V2-1A	2.3	17	2.833	19.3	5.11	0.859
10/25/89	15:24	1751	V2-1A	5.9	8.6	2.152	14.5	13	0.434
10/25/89	21:35	2122	V2-1A	7.6	6.2	1.825	13.8	16.8	0.313
10/26/89	9:44	2851	V2-1A	10.5	2.6	0.956	13.1	23.4	0.131
10/24/89	9:06	0	V2-1B	4.3	14.7	2.688	19.0	1	1
10/24/89	11:17	64	V2-1B	4.5	13.3	2.588	17.8	1.05	0.905
10/24/89	13:42	209	V2-1B	5.6	12.2	2.501	17.8	1.3	0.83
10/24/89	15:53	340	V2-1B	5.9	11.6	2.451	17.5	1.37	0.789
10/24/89	18:39	506	V2-1B	7.2	9.2	2.219	16.4	1.67	0.626
10/24/89	23:07	774	V2-1B	8.4	8	2.079	16.4	1.96	0.544
10/25/89	4:11	1078	V2-1B	9.0	7	1.946	16.0	2.1	0.476
10/25/89	9:33	1400	V2-1B	12.4	5	1.609	17.4	2.9	0.34
10/25/89	15:29	1756	V2-1B	11.7	3.5	1.253	15.2	2.71	0.238
10/25/89	21:43	2130	V2-1B	13.6	3	1.099	16.6	3.16	0.204
10/26/89	9:50	2857	V2-1B	14.4	0.2	-1.609	14.6		
10/24/89	9:08	0	V2-1C	5.6	12.5	2.526	18.1	1	1
10/24/89	11:20	67	V2-1C	5.6	12.2	2.501	17.8	1	0.976
10/24/89	13:44	211	V2-1C	6.3	12	2.485	18.3	1.13	0.96
10/24/89	15:58	345	V2-1C	6.5	11	2.398	17.5	1.16	0.88
10/24/89	18:44	511	V2-1C	7.4	10	2.303	17.4	1.32	0.8
10/24/89	23:11	778	V2-1C	8.2	8.5	2.140	16.7	1.48	0.68
10/25/89	4:14	1081	V2-1C	8.6	8.1	2.092	16.7	1.55	0.648
10/25/89	9:37	1404	V2-1C	11.7	6	1.792	17.7	2.09	0.48
10/25/89	15:30	1757	V2-1C	11.0	4.8	1.569	15.8	1.98	0.384
10/25/89	21:50	2137	V2-1C	11.5	4.1	1.411	15.6	2.06	0.328
10/26/89	9:55	2862	V2-1C	14.2	0.2	-1.609	14.4		

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89 9:10	0	V2-2A	0.2	20.2	3.006	20.4	1	1
10/24/89 11:25	72	V2-2A	0.2	20.2	3.006	20.4	1	1
10/24/89 13:46	213	V2-2A	0.3	20	2.996	20.3	1.67	0.99
10/24/89 16:08	355	V2-2A	0.4	20	2.996	20.4	2.33	0.99
10/24/89 18:47	514	V2-2A	0.5	19	2.944	19.5	3	0.941
10/24/89 23:15	782	V2-2A	0.5	20	2.996	20.5	3.33	0.99
10/25/89 4:19	1086	V2-2A	0.9	18.2	2.901	19.1	6	0.901
10/25/89 9:40	1407	V2-2A	0.7	19.5	2.970	20.2	4.33	0.965
10/25/89 15:37	1764	V2-2A	2.2	13.9	2.632	16.1	14.7	0.688
10/25/89 21:58	2145	V2-2A	3.9	10.8	2.380	14.7	25.7	0.535
10/26/89 9:59	2866	V2-2A	6.1	5	1.609	11.1	40.4	0.248
10/24/89 9:17	0	V2-2B	3.3	16.3	2.791	19.6	1	1
10/24/89 11:27	74	V2-2B	3.1	16	2.773	19.1	0.94	0.982
10/24/89 13:48	215	V2-2B	3.8	14.6	2.681	18.4	1.14	0.896
10/24/89 16:10	357	V2-2B	4.7	13	2.565	17.7	1.41	0.798
10/24/89 18:51	518	V2-2B	5.4	12	2.485	17.4	1.64	0.736
10/24/89 23:18	785	V2-2B	6.7	10.5	2.351	17.2	2.02	0.644
10/25/89 4:26	1093	V2-2B	7.3	8	2.079	15.3	2.2	0.491
10/25/89 9:52	1419	V2-2B	9.3	6.7	1.902	16.0	2.81	0.411
10/25/89 15:40	1767	V2-2B	10.2	4.5	1.504	14.7	3.1	0.276
10/25/89 22:00	2147	V2-2B	12.8	2.8	1.030	15.6	3.87	0.172
10/26/89 10:02	2869	V2-2B	13.9	0.2	-1.609	14.1		
10/24/89 9:26	0	V2-2C	5.0	14	2.639	19.0	1	1
10/24/89 11:28	75	V2-2C	5.0	13.2	2.580	18.2	1.01	0.943
10/24/89 13:50	217	V2-2C	5.8	12.5	2.526	18.3	1.17	0.893
10/24/89 16:03	350	V2-2C	6.3	11	2.398	17.3	1.27	0.786
10/24/89 18:54	521	V2-2C	7.4	9.8	2.282	17.2	1.49	0.7
10/24/89 23:23	790	V2-2C	8.4	8.1	2.092	16.5	1.71	0.579
10/25/89 4:31	1098	V2-2C	8.5	6.5	1.872	15.0	1.72	0.464
10/25/89 9:54	1421	V2-2C	11.8	3.6	1.281	15.4	2.39	0.257
10/25/89 15:43	1770	V2-2C	11.0	3.5	1.253	14.5	2.21	0.25
10/25/89 22:05	2152	V2-2C	13.3	1.7	0.531	15.0	2.69	0.121
10/26/89 10:07	2874	V2-2C	13.6	0.1	-2.303	13.7		
10/24/89 9:29	0	V2-3A	0.8	19.5	2.970	20.3	1	1
10/24/89 11:30	77	V2-3A	1.1	18.5	2.918	19.6	1.47	0.949
10/24/89 13:52	219	V2-3A	1.6	17.7	2.874	19.3	2.13	0.908
10/24/89 16:16	363	V2-3A	2.2	16.5	2.803	18.7	2.93	0.846
10/24/89 18:58	525	V2-3A	2.3	16.6	2.809	18.9	3.07	0.851
10/24/89 23:27	794	V2-3A	2.8	15.5	2.741	18.3	3.73	0.795
10/25/89 4:34	1101	V2-3A	4.1	12.5	2.526	16.6	5.47	0.641
10/25/89 9:58	1425	V2-3A	4.0	13.1	2.573	17.1	5.33	0.672
10/25/89 15:46	1773	V2-3A	7.0	6.5	1.872	13.5	9.38	0.333
10/25/89 22:09	2156	V2-3A	8.6	4.9	1.589	13.5	11.5	0.251
10/26/89 10:12	2879	V2-3A	12.2	1.1	0.095	13.3	16.3	0.056

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89 9:30	0	V2-3B	4.4	14.8	2.695	19.2	1	1
10/24/89 11:32	79	V2-3B	4.4	14.2	2.653	18.6	1	0.959
10/24/89 13:54	221	V2-3B	4.0	14.8	2.695	18.8	0.91	1
10/24/89 16:18	365	V2-3B	5.5	12	2.485	17.5	1.25	0.811
10/24/89 19:00	527	V2-3B	6.3	11	2.398	17.3	1.43	0.743
10/24/89 23:29	796	V2-3B	7.5	9.5	2.251	17.0	1.7	0.642
10/25/89 4:37	1104	V2-3B	7.9	7.2	1.974	15.1	1.78	0.486
10/25/89 10:00	1427	V2-3B	10.6	5.3	1.668	15.9	2.4	0.358
10/25/89 15:50	1777	V2-3B	11.0	3.8	1.335	14.8	2.49	0.257
10/25/89 22:15	2162	V2-3B	13.9	2.3	0.833	16.2	3.15	0.155
10/26/89 10:17	2884	V2-3B	14.4	0.4	-0.916	14.8		
10/24/89 9:32	0	V2-3C	7.2	10	2.303	17.2	1	1
10/24/89 11:34	81	V2-3C	7.6	10	2.303	17.6	1.06	1
10/24/89 13:57	224	V2-3C	7.9	8.6	2.152	16.5	1.09	0.86
10/24/89 16:25	372	V2-3C	5.5	13.2	2.580	18.7		
10/24/89 19:04	531	V2-3C	8.2	8.5	2.140	16.7		
10/24/89 23:34	801	V2-3C	10.0	5.5	1.705	15.5		
10/25/89 4:42	1109	V2-3C	11.8	3.4	1.224	15.2		
10/25/89 10:05	1432	V2-3C	14.4	1.5	0.405	15.9		
10/25/89 15:55	1782	V2-3C	14.2	0.5	-0.693	14.7		
10/25/89 22:18	2165	V2-3C	15.3	0.4	-0.916	15.7		
10/26/89 10:20	2887	V2-3C	15.3	0.1	-2.303	15.4		
10/24/89 7:59	0	V3A	2.0	18.5	2.918	20.5	1	1
10/24/89 11:40	87	V3A	1.9	18	2.890	19.9	0.95	0.973
10/24/89 14:02	229	V3A	2.0	18.2	2.901	20.2	0.98	0.984
10/24/89 19:14	541	V3A	2.3	18.2	2.901	20.5	1.15	0.984
10/25/89 11:11	1498	V3A	2.4	17.8	2.879	20.2	1.2	0.962
10/26/89 10:43	2910	V3A	2.6	17.5	2.862	20.1	1.28	0.946
10/24/89 8:01	0	V3B	2.3	18.2	2.901	20.5	1	1
10/24/89 11:42	89	V3B	2.2	17.8	2.879	20.0	0.96	0.978
10/24/89 14:06	233	V3B	2.1	18.2	2.901	20.3	0.91	1
10/24/89 19:16	543	V3B	2.4	18.1	2.896	20.5	1.04	0.995
10/25/89 11:14	1501	V3B	2.6	17.5	2.862	20.1	1.13	0.962
10/26/89 10:45	2912	V3B	2.6	17.3	2.851	19.9	1.13	0.951
10/24/89 8:06	0	V3C	2.5	18	2.890	20.5	1	1
10/24/89 11:43	90	V3C	2.2	17.7	2.874	19.9	0.88	0.983
10/24/89 14:08	235	V3C	2.3	18	2.890	20.3	0.9	1
10/24/89 19:18	545	V3C	2.5	18	2.890	20.5	1	1
10/25/89 11:16	1503	V3C	2.7	17.5	2.862	20.2	1.08	0.972
10/26/89 10:47	2914	V3C	2.8	17.1	2.839	19.9	1.1	0.95
10/24/89 8:14	0	V4A	1.1	19.2	2.955	20.3	1	1
10/24/89 11:45	92	V4A	1.0	19	2.944	20.0	0.9	0.99
10/24/89 14:10	237	V4A	1.1	19.2	2.955	20.3	1.05	1
10/24/89 19:20	547	V4A	1.4	19.2	2.955	20.6	1.33	1
10/25/89 11:18	1505	V4A	1.7	18.8	2.934	20.5	1.62	0.979
10/26/89 10:50	2917	V4A	1.7	18.5	2.918	20.2	1.62	0.964

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89 8:23	0	V4B	1.2	19.2	2.955	20.4	1	1
10/24/89 11:47	94	V4B	1.1	19	2.944	20.1	0.96	0.99
10/24/89 14:12	239	V4B	1.2	19.2	2.955	20.4	1	1
10/24/89 19:22	549	V4B	1.4	19.3	2.960	20.7	1.17	1.005
10/25/89 11:20	1507	V4B	1.6	18.9	2.939	20.5	1.39	0.984
10/26/89 10:52	2919	V4B	1.6	18.5	2.918	20.1	1.39	0.964
10/24/89 8:28	0	V4C	1.4	19.2	2.955	20.6	1	1
10/24/89 11:50	97	V4C	1.3	18.8	2.934	20.1	0.96	0.979
10/24/89 14:14	241	V4C	1.3	19.2	2.955	20.5	0.93	1
10/24/89 19:25	552	V4C	1.4	19.2	2.955	20.6	1.04	1
10/25/89 11:25	1512	V4C	1.7	18.8	2.934	20.5	1.26	0.979
10/26/89 10:54	2921	V4C	1.7	18.5	2.918	20.2	1.26	0.964

Appendix F
Respiration Test 2 Data

Table 26. Summarized data for Respiration Test 2.

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 15:11	Blowers Off							
11/28/89 11:53	0	V1-1A	4.6	14.4	2.667	19.0	1	1
11/28/89 16:10	59	V1-1A	4.9	13.8	2.625	18.7	1.07	0.96
11/28/89 18:28	197	V1-1A	6.1	12.4	2.518	18.5	1.32	0.86
11/28/89 21:05	354	V1-1A	6.2	11.3	2.425	17.5	1.34	0.78
11/29/89 1:29	618	V1-1A	7.2	9.5	2.251	16.7	1.57	0.66
11/29/89 7:10	959	V1-1A	8.0	7.8	2.054	15.8	1.74	0.54
11/29/89 12:34	1283	V1-1A	8.4	7.0	1.946	15.4	1.83	0.49
11/29/89 19:26	1695	V1-1A	9.4	5.8	1.758	15.2	2.04	0.4
11/30/89 6:58	2387	V1-1A	9.8	4.2	1.435	14.0	2.12	0.29
11/30/89 16:27	2956	V1-1A	11.0	3.4	1.224	14.4	2.4	0.24
12/1/89 8:23	3912	V1-1A	12.8	1.0	0.000	13.8	2.78	0.07
11/28/89 11:57	0	V1-1B	4.8	14.5	2.674	19.3	1	1
11/28/89 16:12	61	V1-1B	4.9	14.0	2.639	18.9	1.01	0.97
11/28/89 18:32	201	V1-1B	5.8	13.4	2.595	19.2	1.2	0.92
11/28/89 21:09	358	V1-1B	5.9	13.0	2.565	18.9	1.22	0.9
11/29/89 1:32	621	V1-1B	6.6	12.0	2.485	18.6	1.38	0.83
11/29/89 7:13	962	V1-1B	7.2	10.8	2.380	18.0	1.51	0.74
11/29/89 12:37	1286	V1-1B	7.4	9.5	2.251	16.9	1.55	0.66
11/29/89 19:30	1699	V1-1B	8.6	8.0	2.079	16.6	1.79	0.55
11/30/89 7:01	2390	V1-1B	9.4	5.5	1.705	14.9	1.95	0.38
11/30/89 16:31	2960	V1-1B	10.9	4.1	1.411	15.0	2.26	0.28
12/1/89 8:27	3916	V1-1B	12.1	1.6	0.470	13.7	2.53	0.11
11/28/89 12:02	0	V1-1C	5.9	13.6	2.610	19.5	1	1
11/28/89 16:14	63	V1-1C	5.9	13.5	2.603	19.4	1	0.99
11/28/89 18:36	205	V1-1C	6.1	13.0	2.565	19.1	1.03	0.96
11/28/89 21:15	364	V1-1C	6.1	13.0	2.565	19.1	1.03	0.96
11/29/89 1:35	624	V1-1C	6.7	12.3	2.510	19.0	1.15	0.9
11/29/89 7:16	965	V1-1C	7.0	11.1	2.407	18.1	1.2	0.82
11/29/89 12:40	1289	V1-1C	7.4	10.0	2.303	17.4	1.27	0.74
11/29/89 19:33	1702	V1-1C	8.4	8.5	2.140	16.9	1.43	0.63
11/30/89 7:04	2393	V1-1C	9.2	6.0	1.792	15.2	1.57	0.44
11/30/89 16:34	2963	V1-1C	11.0	4.5	1.504	15.5	1.88	0.33
12/1/89 8:34	3923	V1-1C	12.1	2.3	0.833	14.4	2.07	0.17
11/28/89 12:08	0	V1-2A	2.3	17.8	2.879	20.1	1	1
11/28/89 16:18	67	V1-2A	3.0	16.2	2.785	19.2	1.28	0.91
11/28/89 18:40	209	V1-2A	4.0	13.6	2.610	17.6	1.74	0.76
11/28/89 21:19	368	V1-2A	4.6	12.0	2.485	16.6	2	0.67
11/29/89 1:40	629	V1-2A	5.9	10.5	2.351	16.4	2.55	0.59
11/29/89 7:20	969	V1-2A	6.8	9.0	2.197	15.8	2.97	0.51
11/29/89 12:43	1292	V1-2A	7.4	7.7	2.041	15.1	3.23	0.43
11/29/89 19:36	1705	V1-2A	8.4	6.7	1.902	15.1	3.65	0.38
11/30/89 7:08	2397	V1-2A	9.2	5.2	1.649	14.4	3.99	0.29
11/30/89 16:37	2966	V1-2A	10.9	3.5	1.253	14.4	4.73	0.2
12/1/89 8:36	3925	V1-2A	12.1	1.8	0.588	13.9	5.28	0.1

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 12:13	0	V1-2B	3.8	15.8	2.760	19.6	1	1
11/28/89 16:21	70	V1-2B	4.1	15.5	2.741	19.6	1.08	0.98
11/28/89 18:43	212	V1-2B	4.6	14.6	2.681	19.2	1.21	0.92
11/28/89 21:22	371	V1-2B	4.8	14.0	2.639	18.8	1.26	0.89
11/29/89 1:43	632	V1-2B	5.8	13.0	2.565	18.8	1.52	0.82
11/29/89 7:25	974	V1-2B	6.4	11.5	2.442	17.9	1.7	0.73
11/29/89 12:45	1294	V1-2B	6.9	10.0	2.303	16.9	1.83	0.63
11/29/89 19:39	1708	V1-2B	8.0	8.4	2.128	16.4	2.11	0.53
11/30/89 7:11	2400	V1-2B	9.0	6.0	1.792	15.0	2.37	0.38
11/30/89 16:42	2971	V1-2B	10.9	4.2	1.435	15.1	2.86	0.27
12/1/89 8:40	3929	V1-2B	12.5	1.8	0.588	14.3	3.28	0.11
11/28/89 12:18	0	V1-2C	7.0	12.4	2.518	19.4	1	1
11/28/89 16:24	73	V1-2C	6.6	13.0	2.565	19.6	0.94	1.05
11/28/89 18:46	215	V1-2C	6.6	12.9	2.557	19.5	0.94	1.04
11/28/89 21:26	375	V1-2C	6.6	12.9	2.557	19.5	0.94	1.04
11/29/89 1:47	636	V1-2C	7.0	12.6	2.534	19.6	1	1.02
11/29/89 7:27	976	V1-2C	7.2	11.5	2.442	18.7	1.03	0.93
11/29/89 12:48	1297	V1-2C	7.6	10.1	2.313	17.7	1.08	0.81
11/29/89 19:42	1711	V1-2C	8.4	9.0	2.197	17.4	1.19	0.73
11/30/89 7:14	2403	V1-2C	9.4	5.8	1.758	15.2	1.33	0.47
11/30/89 16:44	2973	V1-2C	11.2	4.1	1.411	15.3	1.59	0.33
12/1/89 8:42	3931	V1-2C	12.5	1.8	0.588	14.3	1.77	0.15
11/28/89 12:24	0	V1-3A	1.8	18.5	2.918	20.3	1	1
11/28/89 16:28	77	V1-3A	2.5	17.0	2.833	19.5	1.39	0.92
11/28/89 18:49	218	V1-3A	3.2	15.8	2.760	19.0	1.78	0.85
11/28/89 21:30	379	V1-3A	3.7	14.8	2.695	18.5	2.06	0.8
11/29/89 1:51	640	V1-3A	4.0	14.2	2.653	18.2	2.22	0.77
11/29/89 7:31	980	V1-3A	4.1	14.2	2.653	18.3	2.28	0.77
11/29/89 12:52	1301	V1-3A	4.1	13.5	2.603	17.6	2.28	0.73
11/29/89 19:45	1714	V1-3A	4.9	12.0	2.485	16.9	2.69	0.65
11/30/89 7:17	2406	V1-3A	5.7	10.0	2.303	15.7	3.15	0.54
11/30/89 16:47	2976	V1-3A	7.2	7.8	2.054	15.0	4.02	0.42
12/1/89 8:47	3936	V1-3A	8.9	5.0	1.609	13.9	4.94	0.27
11/28/89 12:32	0	V1-3B	3.4	16.4	2.797	16.4	1	1
11/28/89 16:30	79	V1-3B	3.6	16.2	2.785	19.8	1.06	0.99
11/28/89 18:51	220	V1-3B	4.1	15.2	2.721	19.3	1.21	0.93
11/28/89 21:32	381	V1-3B	4.4	14.8	2.695	19.2	1.29	0.9
11/29/89 1:54	643	V1-3B	4.9	13.9	2.632	18.8	1.44	0.85
11/29/89 7:35	984	V1-3B	5.7	12.5	2.526	18.2	1.67	0.76
11/29/89 12:55	1304	V1-3B	7.0	10.4	2.342	17.4	2.07	0.63
11/29/89 19:48	1717	V1-3B	7.8	9.0	2.197	16.8	2.3	0.55
11/30/89 7:22	2411	V1-3B	9.2	6.1	1.808	15.3	2.7	0.37
11/30/89 16:52	2981	V1-3B	10.0	4.6	1.526	14.6	2.93	0.28
12/1/89 8:52	3941	V1-3B	13.1	2.6	0.956	15.7	3.86	0.16

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 12:37	0	V1-3C	4.6	14.6	2.681	19.2	1	1
11/28/89 16:33	82	V1-3C	4.9	14.6	2.681	19.5	1.05	1
11/28/89 18:53	222	V1-3C	5.1	14.0	2.639	19.1	1.11	0.96
11/28/89 21:34	383	V1-3C	5.7	13.7	2.617	19.4	1.23	0.94
11/29/89 1:57	646	V1-3C	6.3	12.9	2.557	19.2	1.38	0.88
11/29/89 7:38	987	V1-3C	7.0	11.1	2.407	18.1	1.53	0.76
11/29/89 12:58	1307	V1-3C	7.8	9.2	2.219	17.0	1.7	0.63
11/29/89 19:52	1721	V1-3C	8.6	7.8	2.054	16.4	1.87	0.53
11/30/89 7:25	2414	V1-3C	9.8	4.9	1.589	14.7	2.12	0.34
11/30/89 16:55	2984	V1-3C	12.5	3.3	1.194	15.8	2.71	0.23
12/1/89 8:55	3944	V1-3C	14.1	1.3	0.262	15.4	3.06	0.09
11/28/89 12:50	0	V2-1A	0.5	19.9	2.991	20.4	1	1
11/28/89 16:36	85	V2-1A	1.2	18.5	2.918	19.7	2.4	0.93
11/28/89 18:55	224	V2-1A	1.8	17.0	2.833	18.8	3.6	0.85
11/28/89 21:38	387	V2-1A	2.3	16.0	2.773	18.3	4.6	0.8
11/29/89 2:00	649	V2-1A	3.1	13.5	2.603	16.6	6.2	0.68
11/29/89 7:41	990	V2-1A	4.3	10.5	2.351	14.8	8.6	0.53
11/29/89 13:03	1312	V2-1A	5.5	8.2	2.104	13.7	10.9	0.41
11/29/89 19:55	1724	V2-1A	6.5	9.5	2.251	16.0	13.1	0.48
11/30/89 7:29	2418	V2-1A	6.4	7.8	2.054	14.2	12.9	0.39
11/30/89 16:59	2988	V2-1A	8.3	6.7	1.902	15.0	16.6	0.34
12/1/89 9:00	3949	V2-1A	8.4	6.2	1.825	14.6	16.8	0.31
11/28/89 12:55	0	V2-1B	3.6	15.2	2.721	18.8	1	1
11/28/89 16:38	87	V2-1B	4.5	14.0	2.639	18.5	1.25	0.92
11/28/89 18:58	227	V2-1B	5.6	12.2	2.501	17.8	1.55	0.8
11/28/89 21:40	389	V2-1B	6.4	11.2	2.416	17.6	1.79	0.74
11/29/89 2:03	652	V2-1B	7.6	9.2	2.219	16.8	2.12	0.61
11/29/89 7:45	994	V2-1B	8.6	7.0	1.946	15.6	2.39	0.46
11/29/89 13:05	1314	V2-1B	9.6	4.2	1.435	13.8	2.66	0.28
11/29/89 19:58	1727	V2-1B	11.7	2.8	1.030	14.5	3.24	0.18
11/30/89 7:35	2424	V2-1B	12.3	1.3	0.262	13.6	3.42	0.09
11/28/89 13:00	0	V2-1C	6.1	12.2	2.501	18.3	1	1
11/28/89 16:40	89	V2-1C	6.4	11.8	2.468	18.2	1.06	0.97
11/28/89 19:03	232	V2-1C	7.0	11.2	2.416	18.2	1.16	0.92
11/28/89 21:43	392	V2-1C	7.6	10.8	2.380	18.4	1.26	0.89
11/29/89 2:06	655	V2-1C	8.2	9.2	2.219	17.4	1.35	0.75
11/29/89 7:48	997	V2-1C	8.8	7.3	1.988	16.1	1.45	0.6
11/29/89 13:10	1319	V2-1C	9.4	4.8	1.569	14.2	1.55	0.39
11/29/89 20:02	1731	V2-1C	11.8	3.2	1.163	15.0	1.95	0.26
11/30/89 7:42	2431	V2-1C	12.5	1.0	0.000	13.5	2.06	0.08

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 13:09	0	V2-2A	0.3	20.5	3.020	20.8	1	1
11/28/89 16:44	93	V2-2A	0.4	19.8	2.986	20.2	1.6	0.97
11/28/89 19:07	236	V2-2A	0.7	18.5	2.918	19.2	2.6	0.9
11/28/89 21:46	395	V2-2A	1.1	17.6	2.868	18.7	4.4	0.86
11/29/89 2:09	658	V2-2A	1.6	16.0	2.773	17.6	6.4	0.78
11/29/89 7:51	1000	V2-2A	2.0	14.3	2.660	16.3	8	0.7
11/29/89 13:13	1322	V2-2A	2.5	12.8	2.549	15.3	10	0.62
11/29/89 20:06	1735	V2-2A	3.1	11.5	2.442	14.6	12.4	0.56
11/30/89 7:47	2436	V2-2A	4.0	9.0	2.197	13.0	15.8	0.44
11/30/89 17:06	2995	V2-2A	5.6	6.8	1.917	12.4	22.3	0.33
12/1/89 9:16	3965	V2-2A	7.4	5.5	1.705	12.9	29.7	0.27
11/28/89 13:18	0	V2-2B	7.6	10.0	2.303	17.6	1	1
11/28/89 16:46	95	V2-2B	7.4	10.5	2.351	17.9	0.97	1.05
11/28/89 19:09	238	V2-2B	7.8	9.8	2.282	17.6	1.03	0.98
11/28/89 21:48	397	V2-2B	8.1	10.0	2.303	18.1	1.06	1
11/29/89 2:10	659	V2-2B	8.6	8.3	2.116	16.9	1.13	0.83
11/29/89 7:54	1003	V2-2B	9.0	6.2	1.825	15.2	1.18	0.62
11/29/89 13:16	1325	V2-2B	9.8	4.8	1.569	14.6	1.28	0.48
11/29/89 20:09	1738	V2-2B	11.8	3.9	1.361	15.7	1.55	0.39
11/30/89 7:50	2439	V2-2B	12.5	1.3	0.262	13.8	1.64	0.13
11/28/89 13:23	0	V2-2C	12.8	3.2	1.163	16.0	1	1
11/28/89 16:52	101	V2-2C	13.7	3.3	1.194	17.0	1.07	1.03
11/28/89 19:13	242	V2-2C	13.4	3.9	1.361	17.3	1.05	1.22
11/28/89 21:52	401	V2-2C	13.7	5.0	1.609	18.7	1.07	1.56
11/29/89 2:15	664	V2-2C	14.6	4.5	1.504	19.1	1.13	1.41
11/29/89 7:57	1006	V2-2C	13.4	3.1	1.131	16.5	1.05	0.97
11/29/89 13:19	1328	V2-2C	13.9	1.5	0.405	15.4	1.08	0.47
11/29/89 20:12	1741	V2-2C	14.1	1.0	0.000	15.1	1.09	0.31
11/30/89 7:53	2442	V2-2C	13.4	0.5	-0.693	13.9		
11/28/89 13:33	0	V2-3A	0.7	19.8	2.986	20.5	1	1
11/28/89 16:55	104	V2-3A	1.4	18.2	2.901	19.6	2	0.92
11/28/89 19:19	248	V2-3A	2.0	16.5	2.803	18.5	2.86	0.83
11/28/89 21:56	405	V2-3A	2.6	15.4	2.734	18.0	3.71	0.78
11/29/89 2:20	669	V2-3A	3.4	13.2	2.580	16.6	4.86	0.67
11/29/89 7:59	1008	V2-3A	4.0	11.5	2.442	15.5	5.71	0.58
11/29/89 13:21	1330	V2-3A	4.6	11.0	2.398	15.6	6.57	0.56
11/29/89 20:15	1744	V2-3A	5.7	9.4	2.241	15.1	8.09	0.47
11/30/89 7:57	2446	V2-3A	7.0	6.0	1.792	13.0	10	0.3
11/30/89 17:08	2997	V2-3A	9.0	5.0	1.609	14.0	12.8	0.25
12/1/89 9:19	3968	V2-3A	9.8	4.5	1.504	14.3	14	0.23

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 13:37	0	V2-3B	5.7	13.0	2.565	16.7		1
11/28/89 16:58	107	V2-3B	6.4	12.5	2.526	18.9	1.14	0.96
11/28/89 19:21	250	V2-3B	7.0	11.1	2.407	18.1	1.24	0.85
11/28/89 21:58	407	V2-3B	7.6	10.6	2.361	18.2	1.34	0.82
11/29/89 2:25	674	V2-3B	8.7	8.2	2.104	16.9	1.53	0.63
11/29/89 8:03	1012	V2-3B	9.3	6.0	1.792	15.3	1.64	0.46
11/29/89 13:24	1333	V2-3B	11.5	3.5	1.253	15.0	2.03	0.27
11/29/89 20:23	1752	V2-3B	12.8	2.3	0.833	15.1	2.26	0.18
11/30/89 8:01	2450	V2-3B	13.1	1.0	0.000	14.1	2.31	0.08
11/28/89 13:42	0	V2-3C	8.6	9.1	2.208	17.7	1	1
11/28/89 17:01	110	V2-3C	9.2	9.2	2.219	18.4	1.07	1.01
11/28/89 19:25	254	V2-3C	9.5	8.4	2.128	17.9	1.1	0.92
11/28/89 22:03	412	V2-3C	9.6	8.2	2.104	17.8	1.11	0.9
11/29/89 2:28	677	V2-3C	10.6	6.2	1.825	16.8	1.24	0.68
11/29/89 8:07	1016	V2-3C	12.1	3.8	1.335	15.9	1.41	0.42
11/29/89 13:26	1335	V2-3C	13.4	1.2	0.182	14.6	1.56	0.13
11/29/89 20:29	1758	V2-3C	14.4	0.5	-0.693	14.9		
11/30/89 8:08	2457	V2-3C	14.1	0.3	-1.204	14.4		
11/28/89 14:07	0	V4A	0.7	19.8	2.986	20.5	1	1
11/29/89 13:41	1350	V4A	0.8	19.8	2.986	20.6	1.14	1
11/30/89 17:14	3003	V4A	0.9	19.8	2.986	20.7	1.29	1
12/1/89 9:25	3974	V4A	0.9	19.8	2.986	20.7	1.29	1
11/28/89 14:10	0	V4B	0.8	19.8	2.986	20.6	1	1
11/29/89 13:43	1352	V4B	0.9	19.7	2.981	20.6	1.06	0.99
11/30/89 17:16	3005	V4B	0.9	19.8	2.986	20.7	1.13	1
12/1/89 9:27	3976	V4B	0.9	19.8	2.986	20.7	1.13	1
11/28/89 14:15	0	V4C	0.9	19.7	2.981	20.6	1	1
11/29/89 13:44	1353	V4C	0.9	19.7	2.981	20.6	1	1
11/30/89 17:17	3006	V4C	1.0	19.7	2.981	20.7	1.11	1
12/1/89 9:29	3978	V4C	1.0	19.7	2.981	20.7	1.11	1

Appendix G
Respiration Test 3 Data

Table 27. Summarized data for Respiration Test 3.

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 15:33	Blowers Off							
1/3/90 11:45	0.0	V1-1A	3.8	16.5	2.803	20.3	1	1
1/3/90 16:20	47.0	V1-1A	3.9	16.5	2.803	20.4	1.03	1
1/3/90 19:16	223.0	V1-1A	4	16.2	2.785	20.2	1.05	0.98
1/3/90 23:12	459.0	V1-1A	4.2	15.8	2.760	20.0	1.11	0.96
1/4/90 5:39	846.0	V1-1A	4.3	15	2.708	19.3	1.13	0.91
1/4/90 12:09	1236.0	V1-1A	4.4	14.1	2.646	18.5	1.16	0.85
1/4/90 17:26	1553.0	V1-1A	4.8	13.3	2.588	18.1	1.26	0.81
1/5/90 6:55	2362.0	V1-1A	5.8	11.2	2.416	17.0	1.53	0.68
1/5/90 16:41	2948.0	V1-1A	6.3	9.6	2.262	15.9	1.66	0.58
1/6/90 7:55	3862.0	V1-1A	7.3	6.8	1.917	14.1	1.92	0.41
1/6/90 16:04	4351.0	V1-1A	7.8	5.4	1.686	13.2	2.05	0.33
1/7/90 8:32	5339.0	V1-1A	8.9	3.3	1.194	12.2	2.34	0.2
1/8/90 10:10	6877.0	V1-1A	10.1	0.8	-0.223	10.9		
1/3/90 11:51	0.0	V1-1B	3.4	17.1	2.839	20.5	1	1
1/3/90 16:22	49.0	V1-1B	3.5	17.1	2.839	20.6	1.03	1
1/3/90 19:18	225.0	V1-1B	3.6	17.1	2.839	20.7	1.06	1
1/3/90 23:13	460.0	V1-1B	3.7	16.8	2.821	20.5	1.09	0.98
1/4/90 5:40	847.0	V1-1B	3.8	16.2	2.785	20.0	1.12	0.95
1/4/90 12:11	1238.0	V1-1B	3.8	15.5	2.741	19.3	1.12	0.91
1/4/90 17:28	1555.0	V1-1B	4.2	15.1	2.715	19.3	1.24	0.88
1/5/90 6:57	2364.0	V1-1B	4.7	13.4	2.595	18.1	1.38	0.78
1/5/90 16:47	2954.0	V1-1B	5.1	12.1	2.493	17.2	1.5	0.71
1/6/90 7:57	3864.0	V1-1B	5.9	9.9	2.293	15.8	1.74	0.58
1/6/90 16:06	4353.0	V1-1B	6.2	8.6	2.152	14.8	1.82	0.5
1/7/90 8:34	5341.0	V1-1B	7.2	6.2	1.825	13.4	2.12	0.36
1/8/90 10:12	6879.0	V1-1B	8.5	3	1.099	11.5	2.5	0.18
1/3/90 11:56	0.0	V1-1C	3.2	17.2	2.845	20.4	1	1
1/3/90 16:24	51.0	V1-1C	3.4	17.4	2.856	20.8	1.06	1.01
1/3/90 19:20	227.0	V1-1C	3.5	17.2	2.845	20.7	1.09	1
1/3/90 23:14	461.0	V1-1C	3.6	17.1	2.839	20.7	1.13	0.99
1/4/90 5:42	849.0	V1-1C	3.8	16.4	2.797	20.2	1.19	0.95
1/4/90 12:13	1240.0	V1-1C	3.8	15.8	2.760	19.6	1.19	0.92
1/4/90 17:30	1557.0	V1-1C	4.1	15.4	2.734	19.5	1.28	0.9
1/5/90 6:59	2366.0	V1-1C	4.5	13.9	2.632	18.4	1.41	0.81
1/5/90 16:52	2959.0	V1-1C	4.9	12.4	2.518	17.3	1.53	0.72
1/6/90 7:58	3865.0	V1-1C	5.7	10.3	2.332	16.0	1.78	0.6
1/6/90 16:08	4355.0	V1-1C	6	9.1	2.208	15.1	1.88	0.53
1/7/90 8:36	5343.0	V1-1C	6.8	6.9	1.932	13.7	2.13	0.4
1/8/90 10:14	6881.0	V1-1C	8.1	3.5	1.253	11.6	2.53	0.2

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 12:01	0.0	V1-2A	2	18.2	2.901	20.2	1	1
1/3/90 16:26	53.0	V1-2A	2.2	18.1	2.896	20.3	1.1	0.99
1/3/90 19:22	229.0	V1-2A	2.7	17.1	2.839	19.8	1.35	0.94
1/3/90 23:16	463.0	V1-2A	3.2	16.2	2.785	19.4	1.6	0.89
1/4/90 5:44	851.0	V1-2A	3.6	15	2.708	18.6	1.8	0.82
1/4/90 12:15	1242.0	V1-2A	3.8	13.9	2.632	17.7	1.9	0.76
1/4/90 17:32	1559.0	V1-2A	4.3	13.2	2.580	17.5	2.15	0.73
1/5/90 7:00	2367.0	V1-2A	5.2	11.1	2.407	16.3	2.6	0.61
1/5/90 16:55	2962.0	V1-2A	6	9.5	2.251	15.5	3	0.52
1/6/90 7:59	3866.0	V1-2A	7.1	7.2	1.974	14.3	3.55	0.4
1/6/90 16:10	4357.0	V1-2A	7.4	6.2	1.825	13.6	3.7	0.34
1/7/90 8:38	5345.0	V1-2A	8.4	4.2	1.435	12.6	4.2	0.23
1/8/90 10:17	6884.0	V1-2A	9.9	1.3	0.262	11.2	4.95	0.07
1/3/90 12:05	0.0	V1-2B	2.75	17.8	2.879	20.6	1	1
1/3/90 16:28	55.0	V1-2B	2.9	17.7	2.874	20.6	1.05	0.99
1/3/90 19:24	231.0	V1-2B	3.1	17.5	2.862	20.6	1.13	0.98
1/3/90 23:18	465.0	V1-2B	3.3	17.1	2.839	20.4	1.2	0.96
1/4/90 5:46	853.0	V1-2B	3.5	16.2	2.785	19.7	1.27	0.91
1/4/90 12:16	1243.0	V1-2B	3.7	15.5	2.741	19.2	1.35	0.87
1/4/90 17:34	1561.0	V1-2B	4	15.1	2.715	19.1	1.45	0.85
1/5/90 7:02	2369.0	V1-2B	4.6	13.2	2.580	17.8	1.67	0.74
1/5/90 16:59	2966.0	V1-2B	5.1	11.9	2.477	17.0	1.85	0.67
1/6/90 8:01	3868.0	V1-2B	6	9.8	2.282	15.8	2.18	0.55
1/6/90 16:12	4359.0	V1-2B	6.3	8.5	2.140	14.8	2.29	0.48
1/7/90 8:40	5347.0	V1-2B	7.3	6.2	1.825	13.5	2.65	0.35
1/8/90 10:19	6886.0	V1-2B	8.9	2.8	1.030	11.7	3.24	0.16
1/3/90 12:13	0.0	V1-2C	3.8	16.5	2.803	20.3	1	1
1/3/90 16:30	57.0	V1-2C	3.9	16.7	2.815	20.6	1.03	1.01
1/3/90 19:26	233.0	V1-2C	3.9	16.7	2.815	20.6	1.03	1.01
1/3/90 23:20	467.0	V1-2C	3.9	16.6	2.809	20.5	1.03	1.01
1/4/90 5:48	855.0	V1-2C	4	16.1	2.779	20.1	1.05	0.98
1/4/90 12:18	1245.0	V1-2C	4	15.3	2.728	19.3	1.05	0.93
1/4/90 17:36	1563.0	V1-2C	4.3	15.1	2.715	19.4	1.13	0.92
1/5/90 7:04	2371.0	V1-2C	4.7	13.5	2.603	18.2	1.24	0.82
1/5/90 17:02	2969.0	V1-2C	5.1	12.1	2.493	17.2	1.34	0.73
1/6/90 8:03	3870.0	V1-2C	6.1	10.1	2.313	16.2	1.61	0.61
1/6/90 16:14	4361.0	V1-2C	6.3	8.9	2.186	15.2	1.66	0.54
1/7/90 8:42	5349.0	V1-2C	7.2	6.4	1.856	13.6	1.89	0.39
1/8/90 10:21	6888.0	V1-2C	8.7	2.9	1.065	11.6	2.29	0.18

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 12:18	0.0	V1-3A	0.6	20.2	3.006	20.8	1	1
1/3/90 16:32	59.0	V1-3A	1	19.1	2.950	20.1	1.67	0.95
1/3/90 19:28	235.0	V1-3A	1.6	18.2	2.901	19.8	2.67	0.9
1/3/90 23:22	469.0	V1-3A	2.2	17.2	2.845	19.4	3.67	0.85
1/4/90 5:49	856.0	V1-3A	2.7	16.2	2.785	18.9	4.5	0.8
1/4/90 12:20	1247.0	V1-3A	3	15.2	2.721	18.2	5	0.75
1/4/90 17:38	1565.0	V1-3A	3.6	14.8	2.695	18.4	6	0.73
1/5/90 7:06	2373.0	V1-3A	4.3	12.7	2.542	17.0	7.17	0.63
1/5/90 17:04	2971.0	V1-3A	5	11.2	2.416	16.2	8.33	0.55
1/6/90 8:07	3874.0	V1-3A	6.1	9.1	2.208	15.2	10.2	0.45
1/6/90 16:16	4363.0	V1-3A	6.4	8.4	2.128	14.8	10.7	0.42
1/7/90 8:44	5351.0	V1-3A	7.2	6.5	1.872	13.7	12	0.32
1/8/90 10:23	6890.0	V1-3A	8.7	3.6	1.281	12.3	14.5	0.18
1/3/90 12:22	0.0	V1-3B	2.5	18.1	2.896	20.6	1	1
1/3/90 16:34	61.0	V1-3B	2.6	18	2.890	20.6	1.04	0.99
1/3/90 19:30	237.0	V1-3B	2.8	17.7	2.874	20.5	1.12	0.98
1/3/90 23:24	471.0	V1-3B	3	17.2	2.845	20.2	1.2	0.95
1/4/90 5:51	858.0	V1-3B	3.3	16.3	2.791	19.6	1.32	0.9
1/4/90 12:22	1249.0	V1-3B	3.5	15.5	2.741	19.0	1.4	0.86
1/4/90 17:40	1567.0	V1-3B	3.9	15.1	2.715	19.0	1.56	0.83
1/5/90 7:08	2375.0	V1-3B	4.5	13.3	2.588	17.8	1.8	0.73
1/5/90 17:05	2972.0	V1-3B	5.1	12.1	2.493	17.2	2.04	0.67
1/6/90 8:09	3876.0	V1-3B	6.1	10.4	2.342	16.5	2.44	0.57
1/6/90 16:18	4365.0	V1-3B	6.3	9.4	2.241	15.7	2.52	0.52
1/7/90 8:46	5353.0	V1-3B	7.1	7.5	2.015	14.6	2.84	0.41
1/8/90 10:25	6892.0	V1-3B	8.3	4.5	1.504	12.8	3.32	0.25
1/3/90 12:26	0.0	V1-3C	3.2	17.2	2.845	20.4	1	1
1/3/90 16:36	63.0	V1-3C	3.3	17.1	2.839	20.4	1.03	0.99
1/3/90 19:32	239.0	V1-3C	3.5	17	2.833	20.5	1.09	0.99
1/3/90 23:26	473.0	V1-3C	3.6	16.8	2.821	20.4	1.13	0.98
1/4/90 5:52	859.0	V1-3C	3.8	16	2.773	19.8	1.19	0.93
1/4/90 12:24	1251.0	V1-3C	3.9	15.2	2.721	19.1	1.22	0.88
1/4/90 17:42	1569.0	V1-3C	4.3	14.8	2.695	19.1	1.34	0.86
1/5/90 7:10	2377.0	V1-3C	4.8	13.1	2.573	17.9	1.5	0.76
1/5/90 17:07	2974.0	V1-3C	5.4	11.9	2.477	17.3	1.69	0.69
1/6/90 8:11	3878.0	V1-3C	6.2	10.1	2.313	16.3	1.94	0.59
1/6/90 16:20	4367.0	V1-3C	6.5	9.1	2.208	15.6	2.03	0.53
1/7/90 8:48	5355.0	V1-3C	7.3	7.2	1.974	14.5	2.28	0.42
1/8/90 10:27	6894.0	V1-3C	8.7	4.1	1.411	12.8	2.72	0.24

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 12:37	0.0	V2-1A	0.1	20.8	3.035	20.9	1	1
1/3/90 16:37	64.0	V2-1A	0.15	20.6	3.025	20.8	1.5	0.99
1/3/90 19:34	241.0	V2-1A	0.3	20.4	3.016	20.7	3	0.98
1/3/90 23:27	474.0	V2-1A	0.3	19.8	2.986	20.1	3	0.95
1/4/90 5:55	862.0	V2-1A	0.6	18.8	2.934	19.4	6	0.9
1/4/90 12:26	1253.0	V2-1A	0.6	17.9	2.885	18.5	6	0.86
1/4/90 17:44	1571.0	V2-1A	1.2	17.1	2.839	18.3	12	0.82
1/5/90 7:11	2378.0	V2-1A	2.3	14.2	2.653	16.5	23	0.68
1/5/90 17:09	2976.0	V2-1A	1.7	18.5	2.918	20.2	17	0.89
1/6/90 8:13	3880.0	V2-1A	0.2	20.7	3.030	20.9	2	1
1/6/90 16:22	4369.0	V2-1A	0.2	20.8	3.035	21.0	2	1
1/7/90 8:50	5357.0	V2-1A	0.2	20.7	3.030	20.9	2	1
1/8/90 10:29	6896.0	V2-1A	0.4	20.2	3.006	20.6	4	0.97
1/3/90 12:43	0.0	V2-1B	1.25	19.3	2.960	20.6	1	1
1/3/90 16:39	66.0	V2-1B	1.5	18.5	2.918	20.0	1.2	0.96
1/3/90 19:35	242.0	V2-1B	2.1	17.7	2.874	19.8	1.68	0.92
1/3/90 23:28	475.0	V2-1B	2.7	16.3	2.791	19.0	2.16	0.84
1/4/90 5:57	864.0	V2-1B	3.6	14	2.639	17.6	2.88	0.73
1/4/90 12:28	1255.0	V2-1B	4.2	11.9	2.477	16.1	3.36	0.62
1/4/90 17:45	1572.0	V2-1B	5	10.8	2.380	15.8	4	0.56
1/5/90 7:13	2380.0	V2-1B	6.4	7.5	2.015	13.9	5.12	0.39
1/5/90 17:16	2983.0	V2-1B	7.5	5.8	1.758	13.3	6	0.3
1/6/90 8:15	3882.0	V2-1B	8.5	6.1	1.808	14.6	6.8	0.32
1/6/90 16:24	4371.0	V2-1B	8.5	7.5	2.015	16.0	6.8	0.39
1/7/90 8:52	5359.0	V2-1B	8	9.6	2.262	17.6	6.4	0.5
1/8/90 10:31	6898.0	V2-1B	8.1	8.4	2.128	16.5	6.48	0.44
1/3/90 12:47	0.0	V2-1C	1.3	19.2	2.955	20.5	1	1
1/3/90 16:40	67.0	V2-1C	1.8	18.9	2.939	20.7	1.38	0.98
1/3/90 19:36	243.0	V2-1C	2.2	18.5	2.918	20.7	1.69	0.96
1/3/90 23:30	477.0	V2-1C	2.3	17.8	2.879	20.1	1.77	0.93
1/4/90 5:59	866.0	V2-1C	2.9	16.3	2.791	19.2	2.23	0.85
1/4/90 12:30	1257.0	V2-1C	3.2	14.8	2.695	18.0	2.46	0.77
1/4/90 17:46	1573.0	V2-1C	4	13.9	2.632	17.9	3.08	0.72
1/5/90 7:15	2382.0	V2-1C	4.8	11.2	2.416	16.0	3.69	0.58
1/5/90 17:18	2985.0	V2-1C	6	8.9	2.186	14.9	4.62	0.46
1/7/90 8:54	5361.0	V2-1C	7	14.5	2.674	21.5	5.38	0.76

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 12:56	0.0	V2-2A	0.05	20.9	3.040	21.0	1	1
1/3/90 16:42	69.0	V2-2A	0.1	20.8	3.035	20.9	2	1
1/3/90 19:38	245.0	V2-2A	0.15	20.5	3.020	20.7	3	0.98
1/3/90 23:32	479.0	V2-2A	0.15	20.2	3.006	20.4	3	0.97
1/4/90 6:00	867.0	V2-2A	0.2	19.1	2.950	19.3	4	0.91
1/4/90 12:32	1259.0	V2-2A	0.3	18.1	2.896	18.4	6	0.87
1/4/90 17:47	1574.0	V2-2A	0.75	17.3	2.851	18.1	15	0.83
1/5/90 7:17	2384.0	V2-2A	1.4	14.8	2.695	16.2	28	0.71
1/5/90 17:20	2987.0	V2-2A	1.8	15.5	2.741	17.3	36	0.74
1/6/90 8:19	3886.0	V2-2A	3.4	12.2	2.501	15.6	68	0.58
1/6/90 16:28	4375.0	V2-2A	3.3	13.1	2.573	16.4	66	0.63
1/7/90 8:56	5363.0	V2-2A	7.1	11.3	2.425	18.4	142	0.54
1/8/90 10:34	6901.0	V2-2A	3.4	18	2.890	21.4	68	0.86
1/3/90 13:06	0.0	V2-2B	1	19.7	2.981	20.7	1	1
1/3/90 16:43	70.0	V2-2B	1.1	19.5	2.970	20.6	1.1	0.99
1/3/90 19:40	247.0	V2-2B	1.3	19.1	2.950	20.4	1.3	0.97
1/3/90 23:34	481.0	V2-2B	1.7	18.2	2.901	19.9	1.7	0.92
1/4/90 6:02	869.0	V2-2B	2.2	16.9	2.827	19.1	2.2	0.86
1/4/90 12:34	1261.0	V2-2B	2.7	15.2	2.721	17.9	2.7	0.77
1/4/90 17:48	1575.0	V2-2B	3.3	14.4	2.667	17.7	3.3	0.73
1/5/90 7:18	2385.0	V2-2B	4.3	11.2	2.416	15.5	4.3	0.57
1/5/90 17:24	2991.0	V2-2B	5.2	9.2	2.219	14.4	5.2	0.47
1/6/90 8:21	3888.0	V2-2B	7.9	5.4	1.686	13.3	7.9	0.27
1/6/90 16:30	4377.0	V2-2B	9	5.2	1.649	14.2	9	0.26
1/7/90 8:58	5365.0	V2-2B	10.1	5.9	1.775	16.0	10.1	0.3
1/8/90 10:36	6903.0	V2-2B	10.9	5.9	1.775	16.8	10.9	0.3
1/3/90 13:09	0.0	V2-2C	1.7	19	2.944	20.7	1	1
1/3/90 16:44	71.0	V2-2C	2.1	18.6	2.923	20.7	1.24	0.98
1/3/90 19:42	249.0	V2-2C	2.5	18.4	2.912	20.9	1.47	0.97
1/3/90 23:35	482.0	V2-2C	2.6	17.8	2.879	20.4	1.53	0.94
1/4/90 6:04	871.0	V2-2C	3	16.3	2.791	19.3	1.76	0.86
1/4/90 12:36	1263.0	V2-2C	3.3	14.7	2.688	18.0	1.94	0.77
1/4/90 17:50	1577.0	V2-2C	3.9	13.9	2.632	17.8	2.29	0.73
1/5/90 7:20	2387.0	V2-2C	4.8	10.7	2.370	15.5	2.82	0.56
1/5/90 17:26	2993.0	V2-2C	5.7	8.5	2.140	14.2	3.35	0.45
1/6/90 8:24	3891.0	V2-2C	7.9	5.1	1.629	13.0	4.65	0.27
1/6/90 16:32	4379.0	V2-2C	9.1	4.8	1.569	13.9	5.35	0.25
1/7/90 9:00	5367.0	V2-2C	10.5	5.1	1.629	15.6	6.18	0.27
1/8/90 10:38	6905.0	V2-2C	11.8	4.4	1.482	16.2	6.94	0.23

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 13:12	0.0	V2-3A	0.1	20.7	3.030	20.8	1	1
1/3/90 16:47	74.0	V2-3A	0.15	20.5	3.020	20.7	1.5	0.99
1/3/90 19:44	251.0	V2-3A	0.3	20.2	3.006	20.5	3	0.98
1/3/90 23:37	484.0	V2-3A	0.5	19.2	2.955	19.7	5	0.93
1/4/90 6:05	872.0	V2-3A	0.8	18	2.890	18.8	8	0.87
1/4/90 12:38	1265.0	V2-3A	1.2	16.3	2.791	17.5	12	0.79
1/4/90 17:52	1579.0	V2-3A	2	15.9	2.766	17.9	20	0.77
1/5/90 7:24	2391.0	V2-3A	3.2	13.1	2.573	16.3	32	0.63
1/5/90 17:27	2994.0	V2-3A	3.2	14.4	2.667	17.6	32	0.7
1/6/90 8:26	3893.0	V2-3A	0.8	20	2.996	20.8	8	0.97
1/6/90 16:34	4381.0	V2-3A	0.7	19.9	2.991	20.6	7	0.96
1/7/90 9:02	5369.0	V2-3A	0.6	20.1	3.001	20.7	6	0.97
1/8/90 10:40	6907.0	V2-3A	0.7	19.4	2.965	20.1	7	0.94
1/3/90 13:15	0.0	V2-3B	0.9	19.5	2.970	20.4	1	1
1/3/90 16:48	75.0	V2-3B	1.1	19.4	2.965	20.5	1.22	0.99
1/3/90 19:46	253.0	V2-3B	1.4	19	2.944	20.4	1.56	0.97
1/3/90 23:39	486.0	V2-3B	1.8	18.1	2.896	19.9	2	0.93
1/4/90 6:07	874.0	V2-3B	2.6	16.7	2.815	19.3	2.89	0.86
1/4/90 12:40	1267.0	V2-3B	3.1	15.1	2.715	18.2	3.44	0.77
1/4/90 17:53	1580.0	V2-3B	3.6	14.5	2.674	18.1	4	0.74
1/5/90 7:26	2393.0	V2-3B	4.7	11.9	2.477	16.6	5.22	0.61
1/5/90 17:30	2997.0	V2-3B	5.3	10.4	2.342	15.7	5.89	0.53
1/6/90 8:28	3895.0	V2-3B	5.8	11.3	2.425	17.1	6.44	0.58
1/6/90 16:36	4383.0	V2-3B	6.1	11.8	2.468	17.9	6.78	0.61
1/7/90 9:04	5371.0	V2-3B	6.5	12	2.485	18.5	7.22	0.62
1/8/90 10:42	6909.0	V2-3B	7.2	10.7	2.370	17.9	8	0.55
1/3/90 13:18	0.0	V2-3C	2.2	18.5	2.918	20.7	1	1
1/3/90 16:49	76.0	V2-3C	2.4	18.2	2.901	20.6	1.09	0.98
1/3/90 19:48	255.0	V2-3C	2.9	17.6	2.868	20.5	1.32	0.95
1/3/90 23:40	487.0	V2-3C	3.2	16.8	2.821	20.0	1.45	0.91
1/4/90 6:09	876.0	V2-3C	3.8	15.3	2.728	19.1	1.73	0.83
1/4/90 12:42	1269.0	V2-3C	4	14	2.639	18.0	1.82	0.76
1/4/90 17:55	1582.0	V2-3C	4.7	13	2.565	17.7	2.14	0.7
1/5/90 7:28	2395.0	V2-3C	5.9	10.3	2.332	16.2	2.68	0.56
1/5/90 17:32	2999.0	V2-3C	6.7	8.5	2.140	15.2	3.05	0.46
1/6/90 8:30	3897.0	V2-3C	7.2	8.5	2.140	15.7	3.27	0.46
1/6/90 16:37	4384.0	V2-3C	7.5	8.8	2.175	16.3	3.41	0.48
1/7/90 9:06	5373.0	V2-3C	8.3	9.1	2.208	17.4	3.77	0.49
1/8/90 10:44	6911.0	V2-3C	9.8	7	1.946	16.8	4.45	0.38

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 14:03	0.0	V3A	3	17.7	2.874	20.7	1	1
1/3/90 16:58	85.0	V3A	3.1	17.5	2.862	20.6	1.03	0.99
1/3/90 19:51	258.0	V3A	3.2	17.6	2.868	20.8	1.07	0.99
1/3/90 23:44	491.0	V3A	3.1	17.2	2.845	20.3	1.03	0.97
1/4/90 6:13	880.0	V3A	3.2	17	2.833	20.2	1.07	0.96
1/4/90 12:48	1275.0	V3A	3.2	16.8	2.821	20.0	1.07	0.95
1/4/90 18:00	1587.0	V3A	3.5	16.6	2.809	20.1	1.17	0.94
1/5/90 7:32	2399.0	V3A	3.6	16.1	2.779	19.7	1.2	0.91
1/5/90 17:34	3001.0	V3A	3.8	15.8	2.760	19.6	1.27	0.89
1/6/90 8:34	3901.0	V3A	3.9	15.4	2.734	19.3	1.3	0.87
1/6/90 16:39	4386.0	V3A	4	15.2	2.721	19.2	1.33	0.86
1/7/90 9:09	5376.0	V3A	4	14.9	2.701	18.9	1.33	0.84
1/8/90 10:49	6916.0	V3A	4.1	14.8	2.695	18.9	1.37	0.84
1/3/90 14:05	0.0	V3B	3.2	17.3	2.851	20.5	1	1
1/3/90 16:59	86.0	V3B	3.3	17.2	2.845	20.5	1.03	0.99
1/3/90 19:53	260.0	V3B	3.3	17.3	2.851	20.6	1.03	1
1/3/90 23:45	492.0	V3B	3.2	17	2.833	20.2	1	0.98
1/4/90 6:15	882.0	V3B	3.3	16.8	2.821	20.1	1.03	0.97
1/4/90 12:49	1276.0	V3B	3.2	16.6	2.809	19.8	1	0.96
1/4/90 18:01	1588.0	V3B	3.6	16.5	2.803	20.1	1.13	0.95
1/5/90 7:33	2400.0	V3B	3.7	16.1	2.779	19.8	1.16	0.93
1/5/90 17:35	3002.0	V3B	3.9	15.8	2.760	19.7	1.22	0.91
1/6/90 8:36	3903.0	V3B	4	15.2	2.721	19.2	1.25	0.88
1/6/90 16:40	4387.0	V3B	4.1	15.1	2.715	19.2	1.28	0.87
1/7/90 9:11	5378.0	V3B	4.1	14.7	2.688	18.8	1.28	0.85
1/8/90 10:50	6917.0	V3B	4.25	14.2	2.653	18.5	1.33	0.82
1/3/90 14:07	0.0	V3C	3.2	17.2	2.845	20.4	1	1
1/3/90 17:00	87.0	V3C	3.3	17.2	2.845	20.5	1.03	1
1/3/90 19:55	262.0	V3C	3.3	17.3	2.851	20.6	1.03	1.01
1/3/90 23:47	494.0	V3C	3.2	17.1	2.839	20.3	1	0.99
1/4/90 6:16	883.0	V3C	3.3	16.8	2.821	20.1	1.03	0.98
1/4/90 12:50	1277.0	V3C	3.2	16.7	2.815	19.9	1	0.97
1/4/90 18:02	1589.0	V3C	3.5	16.5	2.803	20.0	1.09	0.96
1/5/90 7:35	2402.0	V3C	3.7	16	2.773	19.7	1.16	0.93
1/5/90 17:36	3003.0	V3C	3.9	15.7	2.754	19.6	1.22	0.91
1/6/90 8:38	3905.0	V3C	4	15.3	2.728	19.3	1.25	0.89
1/6/90 16:42	4389.0	V3C	4	15.1	2.715	19.1	1.25	0.88
1/7/90 9:13	5380.0	V3C	4.1	14.7	2.688	18.8	1.28	0.85
1/8/90 10:52	6919.0	V3C	4.2	14.3	2.660	18.5	1.31	0.83

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90	13:49	0.0	V4A	0.2	20.6	3.025	20.8	1	1
1/3/90	17:01	88.0	V4A	0.3	20.5	3.020	20.8	1.5	1
1/4/90	12:53	1280.0	V4A	0.4	20.2	3.006	20.6	2	0.98
1/5/90	7:36	2403.0	V4A	0.6	20.1	3.001	20.7	3	0.98
1/6/90	8:39	3906.0	V4A	0.9	19.8	2.986	20.7	4.5	0.96
1/6/90	16:44	4391.0	V4A	1	19.7	2.981	20.7	5	0.96
1/7/90	9:15	5382.0	V4A	1	19.3	2.960	20.3	5	0.94
1/8/90	10:53	6920.0	V4A	1.2	19.2	2.955	20.4	6	0.93
1/3/90	13:51	0.0	V4B	0.2	20.6	3.025	20.8	1	1
1/3/90	17:02	89.0	V4B	0.3	20.5	3.020	20.8	1.5	1
1/4/90	12:54	1281.0	V4B	0.3	20.3	3.011	20.6	1.5	0.99
1/5/90	7:37	2404.0	V4B	0.6	20.1	3.001	20.7	3	0.98
1/6/90	8:40	3907.0	V4B	1	19.8	2.986	20.8	5	0.96
1/6/90	16:46	4393.0	V4B	0.9	19.7	2.981	20.6	4.5	0.96
1/7/90	9:17	5384.0	V4B	1	19.3	2.960	20.3	5	0.94
1/8/90	10:55	6922.0	V4B	1.1	19.2	2.955	20.3	5.5	0.93
1/3/90	13:53	0.0	V4C	0.3	20.5	3.020	20.8	1	1
1/3/90	17:03	90.0	V4C	0.3	20.5	3.020	20.8	1	1
1/4/90	12:56	1283.0	V4C	0.3	20.3	3.011	20.6	1	0.99
1/5/90	7:39	2406.0	V4C	0.6	20.1	3.001	20.7	2	0.98
1/6/90	8:41	3908.0	V4C	1	19.8	2.986	20.8	3.33	0.97
1/6/90	16:47	4394.0	V4C	1	19.7	2.981	20.7	3.33	0.96
1/7/90	9:19	5386.0	V4C	0.9	19.4	2.965	20.3	3	0.95
1/8/90	10:57	6924.0	V4C	1.2	19.2	2.955	20.4	4	0.94

Appendix H
Respiration Test 4 Data

Table 28. Summarized data for Respiration Test 4.

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	THC μL/L	Norm CO2	Norm O2
3/3/90 11:06	Blower to V3 and V4 off for shutdown test 4								
3/3/90 10:00	0	V3A	5.4	14.7	2.688	20.1	1	1	
3/3/90 13:24	138	V3A	5.2	14.9	2.701	20.1	0.96	1.01	
3/3/90 16:38	332	V3A	5.3	15	2.708	20.25	0.97	1.02	
3/4/90 9:46	1360	V3A	5.1	14.4	2.667	19.5	0.94	0.98	
3/4/90 17:23	1817	V3A	5.2	14.4	2.667	19.6	0.96	0.98	
3/5/90 8:13	2707	V3A	5.0	14.3	2.660	19.3	0.93	0.97	
3/5/90 16:48	3222	V3A	5.1	14.2	2.653	19.3	0.94	0.97	
3/6/90 10:17	4271	V3A	5.0	14.1	2.646	19.1	0.93	0.96	
3/3/90 10:02	0	V3B	5.8	14.2	2.653	20	1	1	
3/3/90 13:26	140	V3B	5.7	14.3	2.660	20	0.98	1.01	
3/3/90 16:40	334	V3B	5.7	14.5	2.674	20.2	0.98	1.02	
3/4/90 9:48	1362	V3B	5.3	14.1	2.646	19.4	0.91	0.99	
3/4/90 17:25	1819	V3B	5.4	14.1	2.646	19.5	0.93	0.99	
3/5/90 8:16	2710	V3B	5.1	14.1	2.646	19.2	0.88	0.99	
3/5/90 16:50	3224	V3B	5.1	14.1	2.646	19.2	0.88	0.99	
3/6/90 10:19	4273	V3B	5.1	13.9	2.632	19	0.88	0.98	
3/3/90 10:04	0	V3C	6.0	14.1	2.646	20.1	1	1	
3/3/90 13:28	142	V3C	5.8	14.2	2.653	20	0.97	1.01	
3/3/90 16:42	336	V3C	5.7	14.5	2.674	20.2	0.95	1.03	
3/4/90 9:50	1364	V3C	5.4	14	2.639	19.4	0.9	0.99	
3/4/90 17:27	1821	V3C	5.4	14.1	2.646	19.5	0.9	1	
3/5/90 8:18	2712	V3C	5.2	14	2.639	19.2	0.87	0.99	
3/5/90 16:52	3226	V3C	5.2	14.1	2.646	19.3	0.87	1	
3/6/90 10:21	4275	V3C	6.4	12	2.485	18.4	1.07	0.85	
3/3/90 9:52	0	V4A	0.5	20.5	3.020	21	1	1	
3/3/90 13:30	144	V4A	0.6	20.4	3.016	21	1.2	1	
3/3/90 16:44	338	V4A	0.6	20.5	3.020	21.1	1.2	1	
3/4/90 9:53	1367	V4A	0.8	20	2.996	20.8	1.6	0.98	
3/4/90 17:29	1823	V4A	0.9	20	2.996	20.9	1.8	0.98	
3/5/90 8:23	2717	V4A	1.0	19.5	2.970	20.5	2	0.95	
3/5/90 16:54	3228	V4A	1.1	19.5	2.970	20.6	2.2	0.95	
3/6/90 10:24	4278	V4A	1.2	19.2	2.955	20.4	2.4	0.94	
3/3/90 9:54	0	V4B	0.6	20.3	3.011	20.9	1	1	
3/3/90 13:32	146	V4B	0.7	20.3	3.011	21	1.17	1	
3/3/90 16:46	340	V4B	0.7	20.3	3.011	21	1.17	1	
3/4/90 9:55	1369	V4B	0.8	20	2.996	20.8	1.33	0.99	
3/4/90 17:31	1825	V4B	0.9	20	2.996	20.9	1.5	0.99	
3/5/90 8:25	2719	V4B	1.0	19.5	2.970	20.5	1.67	0.96	
3/5/90 16:56	3230	V4B	1.1	19.5	2.970	20.6	1.83	0.96	
3/6/90 10:26	4280	V4B	1.2	19.2	2.955	20.4	2	0.95	
3/3/90 9:56	0	V4C	0.7	20.2	3.006	20.9	1	1	
3/3/90 13:34	148	V4C	0.7	20.2	3.006	20.9	1	1	
3/3/90 16:48	342	V4C	0.8	20.3	3.011	21.05	1.07	1	
3/4/90 9:57	1371	V4C	0.8	20	2.996	20.8	1.14	0.99	
3/4/90 17:33	1827	V4C	0.9	20	2.996	20.9	1.29	0.99	
3/5/90 8:27	2721	V4C	1.0	19.5	2.970	20.5	1.43	0.97	
3/5/90 16:58	3232	V4C	1.1	19.4	2.965	20.5	1.57	0.96	
3/6/90 10:28	4282	V4C	1.2	19.2	2.955	20.4	1.71	0.95	

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	THC μL/L	Norm CO2	Norm O2
3/8/90 11:35	Blowers off (V1 & V2) for shutdown 4								
3/8/90 9:46	0	V1-1A	5.8	13.5	2.603	19.3	2494	1	1
3/8/90 13:42	127	V1-1A	6.0	12.9	2.557	18.9		1.03	0.96
3/8/90 17:08	333	V1-1A	6.7	11	2.398	17.7		1.16	0.81
3/8/90 22:16	641	V1-1A	7.4	9	2.197	16.4		1.28	0.67
3/9/90 7:44	1209	V1-1A	8.2	6.2	1.825	14.4		1.41	0.46
3/9/90 16:01	1706	V1-1A	9.2	4.1	1.411	13.3		1.59	0.3
3/10/90 6:42	2587	V1-1A	11.0	0.8	-0.223	11.8			
3/8/90 9:59	0	V1-1B	6.5	11.3	2.468	18.3	3719	1	1
3/8/90 13:44	129	V1-1B	6.8	11.6	2.451	18.4		1.05	0.98
3/8/90 17:13	338	V1-1B	7.2	11	2.398	18.2		1.11	0.93
3/8/90 22:18	643	V1-1B	7.6	10.2	2.322	17.8		1.17	0.86
3/9/90 7:46	1211	V1-1B	7.8	8.5	2.140	16.3		1.2	0.72
3/9/90 16:04	1709	V1-1B	8.3	6.8	1.917	15.1		1.28	0.58
3/10/90 6:44	2589	V1-1B	9.8	3.7	1.308	13.5		1.51	0.31
3/10/90 17:30	3235	V1-1B	10.4	1.9	0.642	12.3		1.6	0.16
3/8/90 10:07	0	V1-1C	7.1	11	2.398	18.1	2331	1	1
3/8/90 13:46	131	V1-1C	7.4	10.7	2.370	18.1		1.04	0.97
3/8/90 17:15	340	V1-1C	7.7	10.2	2.322	17.9		1.08	0.93
3/8/90 22:20	645	V1-1C	8.0	10	2.303	18		1.13	0.91
3/9/90 7:48	1213	V1-1C	8.2	8.5	2.140	16.7		1.15	0.77
3/9/90 16:07	1712	V1-1C	8.6	7.1	1.960	15.7		1.21	0.65
3/10/90 6:46	2591	V1-1C	9.8	4.1	1.411	13.9		1.38	0.37
3/10/90 17:32	3237	V1-1C	10.4	2.2	0.788	12.6		1.46	0.2
3/8/90 10:20	0	V1-2A	3.4	16.8	2.821	20.2	908	1	1
3/8/90 13:48	133	V1-2A	4.0	15.3	2.728	19.3		1.18	0.91
3/8/90 17:17	342	V1-2A	4.7	13.2	2.580	17.9		1.38	0.79
3/8/90 22:24	649	V1-2A	5.6	11.2	2.416	16.8		1.65	0.67
3/9/90 7:50	1215	V1-2A	6.6	8.2	2.104	14.8		1.94	0.49
3/9/90 16:10	1715	V1-2A	7.4	6.2	1.825	13.6		2.18	0.37
3/10/90 6:48	2593	V1-2A	9.4	2.3	0.833	11.7		2.76	0.14
3/10/90 17:34	3239	V1-2A	10.5	0.6	-0.511	11.1			
3/8/90 10:27	0	V1-2B	4.5	15	2.708	19.5	1513	1	1
3/8/90 13:50	135	V1-2B	4.8	14.4	2.667	19.2		1.07	0.96
3/8/90 17:19	344	V1-2B	5.4	13.6	2.610	19		1.2	0.91
3/8/90 22:26	651	V1-2B	6.0	12.4	2.518	18.4		1.33	0.83
3/9/90 7:52	1217	V1-2B	6.6	10.2	2.322	16.8		1.47	0.68
3/9/90 16:12	1717	V1-2B	7.3	8.2	2.104	15.5		1.62	0.55
3/10/90 6:50	2595	V1-2B	8.8	4.6	1.526	13.4		1.96	0.31
3/10/90 17:36	3241	V1-2B	9.7	2.4	0.875	12.1		2.16	0.16
3/8/90 10:32	0	V1-2C	4.8	14.7	2.688	19.5	1758	1	1
3/8/90 13:52	137	V1-2C	5.8	13.2	2.580	19		1.21	0.9
3/8/90 17:21	346	V1-2C	6.3	12.7	2.542	19		1.31	0.86
3/8/90 22:28	653	V1-2C	6.6	12.2	2.501	18.8		1.38	0.83
3/9/90 7:54	1219	V1-2C	6.9	10.3	2.332	17.2		1.44	0.7
3/9/90 16:14	1719	V1-2C	7.4	8.6	2.152	16		1.54	0.59
3/10/90 6:52	2597	V1-2C	8.8	5.2	1.649	14		1.83	0.35
3/10/90 17:38	3243	V1-2C	9.5	3	1.099	12.5		1.98	0.2

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	THC μL/L	Norm CO2	Norm O2
3/8/90 10:37	0	V1-3A	1.8	18.3	2.907	20.1	200	1	1
3/8/90 13:54	139	V1-3A	3.0	16.1	2.779	19.1		1.67	0.88
3/8/90 17:23	348	V1-3A	4.0	14.2	2.653	18.2		2.22	0.78
3/8/90 22:30	655	V1-3A	5.0	12.4	2.518	17.4		2.78	0.68
3/9/90 7:58	1223	V1-3A	6.1	9.9	2.293	16		3.39	0.54
3/9/90 16:16	1721	V1-3A	7.0	7.8	2.054	14.8		3.89	0.43
3/10/90 6:54	2599	V1-3A	8.7	4.2	1.435	12.9		4.83	0.23
3/10/90 17:40	3245	V1-3A	9.8	2.8	1.030	12.6		5.44	0.15
3/8/90 10:42	0	V1-3B	4.8	14.2	2.653	19	1840	1	1
3/8/90 13:56	141	V1-3B	5.1	13.6	2.610	18.7		1.06	0.96
3/8/90 17:25	350	V1-3B	5.8	13	2.565	18.8		1.21	0.92
3/8/90 22:34	659	V1-3B	6.3	12.1	2.493	18.4		1.31	0.85
3/9/90 8:00	1225	V1-3B	6.9	10.1	2.313	17		1.44	0.71
3/9/90 16:18	1723	V1-3B	7.4	8.5	2.140	15.9		1.54	0.6
3/10/90 6:56	2601	V1-3B	8.9	5.4	1.686	14.3		1.85	0.38
3/10/90 17:44	3249	V1-3B	9.8	3.4	1.224	13.2		2.04	0.24
3/8/90 10:45	0	V1-3C	6.2	12.4	2.518	18.6	1078	1	1
3/8/90 13:58	143	V1-3C	6.4	12.2	2.501	18.6		1.03	0.98
3/8/90 17:27	352	V1-3C	6.7	12	2.485	18.7		1.08	0.97
3/8/90 22:36	661	V1-3C	7.0	11.5	2.442	18.5		1.13	0.93
3/9/90 8:02	1227	V1-3C	7.3	9.9	2.293	17.2		1.18	0.8
3/9/90 16:20	1725	V1-3C	7.8	8.3	2.116	16.1		1.26	0.67
3/10/90 6:58	2603	V1-3C	9.0	5.3	1.668	14.3		1.45	0.43
3/10/90 17:46	3251	V1-3C	9.9	3.3	1.194	13.2		1.6	0.27
3/8/90 10:49	0	V2-1A	0.6	20.3	3.011	20.9	60	1	1
3/8/90 14:04	149	V2-1A	1.1	18.8	2.934	19.9		1.83	0.93
3/8/90 17:30	355	V2-1A	1.9	17.8	2.879	19.7		3.17	0.88
3/8/90 22:38	663	V2-1A	2.6	16.1	2.779	18.7		4.33	0.79
3/9/90 8:06	1231	V2-1A	3.3	14.1	2.646	17.4		5.5	0.69
3/9/90 16:22	1727	V2-1A	4.3	12.2	2.501	16.5		7.17	0.6
3/10/90 7:06	2611	V2-1A	5.5	9	2.197	14.5		9.17	0.44
3/10/90 17:48	3253	V2-1A	6.8	7.8	2.054	14.6		11.3	0.38
3/8/90 10:53	0	V2-1B	4.8	14.3	2.660	19.1	1610	1	1
3/8/90 14:06	151	V2-1B	5.4	12.7	2.542	18.1		1.13	0.89
3/8/90 17:35	360	V2-1B	6.5	11.4	2.434	17.9		1.35	0.8
3/8/90 22:40	665	V2-1B	7.2	9.9	2.293	17.1		1.5	0.69
3/9/90 8:08	1233	V2-1B	8.3	6.9	1.932	15.2		1.73	0.48
3/9/90 16:24	1729	V2-1B	9.4	4.7	1.548	14.1		1.96	0.33
3/10/90 7:08	2613	V2-1B	10.8	2.3	0.833	13.1		2.25	0.16
3/10/90 17:50	3255	V2-1B	11.3	1.4	0.336	12.7		2.35	0.1
3/8/90 10:57	0	V2-1C	5.8	12.9	2.557	18.7	5550	1	1
3/8/90 14:08	153	V2-1C	6.1	12.4	2.518	18.5		1.05	0.96
3/8/90 17:45	370	V2-1C	6.5	12.1	2.493	18.6		1.12	0.94
3/8/90 22:42	667	V2-1C	6.8	11.2	2.416	18		1.17	0.87
3/9/90 8:10	1235	V2-1C	7.3	9.2	2.219	16.5		1.26	0.71
3/9/90 16:26	1731	V2-1C	8.2	7.2	1.974	15.4		1.41	0.56
3/10/90 7:10	2615	V2-1C	9.5	4	1.386	13.5		1.64	0.31
3/10/90 17:52	3257	V2-1C	10.5	2.3	0.833	12.8		1.81	0.18

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	THC μL/L	Norm CO2	Norm O2
3/8/90 11:00	0	V2-2A	0.1	20.8	3.035	20.9	60	1	1
3/8/90 14:10	155	V2-2A	0.2	20.2	3.006	20.4		2	0.97
3/8/90 17:47	372	V2-2A	0.6	19.3	2.960	19.9		6	0.93
3/8/90 22:44	669	V2-2A	1.0	18.2	2.901	19.2		10	0.88
3/9/90 8:24	1249	V2-2A	1.9	15.7	2.754	17.6		19	0.75
3/9/90 16:28	1733	V2-2A	3.1	13.2	2.580	16.3		31	0.63
3/10/90 7:12	2617	V2-2A	4.4	9.2	2.219	13.6		44	0.44
3/10/90 17:54	3259	V2-2A	6.3	6.5	1.872	12.8		63	0.31
3/8/90 11:05	0	V2-2B	4.1	16.1	2.779	20.2	2430	1	1
3/8/90 14:12	157	V2-2B	4.4	15.2	2.721	19.6		1.07	0.94
3/8/90 17:49	374	V2-2B	5.0	14.1	2.646	19.1		1.22	0.88
3/8/90 22:46	671	V2-2B	5.8	12.7	2.542	18.5		1.41	0.79
3/9/90 8:26	1251	V2-2B	6.7	9.3	2.230	16		1.63	0.58
3/9/90 16:30	1735	V2-2B	7.7	7	1.946	14.7		1.88	0.43
3/10/90 7:14	2619	V2-2B	9.5	2.5	0.916	12		2.32	0.16
3/10/90 17:56	3261	V2-2B	10.5	0.7	-0.357	11.2			
3/8/90 11:10	0	V2-2C	6.0	13.6	2.610	19.6	5112	1	1
3/8/90 14:16	161	V2-2C	6.5	12.6	2.534	19.1		1.08	0.93
3/8/90 17:52	377	V2-2C	7.0	11.8	2.468	18.8		1.17	0.87
3/8/90 22:48	673	V2-2C	7.3	10.7	2.370	18		1.22	0.79
3/9/90 8:28	1253	V2-2C	7.8	7.8	2.054	15.6		1.3	0.57
3/9/90 16:32	1737	V2-2C	8.9	5.2	1.649	14.1		1.48	0.38
3/10/90 7:16	2621	V2-2C	10.3	1	0.000	11.3		1.72	0.07
3/10/90 17:58	3263	V2-2C	11.1	0	0.000	11.1		1.85	0
3/8/90 11:15	0	V2-3A	0.5	20.5	3.020	21	115	1	1
3/8/90 14:18	163	V2-3A	1.3	18.2	2.901	19.5		2.6	0.89
3/8/90 17:54	379	V2-3A	2.3	16.5	2.803	18.8		4.6	0.8
3/8/90 22:50	675	V2-3A	3.1	15	2.708	18.1		6.2	0.73
3/9/90 8:34	1259	V2-3A	4.2	12	2.485	16.2		8.4	0.59
3/9/90 16:34	1739	V2-3A	5.6	9.8	2.282	15.4		11.2	0.48
3/10/90 7:20	2625	V2-3A	7.0	6.4	1.856	13.4		14	0.31
3/10/90 18:00	3265	V2-3A	8.6	4.2	1.435	12.8		17.2	0.2
3/8/90 11:19	0	V2-3B	4.5	15.1	2.715	19.6	1150	1	1
3/8/90 14:20	165	V2-3B	4.9	13.9	2.632	18.8		1.09	0.92
3/8/90 17:56	381	V2-3B	5.6	13	2.565	18.6		1.24	0.86
3/8/90 22:52	677	V2-3B	6.2	11.8	2.468	18		1.38	0.78
3/9/90 8:36	1261	V2-3B	7.1	9.4	2.241	16.5		1.58	0.62
3/9/90 16:36	1741	V2-3B	8.0	7.5	2.015	15.5		1.78	0.5
3/10/90 7:22	2627	V2-3B	9.5	4.2	1.435	13.7		2.11	0.28
3/10/90 18:02	3267	V2-3B	10.6	2.4	0.875	13		2.36	0.16
3/8/90 11:23	0	V2-3C	6.8	12.1	2.493	18.9	3323	1	1
3/8/90 14:22	167	V2-3C	6.6	12.1	2.493	18.7		0.97	1
3/8/90 17:58	383	V2-3C	7.2	11	2.398	18.2		1.06	0.91
3/8/90 22:54	679	V2-3C	7.5	10	2.303	17.5		1.1	0.83
3/9/90 8:38	1263	V2-3C	8.2	7.5	2.015	15.7		1.21	0.62
3/9/90 16:38	1743	V2-3C	9.4	5.5	1.705	14.9		1.38	0.45
3/10/90 7:24	2629	V2-3C	10.8	2.2	0.788	13		1.59	0.18
3/10/90 18:04	3269	V2-3C	11.8	0.4	-0.916	12.2			

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	THC μL/L	Norm CO2	Norm O2
3/9/90 9:20	Blower for V3 off for shutdown test 4A								
3/9/90 8:55	0	V3 disch	2.7	17.5	2.862	20.2	895	1	1
3/9/90 11:30	130	V3 disch	2.5	17.3	2.851	19.8	719	0.93	0.99
3/9/90 16:40	440	V3 disch	2.9	17.3	2.851	20.2	654	1.07	0.99
3/10/90 7:35	1335	V3 disch	3.2	16.5	2.803	19.7	95	1.19	0.94
3/10/90 18:15	1975	V3 disch	3.4	15.9	2.766	19.3	32	1.26	0.91
3/11/90 3:00	2500	V3 disch	3.5	15.3	2.728	18.8	22	1.3	0.87
3/11/90 17:53	3393	V3 disch	3.8	14.7	2.688	18.5	7	1.41	0.84
3/12/90 8:15	4255	V3 disch	3.9	14.3	2.660	18.2	8	1.44	0.82
3/9/90 9:00	0	V3A	2.8	17.3	2.851	20.1	40.0	1	1
3/9/90 11:35	135	V3A	2.7	17.2	2.845	19.9	40.0	0.96	0.99
3/9/90 16:50	450	V3A	3.1	17.3	2.851	20.4	37.0	1.11	1
3/10/90 7:40	1340	V3A	3.1	16.5	2.803	19.6	7.0	1.11	0.95
3/10/90 18:20	1980	V3A	3.4	16.1	2.779	19.5	0.0	1.21	0.93
3/11/90 3:05	2505	V3A	3.4	15.5	2.741	18.9	1.0	1.21	0.9
3/11/90 18:10	3410	V3A	3.8	14.9	2.701	18.7	0.0	1.36	0.86
3/12/90 8:25	4265	V3A	3.8	14.4	2.667	18.2	1.0	1.36	0.83
3/9/90 9:05	0	V3B	2.9	17.2	2.845	20.1	65.0	1	1
3/9/90 11:40	140	V3B	2.8	17.2	2.845	20	50.0	0.97	1
3/9/90 17:00	460	V3B	3.1	17.2	2.845	20.3	31.0	1.07	1
3/10/90 7:45	1345	V3B	3.2	16.4	2.797	19.6	6.0	1.1	0.95
3/10/90 18:25	1985	V3B	3.3	15.9	2.766	19.2	2.0	1.14	0.92
3/11/90 3:10	2510	V3B	3.5	15.3	2.728	18.8	2.0	1.21	0.89
3/11/90 18:15	3415	V3B	3.8	14.8	2.695	18.6	2.0	1.31	0.86
3/12/90 8:30	4270	V3B	3.8	14.2	2.653	18	3.0	1.31	0.83
3/9/90 9:10	0	V3C	2.0	17.2	2.845	19.2	30.0	1	1
3/9/90 11:45	145	V3C	2.8	17.1	2.839	19.9	34.0	1.4	0.99
3/9/90 17:10	470	V3C	3.1	17.2	2.845	20.3	40.0	1.55	1
3/10/90 7:50	1350	V3C	3.2	16.4	2.797	19.6	10.0	1.6	0.95
3/10/90 18:30	1990	V3C	3.3	16	2.773	19.3	2.0	1.65	0.93
3/11/90 3:15	2515	V3C	3.5	15.4	2.734	18.9	1.0	1.75	0.9
3/11/90 18:20	3420	V3C	3.8	14.9	2.701	18.7	1.0	1.9	0.87
3/12/90 8:35	4275	V3C	3.8	14.2	2.653	18	2.0	1.9	0.83

Appendix I
Respiration Test 5 Data

Table 29. Summarized data for Respiration Test 5.

mo/day/yr/time	Elapsed		Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm	
	Time (min)							CO2	O2
4/24/90 13:00	Bowers off								
4/24/90 9:06	0		V1-1A	9.1	7.7	2.041	16.8	1.00	1.00
4/24/90 16:00	180		V1-1A	9.4	7.1	1.960	16.5	1.03	0.92
4/24/90 22:08	548		V1-1A	10.4	4.4	1.482	14.8	1.14	0.57
4/25/90 8:04	1144		V1-1A	11.5	1.4	0.336	12.9	1.26	0.18
4/25/90 16:17	1637		V1-1A	12	0.1	-2.303	12.1		
4/24/90 9:08	0		V1-1B	9.4	7.6	2.028	17	1.00	1.00
4/24/90 16:04	184		V1-1B	9.4	7.6	2.028	17	1.00	1.00
4/24/90 22:10	550		V1-1B	9.7	6.9	1.932	16.6	1.03	0.91
4/25/90 8:06	1146		V1-1B	10.4	4.6	1.526	15	1.11	0.61
4/25/90 16:18	1638		V1-1B	10.8	2.9	1.065	13.7	1.15	0.38
4/25/90 21:54	1974		V1-1B	11.5	1.8	0.588	13.3	1.22	0.24
4/24/90 9:10	0		V1-1C	9.6	7.5	2.015	17.1	1.00	1.00
4/24/90 16:06	186		V1-1C	9.5	7.5	2.015	17	0.99	1.00
4/24/90 22:12	552		V1-1C	9.8	7.1	1.960	16.9	1.02	0.95
4/25/90 8:08	1148		V1-1C	10.3	5.1	1.629	15.4	1.07	0.68
4/25/90 16:20	1640		V1-1C	10.8	3.3	1.194	14.1	1.13	0.44
4/25/90 21:56	1976		V1-1C	11.4	2.2	0.788	13.6	1.19	0.29
4/24/90 9:12	0		V1-2A	5.6	13.3	2.588	18.9	1.00	1.00
4/24/90 16:08	188		V1-2A	6.5	10.9	2.389	17.4	1.16	0.82
4/24/90 22:14	554		V1-2A	7.9	6.3	1.841	14.2	1.41	0.47
4/25/90 8:10	1150		V1-2A	9.5	2.2	0.788	11.7	1.70	0.17
4/25/90 16:22	1642		V1-2A	10.3	0		10.3		
4/24/90 9:14	0		V1-2B	6.3	12.1	2.493	18.4	1.00	1.00
4/24/90 16:10	190		V1-2B	7	11	2.398	18	1.11	0.91
4/24/90 22:16	556		V1-2B	7.8	8.9	2.186	16.7	1.24	0.74
4/25/90 8:12	1152		V1-2B	9.1	5.5	1.705	14.6	1.44	0.45
4/25/90 16:24	1644		V1-2B	10	3.1	1.131	13.1	1.59	0.26
4/25/90 21:58	1978		V1-2B	10.9	1.4	0.336	12.3	1.73	0.12
4/24/90 9:16	0		V1-2C	7.7	10.2	2.322	17.9	1.00	1.00
4/24/90 16:12	192		V1-2C	8.2	9.7	2.272	17.9	1.06	0.95
4/24/90 22:20	560		V1-2C	8.6	8.8	2.175	17.4	1.12	0.86
4/25/90 8:14	1154		V1-2C	9.3	6.2	1.825	15.5	1.21	0.61
4/25/90 16:26	1646		V1-2C	9.8	4	1.386	13.8	1.27	0.39
4/25/90 22:00	1980		V1-2C	10.8	2.3	0.833	13.1	1.40	0.23
4/24/90 9:18	0		V1-3A	4.6	14.2	2.653	18.8	1.00	1.00
4/24/90 16:14	194		V1-3A	6.3	11.2	2.416	17.5	1.37	0.79
4/24/90 22:24	564		V1-3A	7.8	8.5	2.140	16.3	1.70	0.60
4/25/90 8:16	1156		V1-3A	9.1	5.1	1.629	14.2	1.98	0.36
4/25/90 16:28	1648		V1-3A	10	2.9	1.065	12.9	2.17	0.20
4/25/90 22:02	1982		V1-3A	11.2	1.2	0.182	12.4	2.43	0.08
4/24/90 9:20	0		V1-3B	7.5	10.5	2.351	18	1.00	1.00
4/24/90 16:16	196		V1-3B	7.7	10.3	2.332	18	1.03	0.98
4/24/90 22:26	566		V1-3B	8.3	9	2.197	17.3	1.11	0.86
4/25/90 8:18	1158		V1-3B	9.3	6.2	1.825	15.5	1.24	0.59
4/25/90 16:30	1650		V1-3B	10	4.2	1.435	14.2	1.33	0.40
4/25/90 22:04	1984		V1-3B	10.8	2.8	1.030	13.6	1.44	0.27

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
4/24/90 9:22	0	V1-3C	8	10	2.303	18	1	1
4/24/90 16:18	198	V1-3C	8.2	9.9	2.293	18.1	1.025	0.99
4/24/90 22:28	568	V1-3C	8.7	9.1	2.208	17.8	1.088	0.91
4/25/90 8:20	1160	V1-3C	9.2	6.8	1.917	16	1.15	0.68
4/25/90 16:32	1652	V1-3C	9.8	4.6	1.526	14.4	1.225	0.46
4/25/90 22:06	1986	V1-3C	10.7	3.2	1.163	13.9	1.338	0.32
4/24/90 9:30	0	V2-1A	1.7	18.5	2.918	20.2	1	1
4/24/90 16:20	200	V2-1A	3.1	16.2	2.785	19.3	1.824	0.876
4/24/90 22:30	570	V2-1A	4.1	13.3	2.588	17.4	2.412	0.719
4/25/90 8:22	1162	V2-1A	5.4	10.5	2.351	15.9	3.176	0.568
4/25/90 16:34	1654	V2-1A	6.5	9	2.197	15.5	3.824	0.486
4/25/90 22:08	1988	V2-1A	7.7	6.5	1.872	14.2	4.529	0.351
4/26/90 8:20	2600	V2-1A	8.9	4.5	1.504	13.4	5.235	0.243
4/24/90 9:32	0	V2-1B	7.8	9.2	2.219	17	1	1
4/24/90 16:22	202	V2-1B	9	7	1.946	16	1.154	0.761
4/24/90 22:32	572	V2-1B	10.6	4.2	1.435	14.8	1.359	0.457
4/25/90 8:24	1164	V2-1B	11.9	1.9	0.642	13.8	1.526	0.207
4/25/90 16:35	1655	V2-1B	12.2	0.9	-0.105	13.1		
4/24/90 9:34	0	V2-1C	9.9	6.2	1.825	16.1	1	1
4/24/90 16:24	204	V2-1C	10.2	6.1	1.808	16.3	1.03	0.984
4/24/90 22:34	574	V2-1C	10.8	5	1.609	15.8	1.091	0.806
4/25/90 8:26	1166	V2-1C	11.5	2.6	0.956	14.1	1.162	0.419
4/25/90 16:36	1656	V2-1C	12.2	1.1	0.095	13.3	1.232	0.177
4/24/90 9:36	0	V2-2A	0.6	20.2	3.006	20.8	1	1
4/24/90 16:26	206	V2-2A	1.2	18.3	2.907	19.5	2	0.906
4/24/90 22:36	576	V2-2A	2.8	15.8	2.760	18.6	4.667	0.782
4/25/90 8:28	1168	V2-2A	4.2	11.9	2.477	16.1	7	0.589
4/25/90 16:38	1658	V2-2A	5.4	9.7	2.272	15.1	9	0.48
4/25/90 22:10	1990	V2-2A	6.5	7.8	2.054	14.3	10.83	0.386
4/26/90 8:22	2602	V2-2A	7.4	5.3	1.668	12.7	12.33	0.262
4/24/90 9:38	0	V2-2B	9.4	8.3	2.116	17.7	1	1
4/24/90 16:28	208	V2-2B	8.4	9.5	2.251	17.9	0.894	1.145
4/24/90 22:38	578	V2-2B	9.5	7.5	2.015	17	1.011	0.904
4/25/90 8:30	1170	V2-2B	10.6	3.9	1.361	14.5	1.128	0.47
4/25/90 16:40	1660	V2-2B	11.2	1.7	0.531	12.9	1.191	0.205
4/25/90 22:12	1992	V2-2B	12.4	0.4	-0.916	12.8		
4/24/90 9:40	0	V2-2C	12.8	3.3	1.194	16.1	1	1
4/24/90 16:30	210	V2-2C	12.6	4.5	1.504	17.1	0.984	1.364
4/24/90 22:40	580	V2-2C	12.7	3.7	1.308	16.4	0.992	1.121
4/25/90 8:32	1172	V2-2C	13.1	1.1	0.095	14.2	1.023	0.333
4/25/90 16:42	1662	V2-2C	13	0		13		
4/24/90 9:42	0	V2-3A	0.9	19.5	2.970	20.4	1	1
4/24/90 16:32	212	V2-3A	2.8	16.5	2.803	19.3	3.111	0.846
4/24/90 22:42	582	V2-3A	4.2	13.9	2.632	18.1	4.667	0.713
4/25/90 8:34	1174	V2-3A	5.5	10.3	2.332	15.8	6.111	0.528
4/25/90 16:44	1664	V2-3A	6.8	8.2	2.104	15	7.556	0.421
4/25/90 22:14	1994	V2-3A	7.6	7.2	1.974	14.8	8.444	0.369
4/26/90 8:24	2604	V2-3A	8.2	4.9	1.589	13.1	9.111	0.251

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	In O2	CO2+O2 (%)	Norm CO2	Norm O2
4/24/90 9:44	0	V2-3B	6.5	12.4	2.518	18.9	1	1
4/24/90 16:34	214	V2-3B	6.7	12	2.485	18.7	1.031	0.968
4/24/90 22:44	584	V2-3B	7.6	10.2	2.322	17.8	1.169	0.823
4/25/90 8:36	1176	V2-3B	8.8	6.8	1.917	15.6	1.354	0.548
4/25/90 16:46	1666	V2-3B	9.5	4.6	1.526	14.1	1.462	0.371
4/25/90 22:16	1996	V2-3B	10.6	3.4	1.224	14	1.631	0.274
4/26/90 8:26	2606	V2-3B	11.2	1.9	0.642	13.1	1.723	0.153
4/24/90 9:46	0	V2-3C	10.2	7.2	1.974	17.4	1	1
4/24/90 16:36	216	V2-3C	9.5	8.2	2.104	17.7	0.931	1.139
4/24/90 22:46	586	V2-3C	10	7.1	1.960	17.1	0.98	0.986
4/25/90 8:38	1178	V2-3C	10.8	4.1	1.411	14.9	1.059	0.569
4/25/90 16:48	1668	V2-3C	11.5	1.9	0.642	13.4	1.127	0.264
4/25/90 22:18	1998	V2-3C	12.4	0.8	-0.223	13.2		
4/24/90 9:55	0	V3A	1.5	19.2	2.955	20.7	1	1
4/25/90 8:40	1180	V3A	1.7	18.6	2.923	20.3	1.133	0.969
4/25/90 16:56	1676	V3A	2	18.4	2.912	20.4	1.333	0.958
4/26/90 8:32	2612	V3A	2.2	18.2	2.901	20.4	1.467	0.948
4/24/90 9:58	0	V3B	1.5	19.2	2.955	20.7	1	1
4/25/90 8:42	1182	V3B	1.8	18.6	2.923	20.4	1.2	0.969
4/25/90 16:58	1678	V3B	1.9	18.4	2.912	20.3	1.267	0.958
4/26/90 8:34	2614	V3B	2.2	18.2	2.901	20.4	1.467	0.948
4/24/90 10:00	0	V3C	1.6	19.2	2.955	20.8	1	1
4/25/90 8:44	1184	V3C	1.8	18.6	2.923	20.4	1.125	0.969
4/25/90 17:00	1680	V3C	1.9	18.4	2.912	20.3	1.188	0.958
4/26/90 8:36	2616	V3C	2.2	18.2	2.901	20.4	1.375	0.948
4/24/90 10:04	0	V4A	1.3	19.5	2.970	20.8	1	1
4/25/90 8:50	1190	V4A	1.3	19.3	2.960	20.6	1	0.99
4/25/90 17:02	1682	V4A	1.2	19.8	2.986	21	0.923	1.015
4/26/90 8:38	2618	V4A	1.5	19.3	2.960	20.8	1.154	0.99
4/24/90 10:06	0	V4B	1.4	19.4	2.965	20.8	1	1
4/25/90 8:52	1192	V4B	1.4	19.2	2.955	20.6	1	0.99
4/25/90 17:04	1684	V4B	1.3	19.6	2.976	20.9	0.929	1.01
4/26/90 8:40	2620	V4B	1.5	19.3	2.960	20.8	1.071	0.995
4/24/90 10:08	0	V4C	1.6	19.2	2.955	20.8	1	1
4/25/90 8:54	1194	V4C	1.5	19.2	2.955	20.7	0.938	1
4/25/90 17:06	1686	V4C	1.5	19.4	2.965	20.9	0.938	1.01
4/26/90 8:42	2622	V4C	1.6	19.2	2.955	20.8	1	1

Appendix J
Zero- and First-Order Plots
of Respiration Test Data

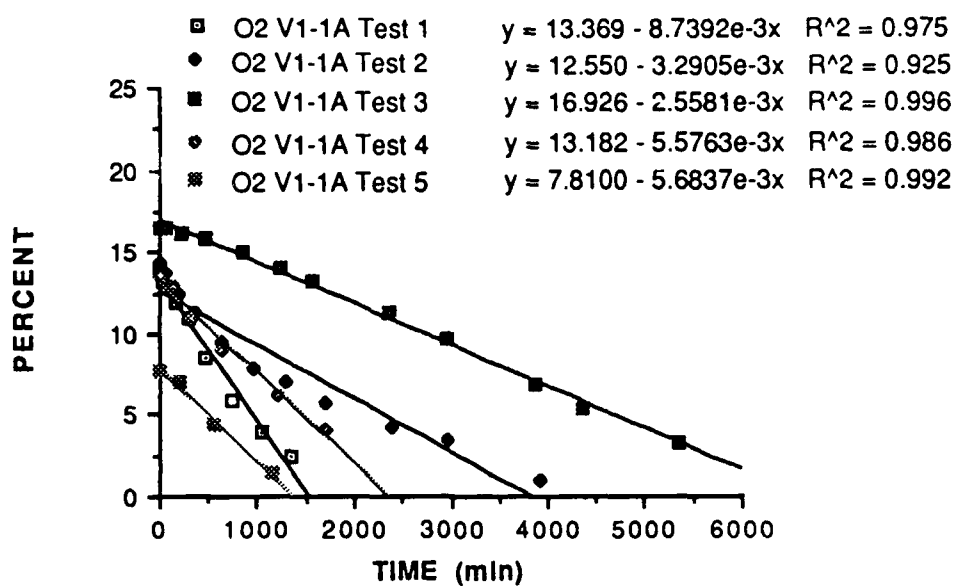


Figure 84. Zero order plot of O₂ consumption measured at V1-1A.

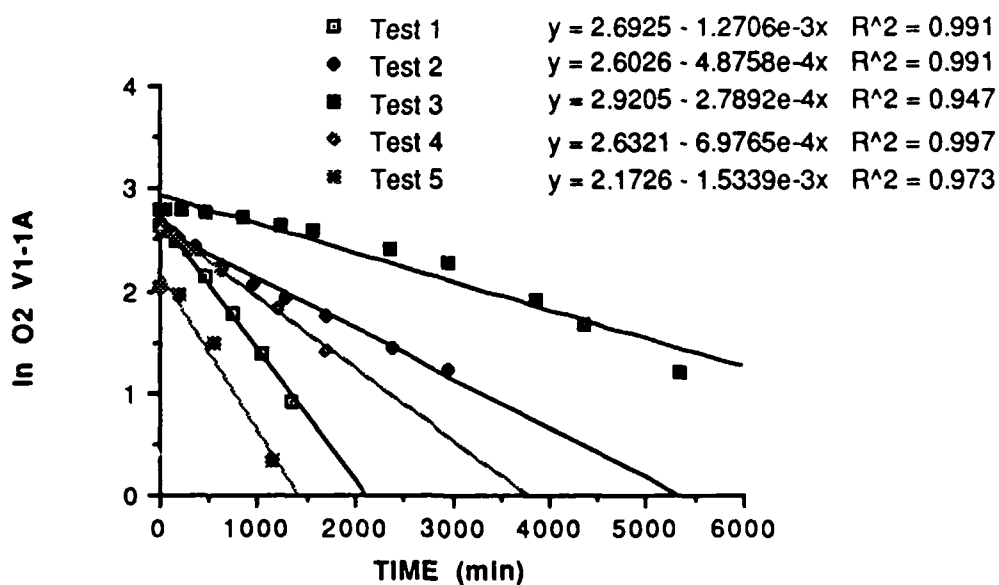


Figure 85. First order plot of O₂ consumption measured at V1-1A.

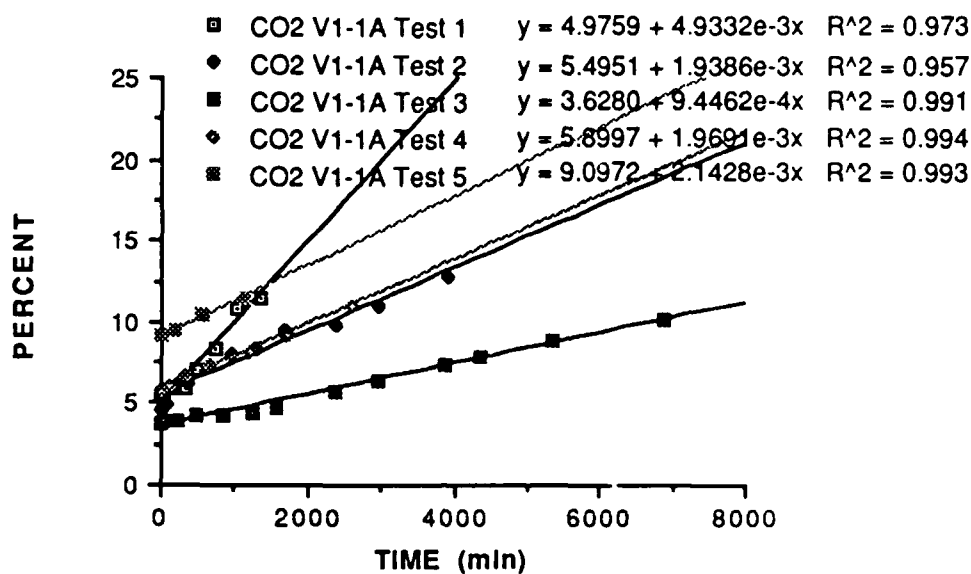


Figure 86. Zero order plot of CO₂ production measured at V1-1A.

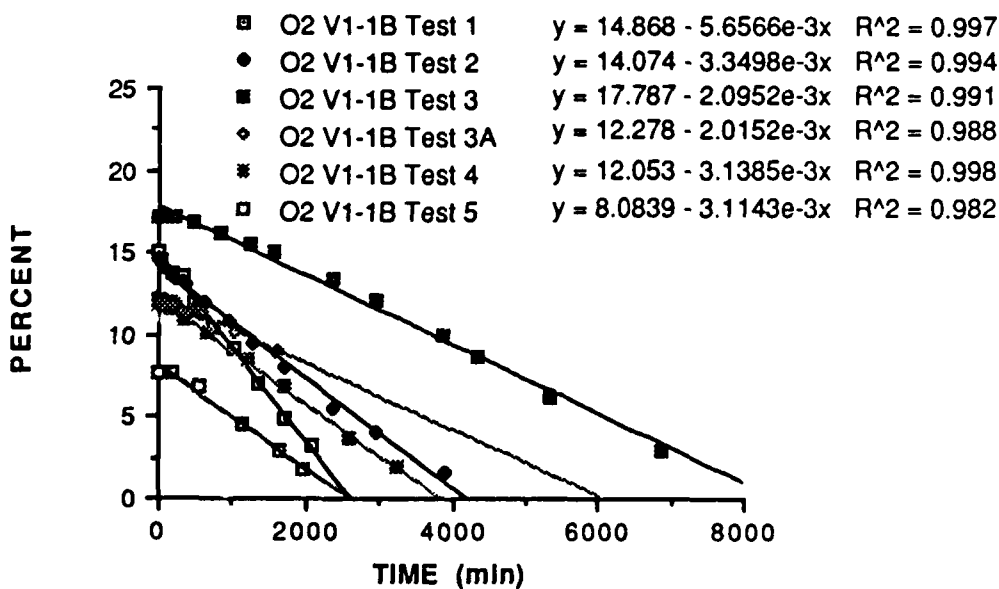


Figure 87. Zero order plot of O₂ production measured at V1-1B.

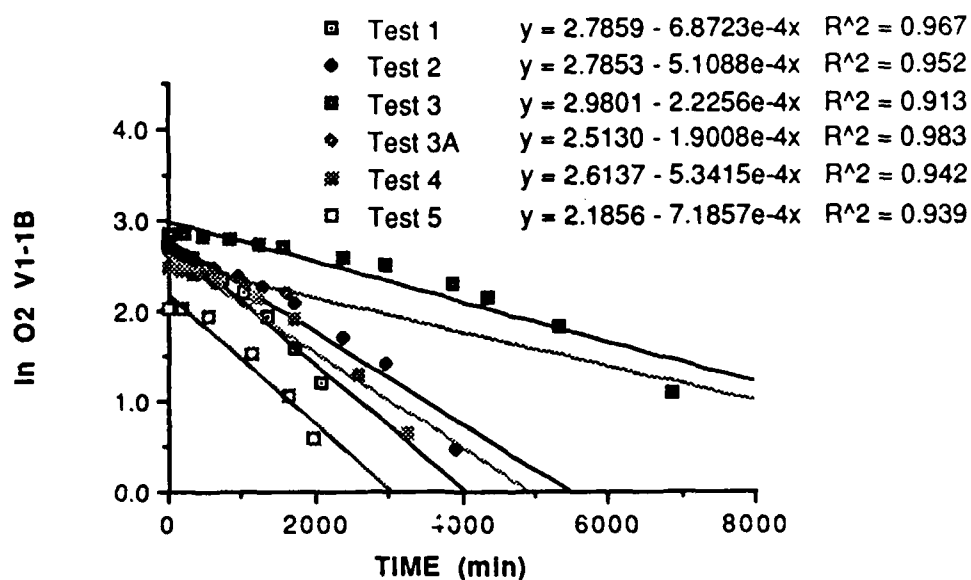


Figure 88. First order plot of O₂ consumption measured at V1-1B.

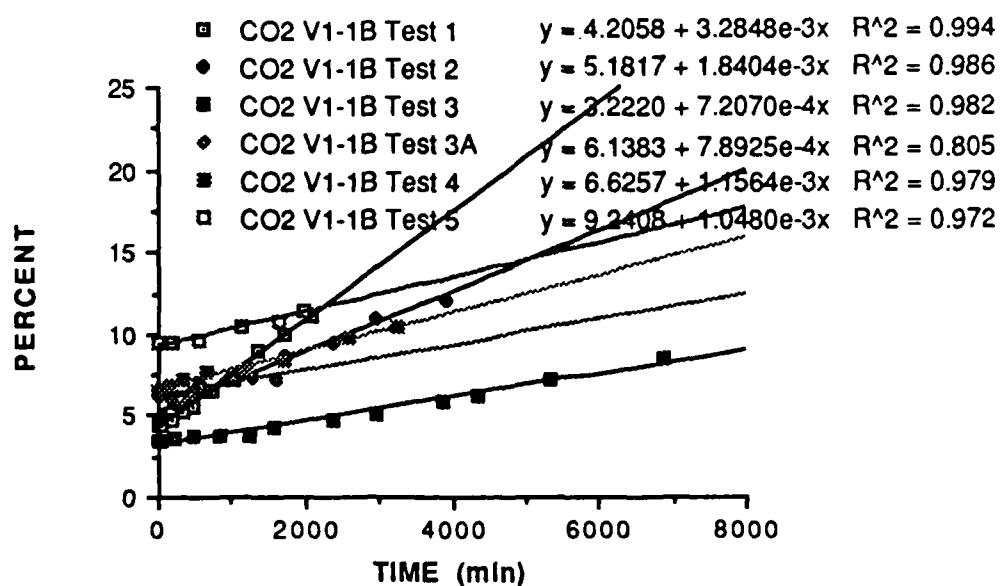


Figure 89. Zero order plot of CO₂ production measured at V1-1B.

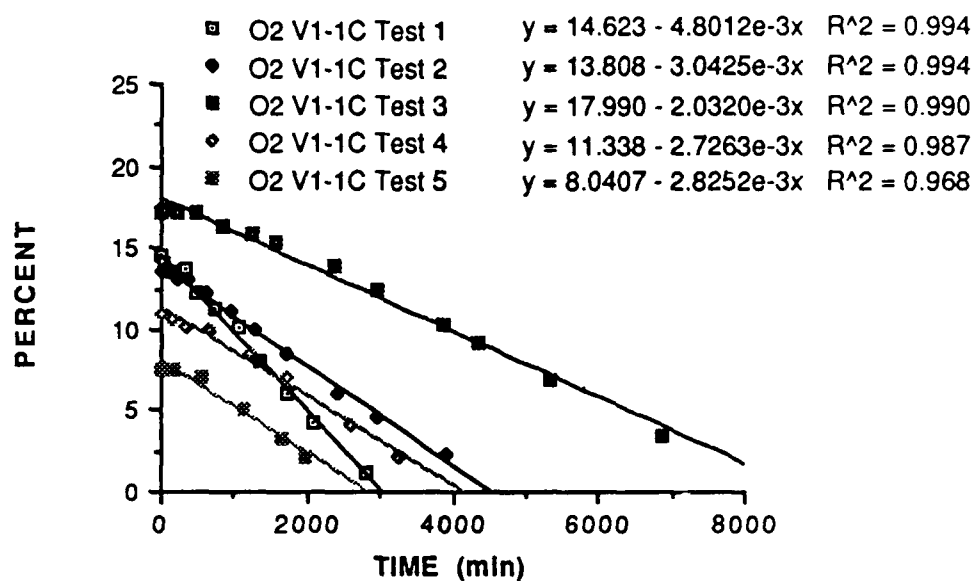


Figure 90. Zero order plot of O₂ production measured at V1-1C.

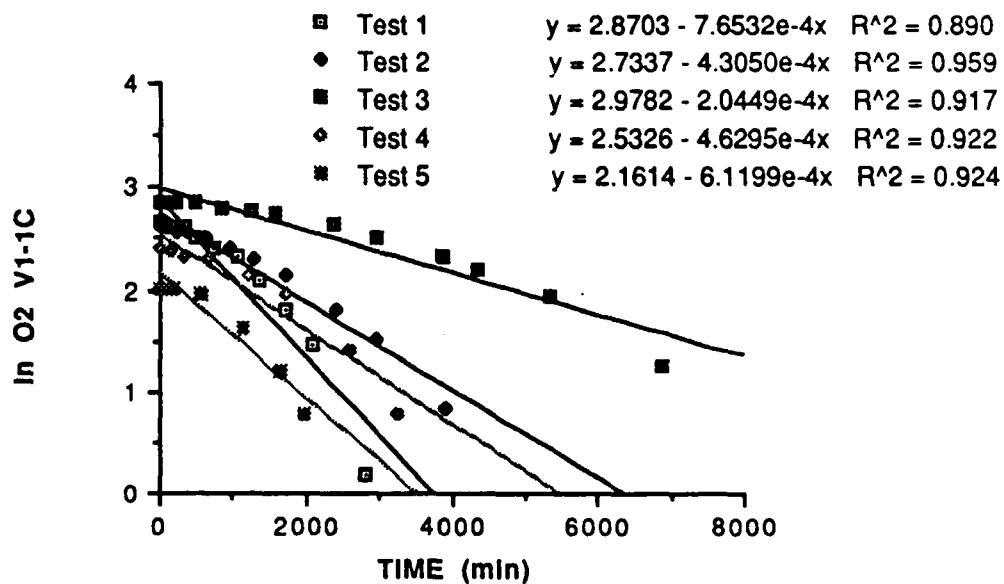


Figure 91. First order plot of O₂ consumption measured at V1-1C.

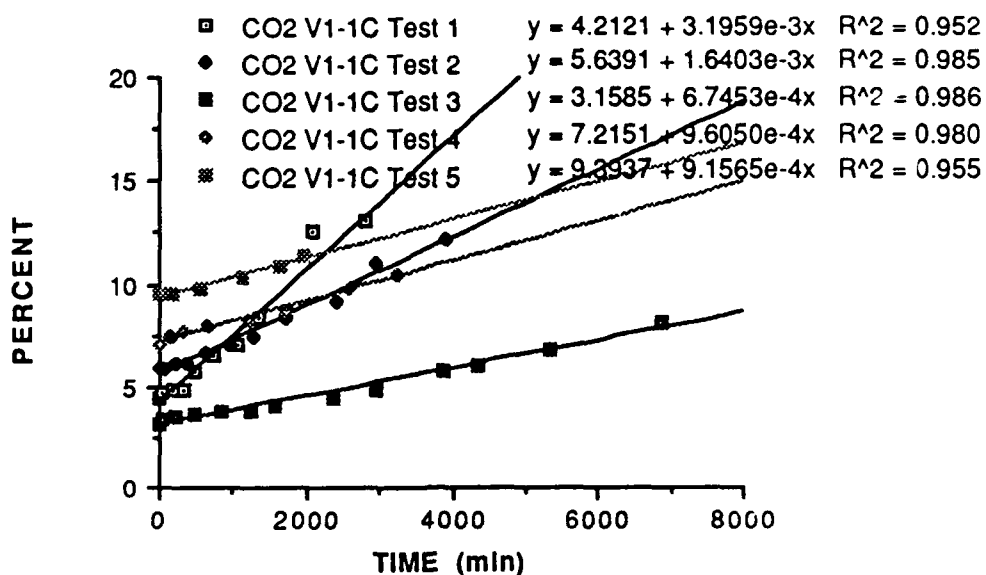


Figure 92. Zero order plot of CO₂ production measured at V1-1C.

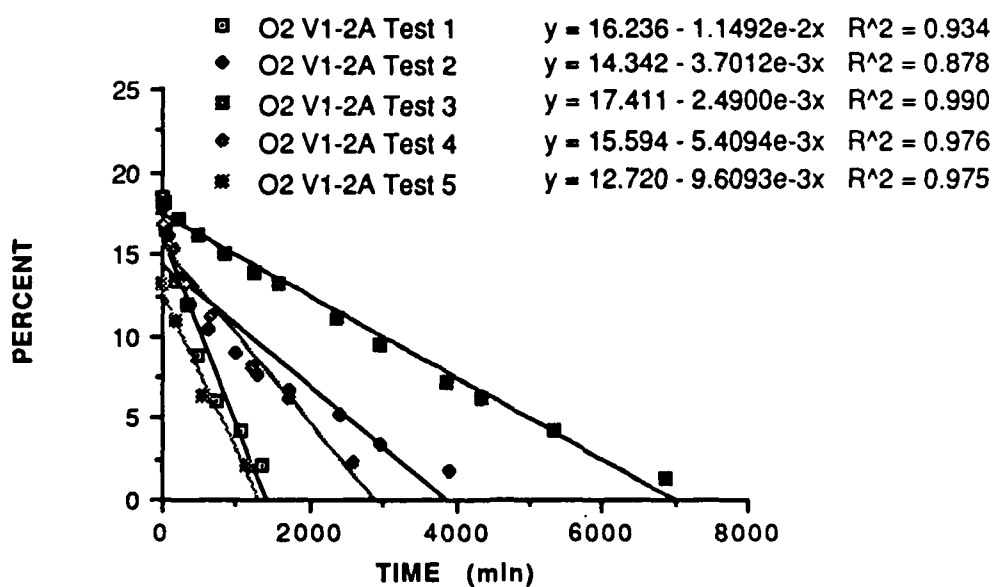


Figure 93. Zero order plot of O₂ consumption measured at V1-2A.

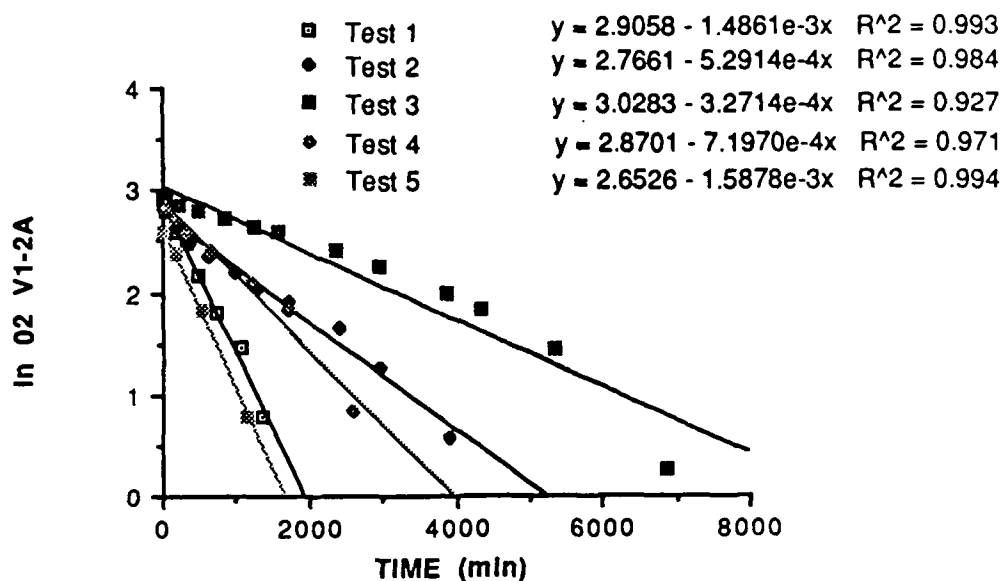


Figure 94. First order plot of O₂ consumption measured at V1-2A.

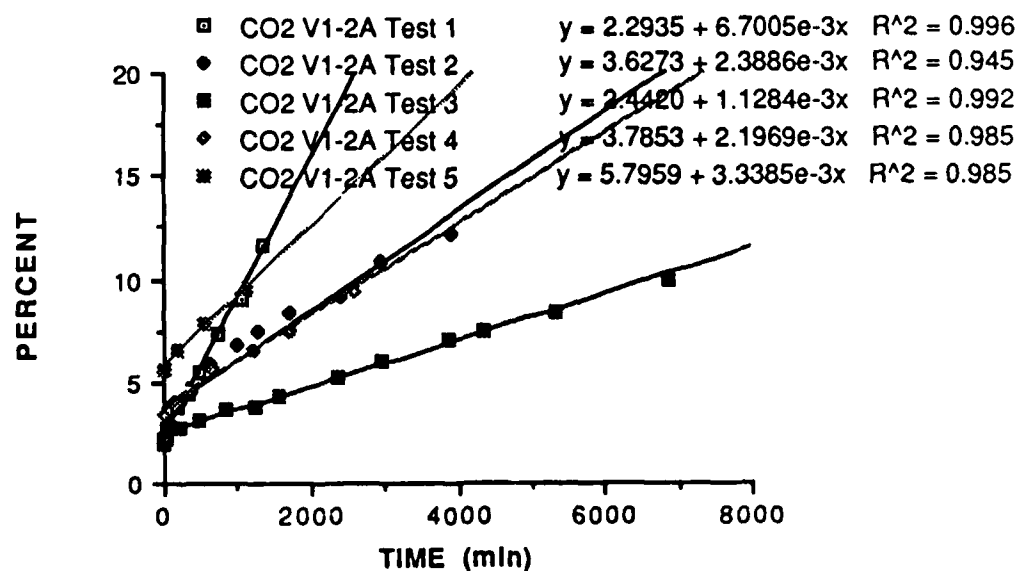


Figure 95. Zero order plot of CO₂ production measured at V1-2A.

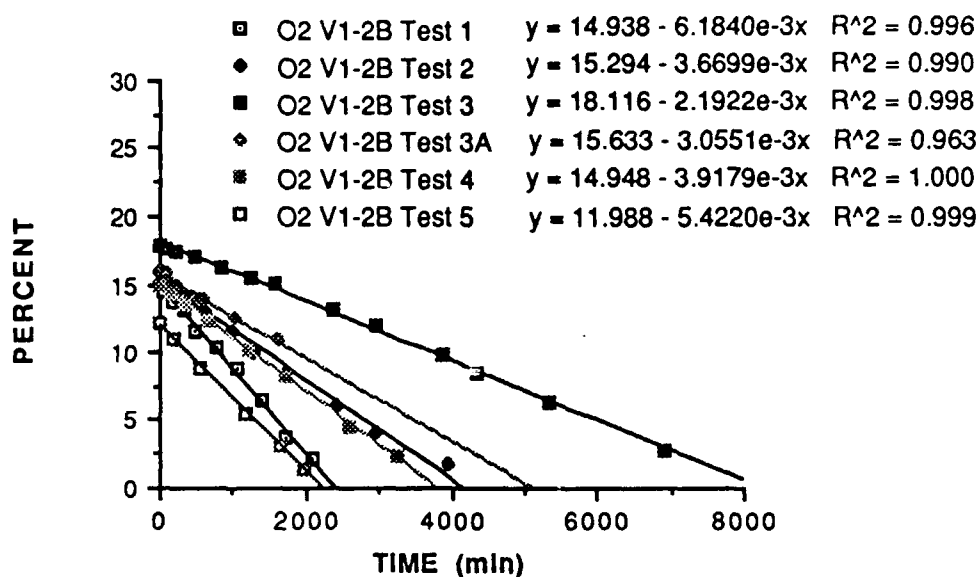


Figure 96. Zero order plot of O₂ consumption measured at V1-2B.

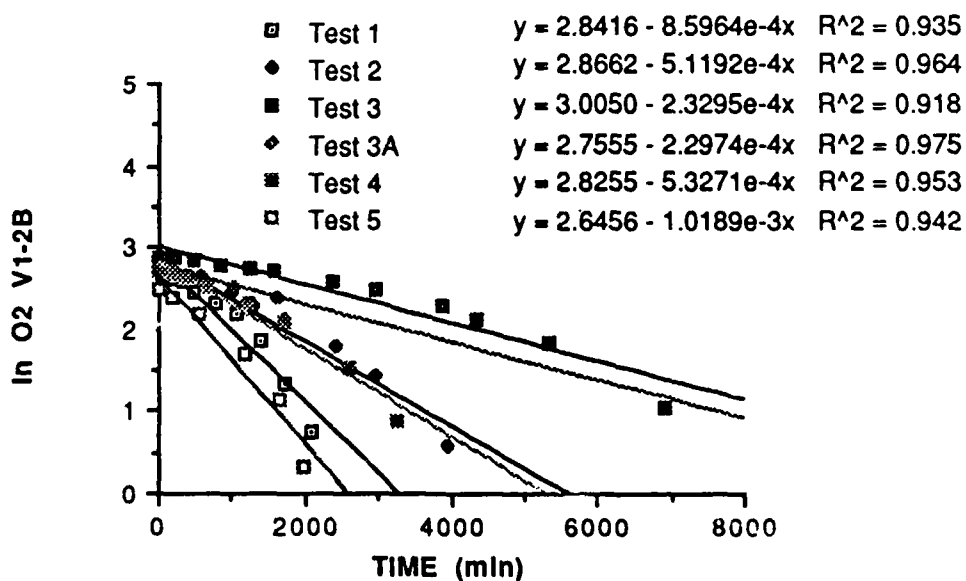


Figure 97. First order plot of O₂ consumption measured at V1-2B.

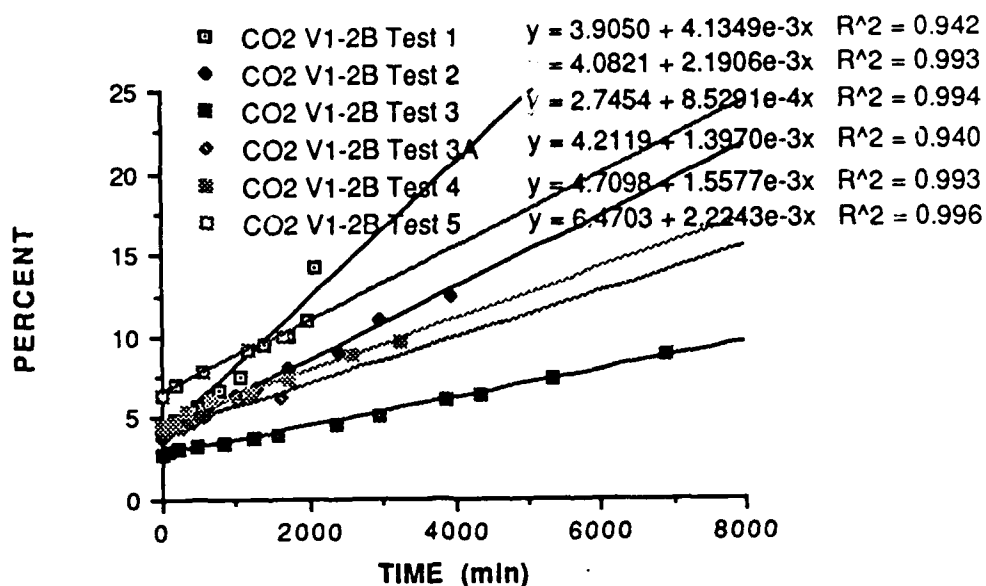


Figure 98. Zero order plot of CO₂ production measured at V1-2B.

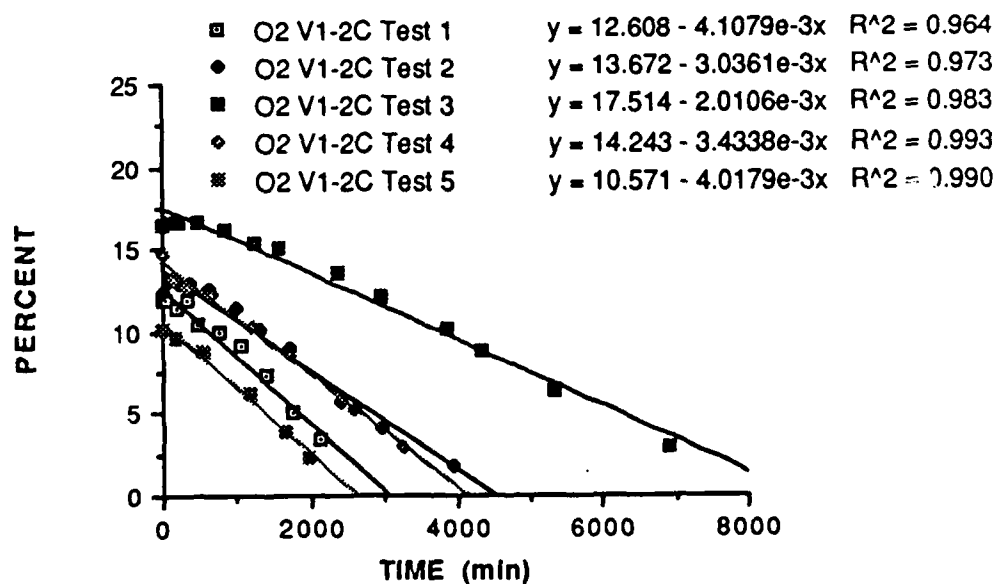


Figure 99. Zero order plot of O₂ consumption measured at V1-2C.

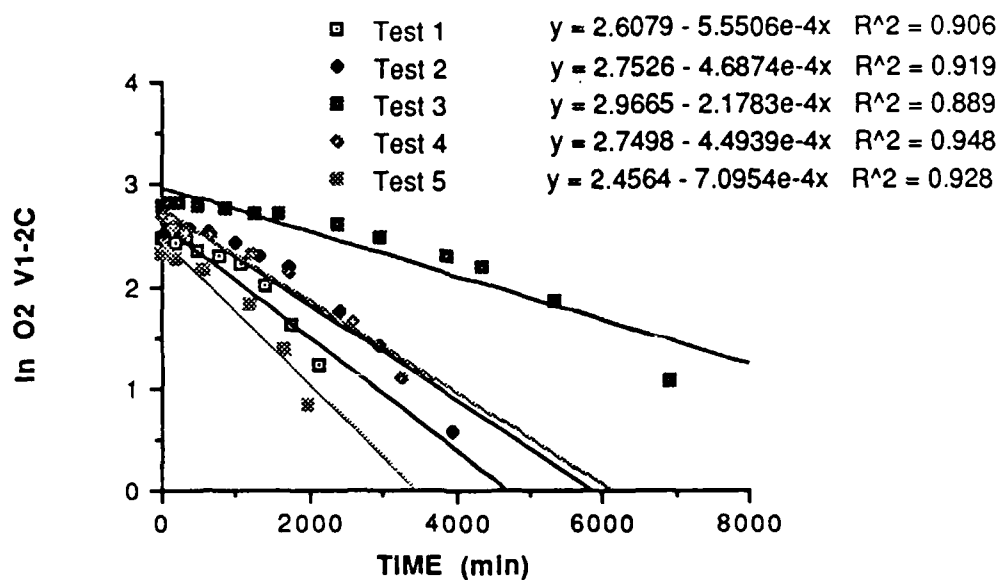


Figure 100. First order plot of O₂ consumption measured at V1-2C.

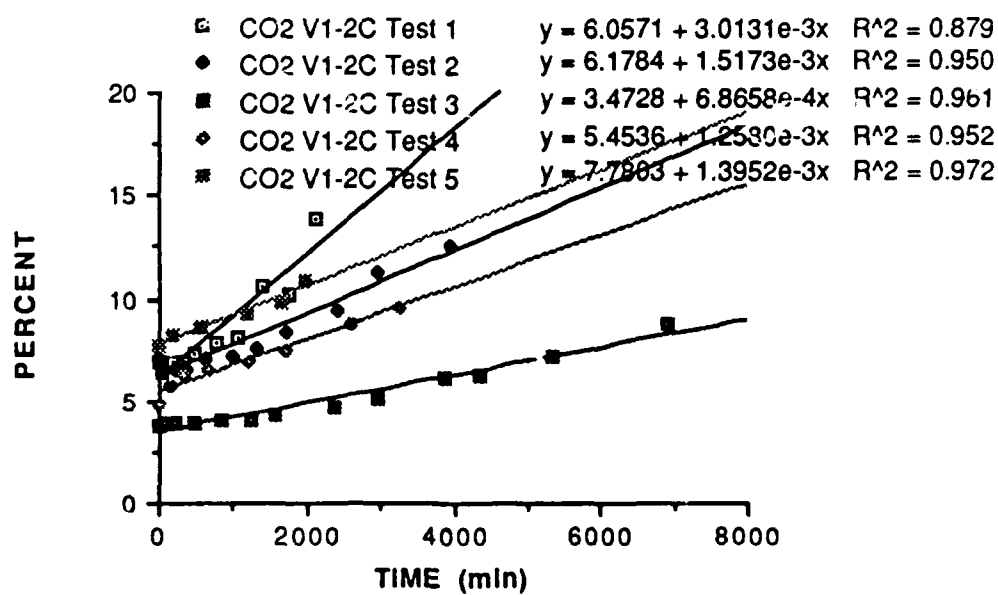


Figure 101. Zero order plot of CO₂ production measured at V1-2C.

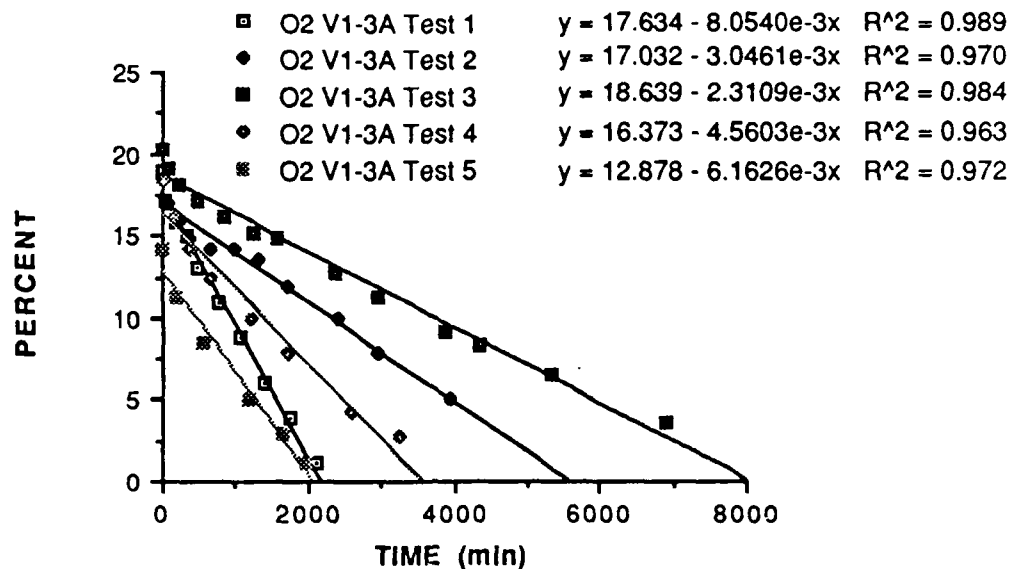


Figure 102. Zero order plot of O₂ consumption measured at V1-3A.

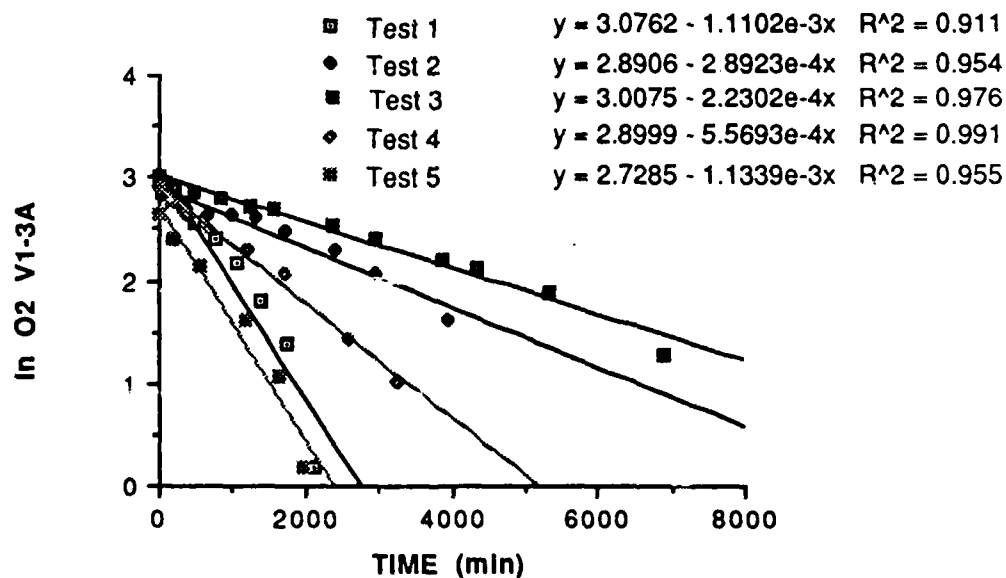


Figure 103. First order plot of O₂ consumption measured at V1-3A.

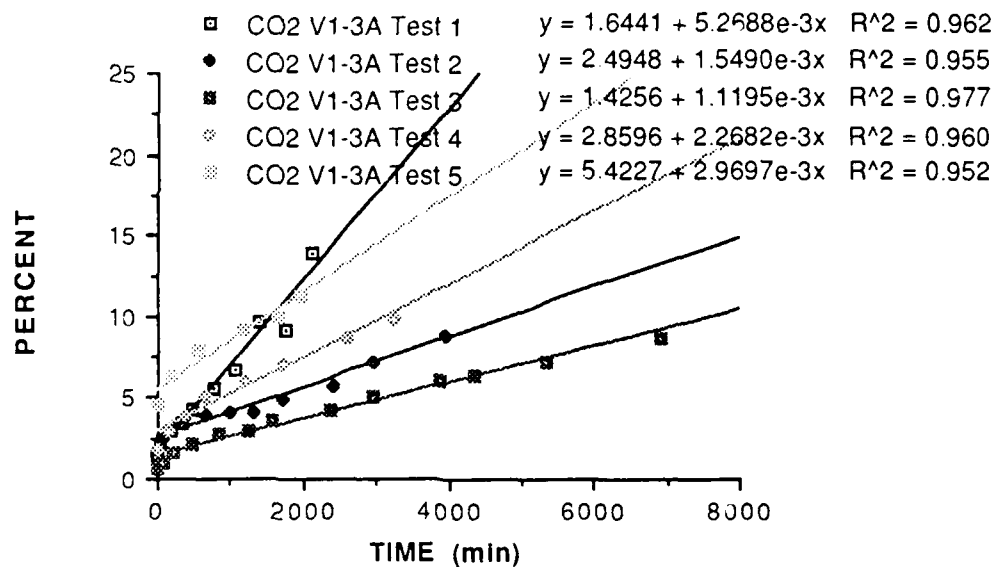


Figure 104. Zero order plot of CO₂ production measured at V1-3A.

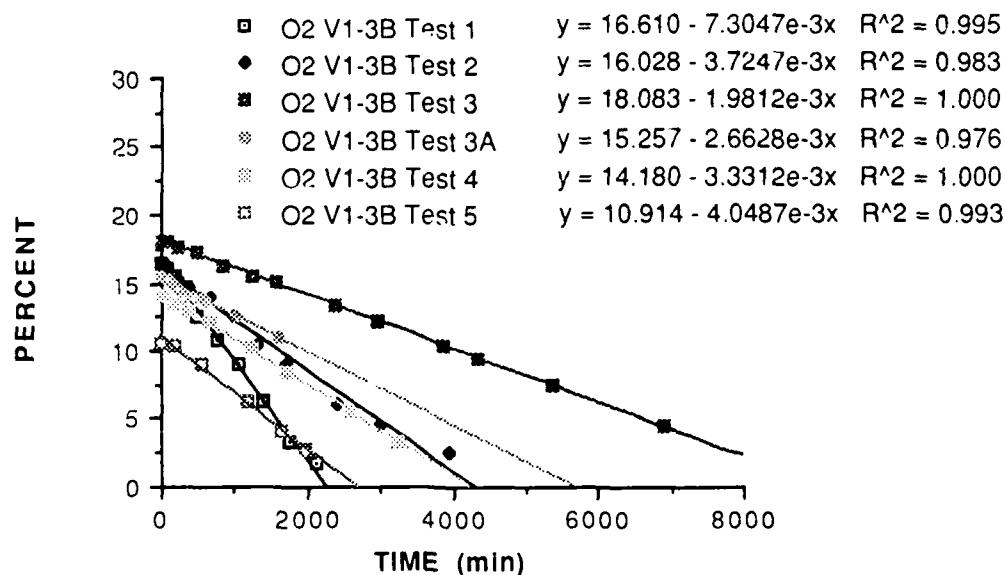


Figure 105. Zero order plot of O₂ consumption measured at V1-3B.

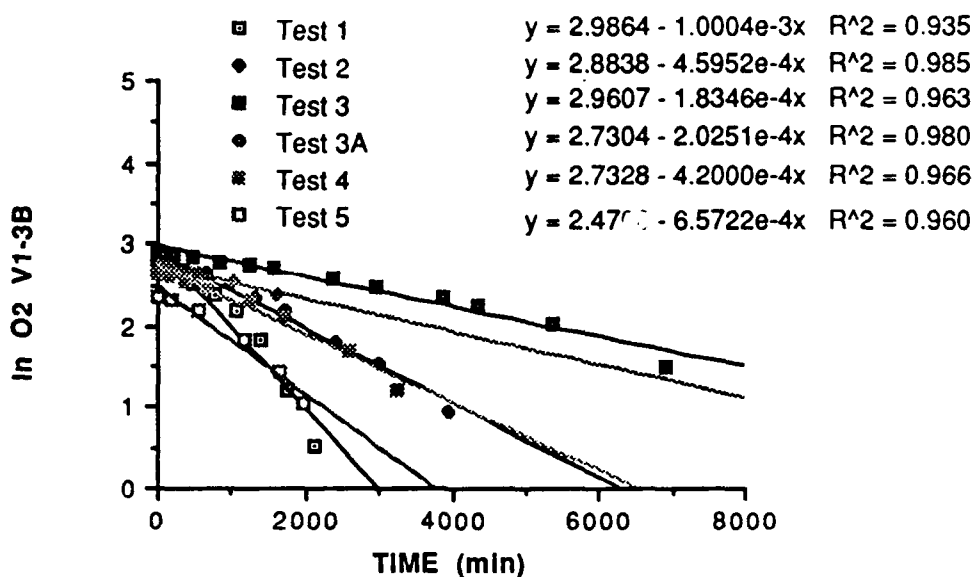


Figure 106. First order plot of O₂ consumption measured at V1-3B.

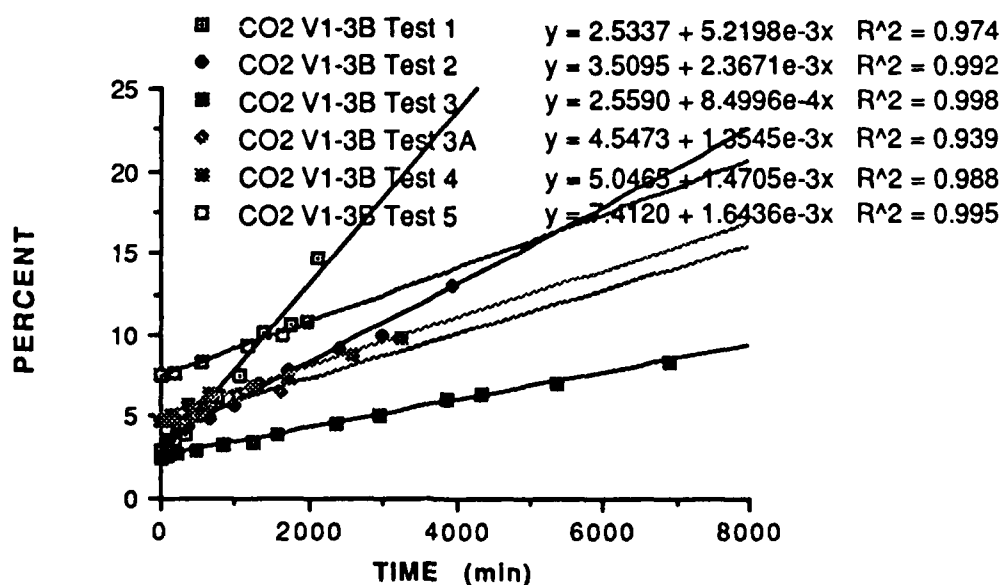


Figure 107. Zero order plot of CO₂ production measured at V1-3B.

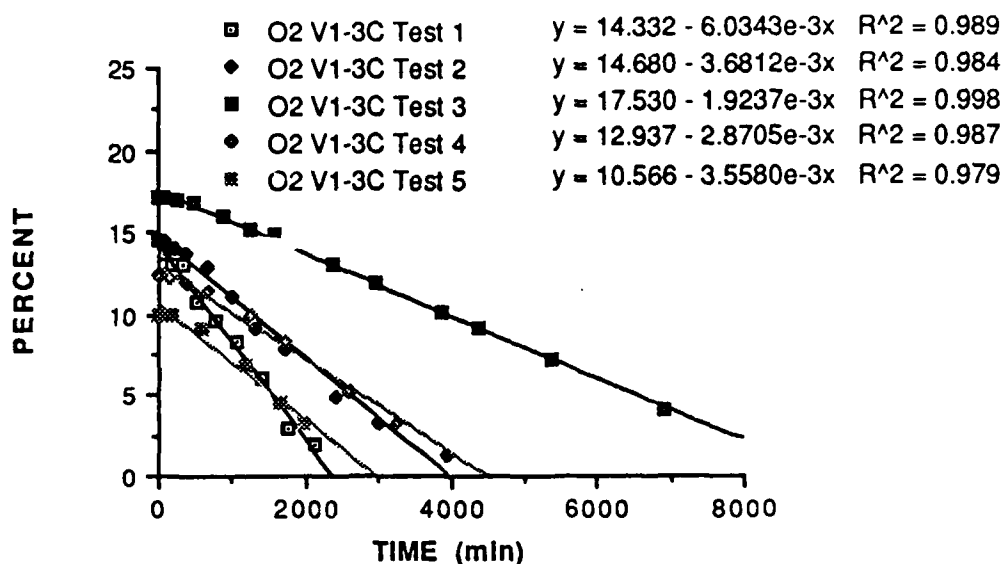


Figure 108. Zero order plot of O₂ consumption measured at V1-3C.

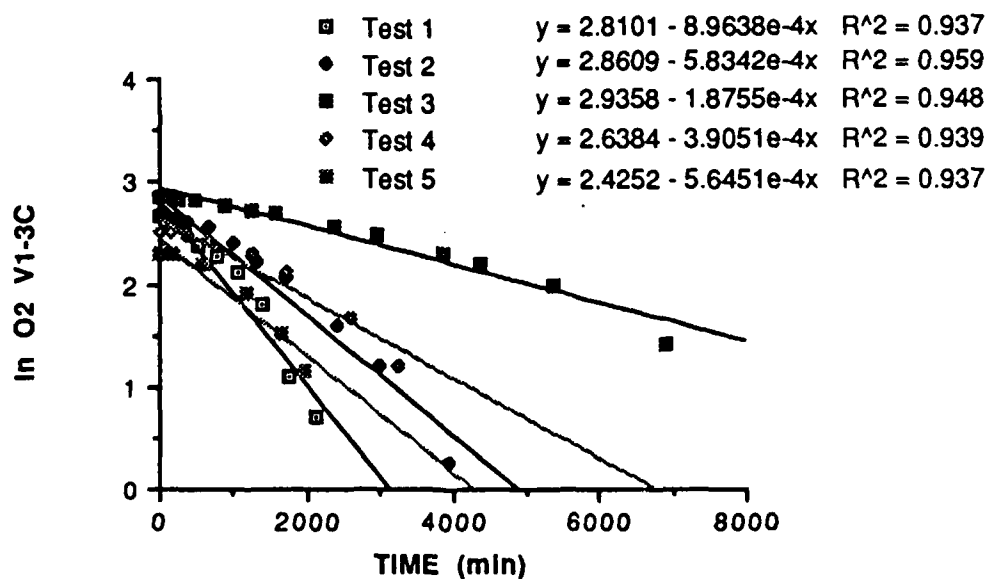


Figure 109. First order plot of O₂ consumption measured at V1-3C.

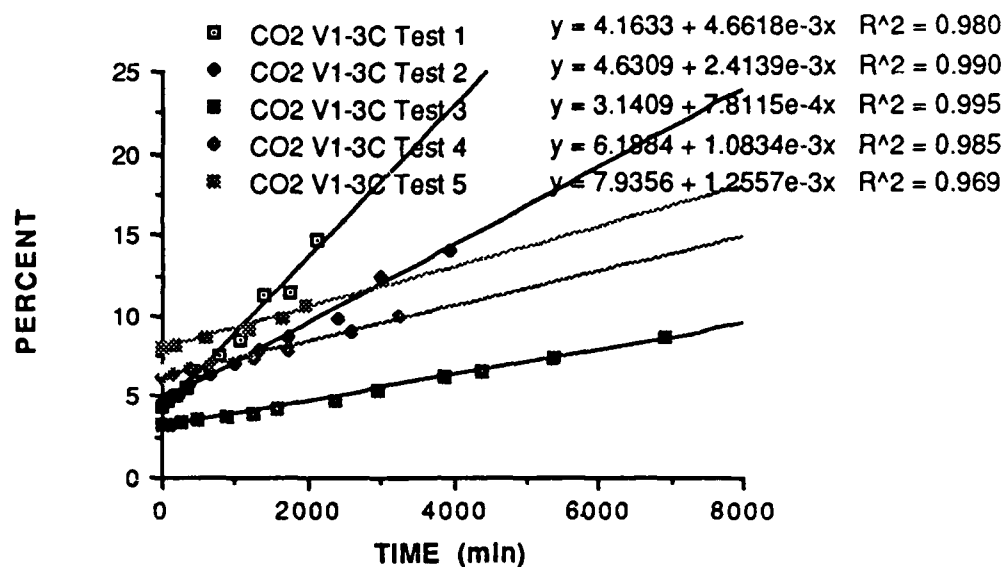


Figure 110. Zero order plot of CO₂ production measured at V1-3C.

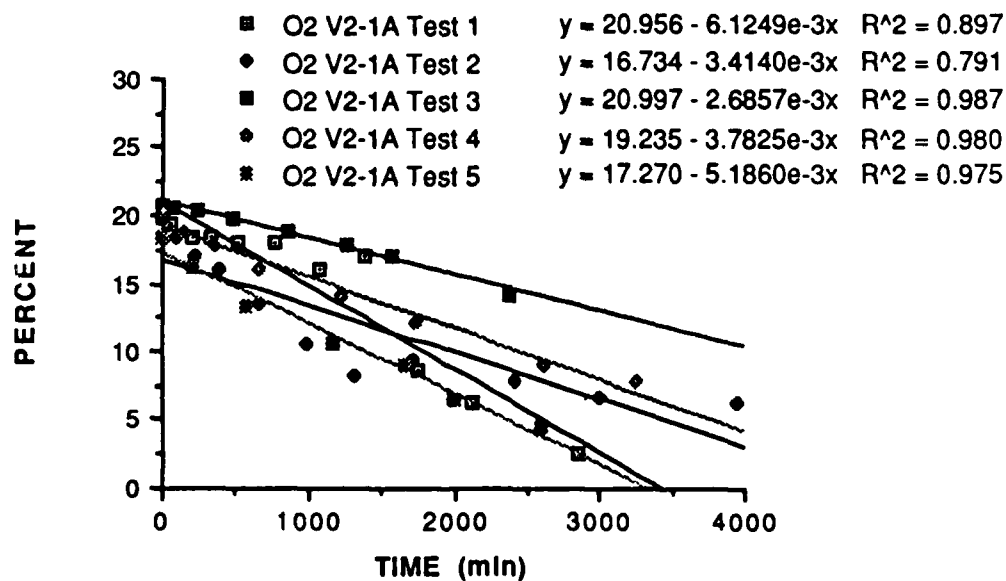


Figure 111. Zero order plot of O₂ consumption measured at V2-1A.

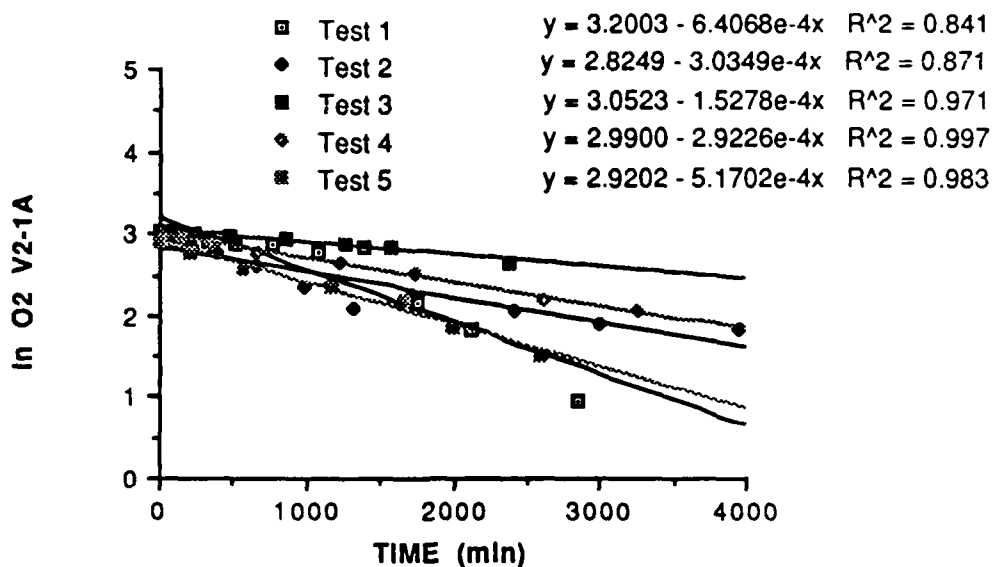


Figure 112. First order plot of O₂ consumption measured at V2-1A.

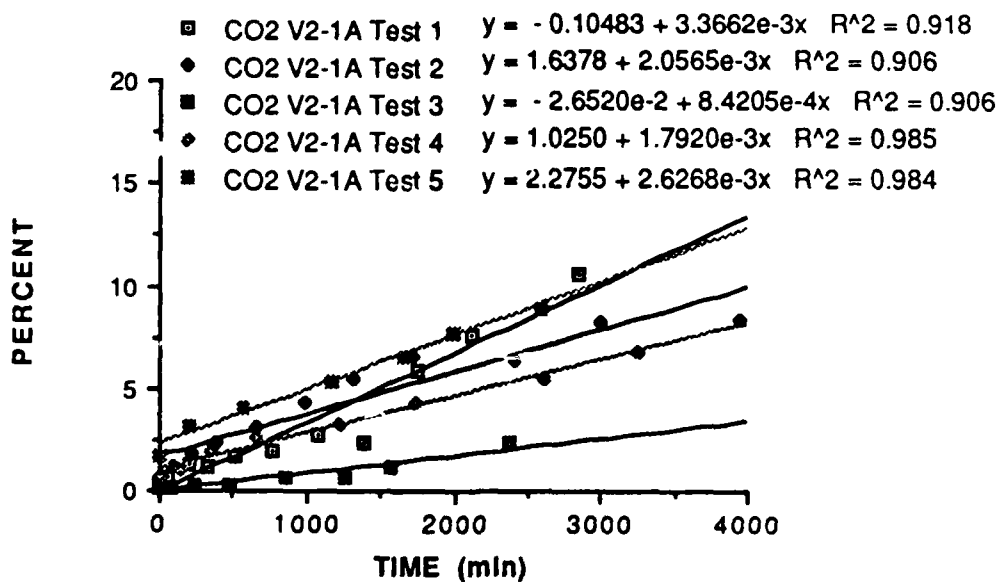


Figure 113. Zero order plot of CO₂ production measured at V2-1A.

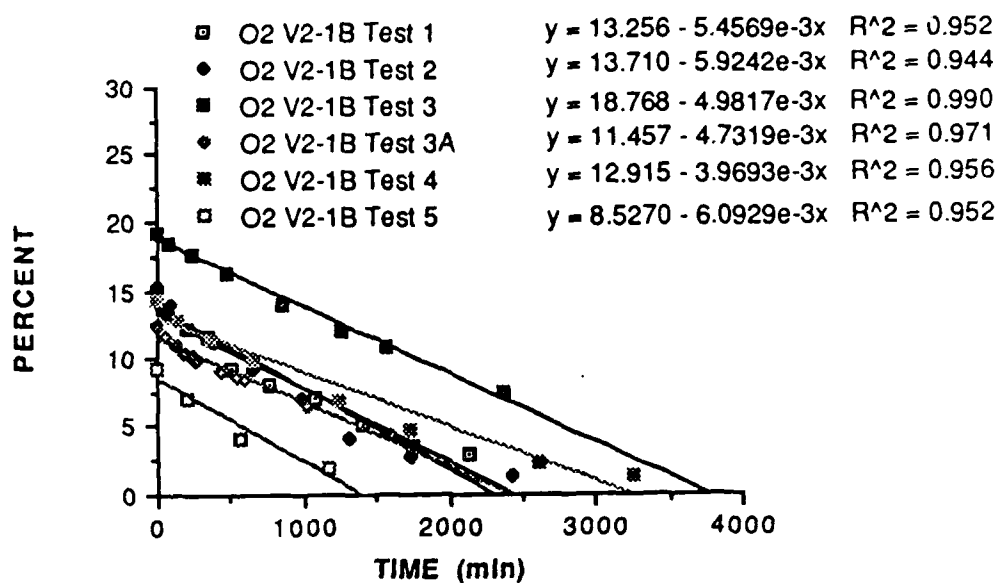


Figure 114. Zero order plot of O₂ production measured at V2-1B.

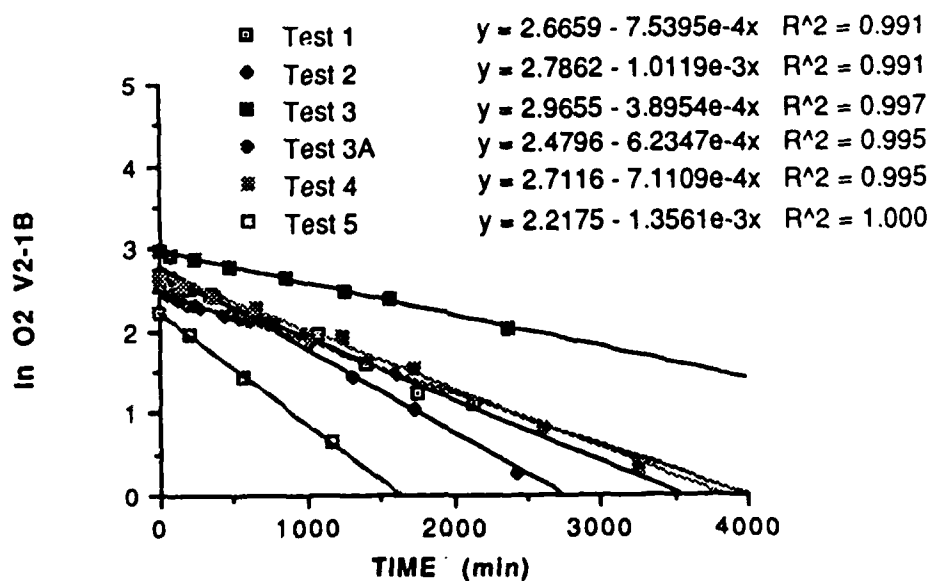


Figure 115. First order plot of O₂ consumption measured at V2-1B.

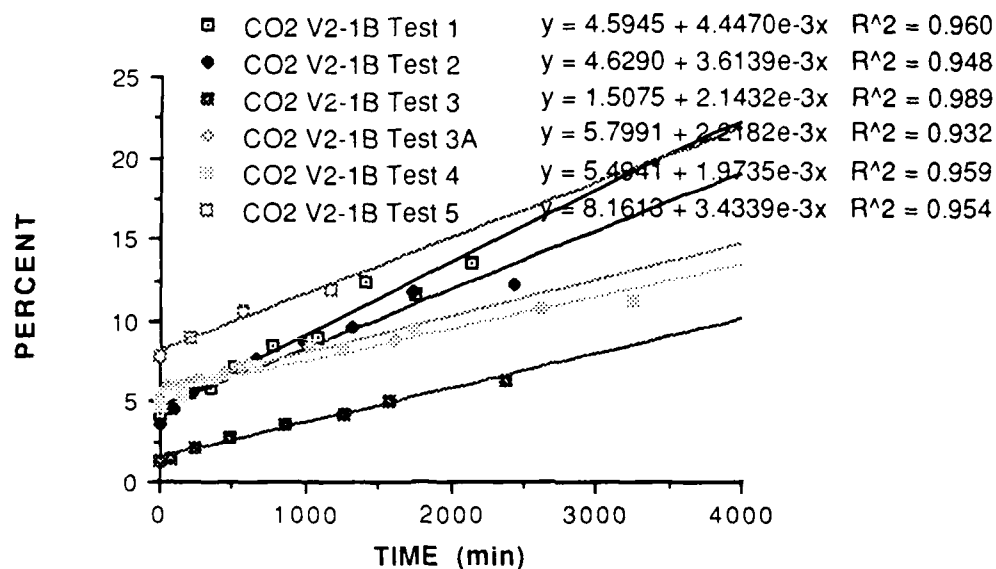


Figure 116. Zero order plot of CO₂ production measured at V2-1B.

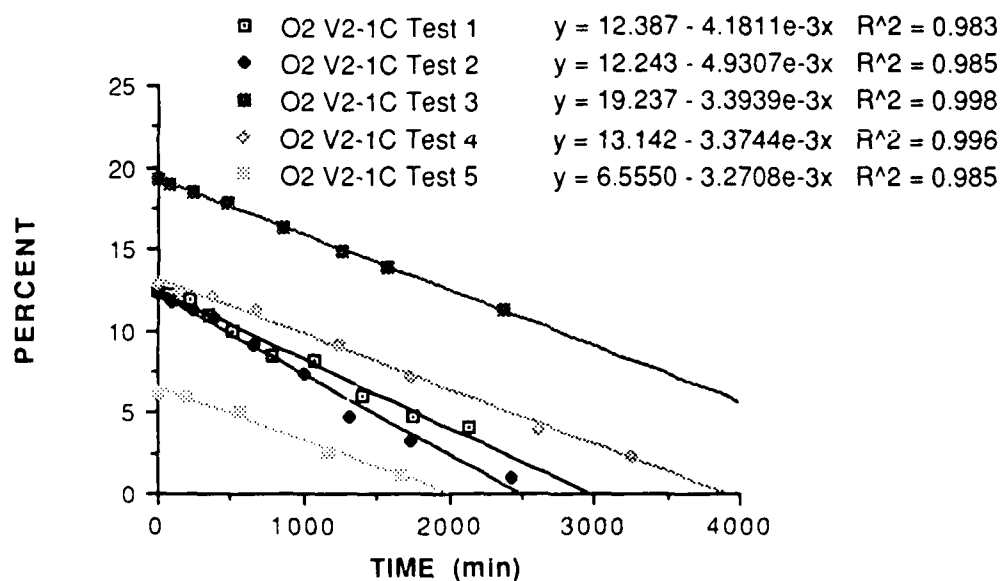


Figure 117. Zero order plot of O₂ consumption measured at V2-1C.

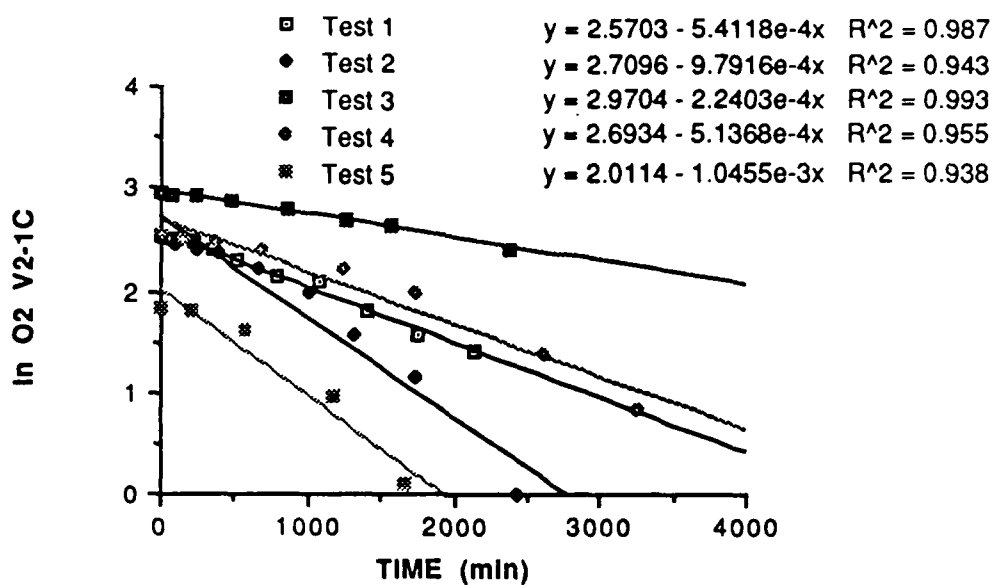


Figure 118. First order plot of O₂ consumption measured at V2-1C.

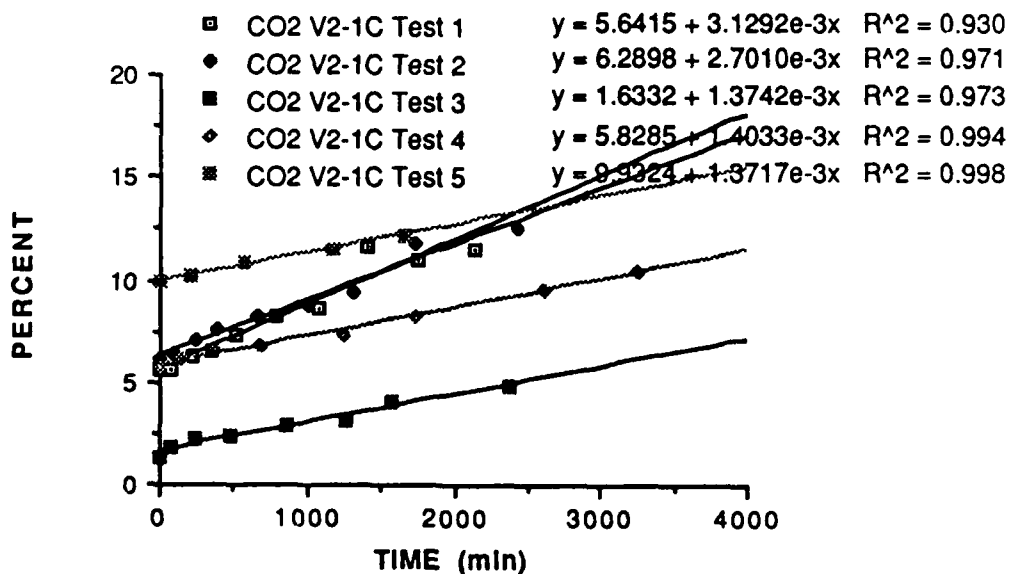


Figure 119. Zero order plot of CO₂ production measured at V2-1C.

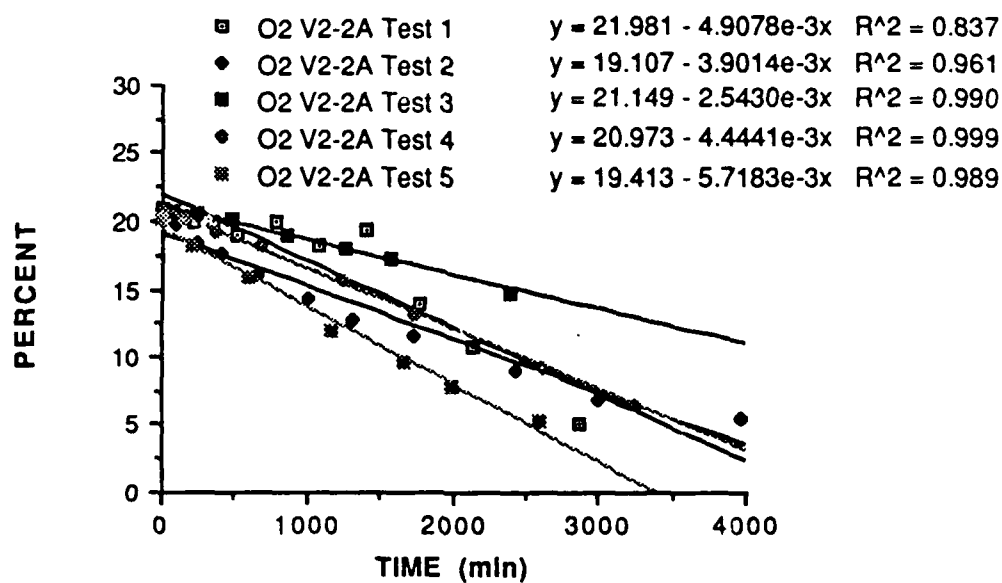


Figure 120. Zero order plot of O₂ consumption measured at V2-2A.

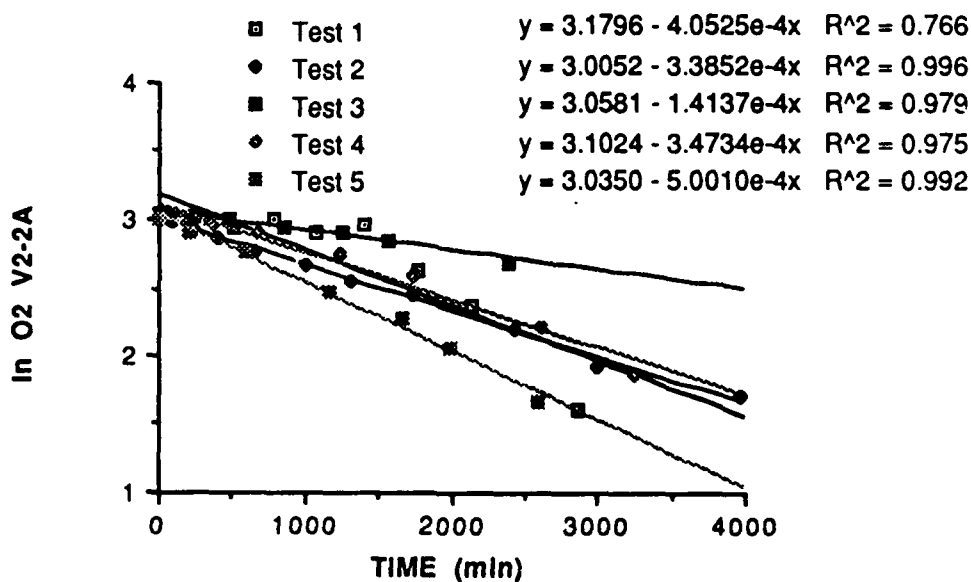


Figure 121. First order plot of O₂ consumption measured at V2-2A.

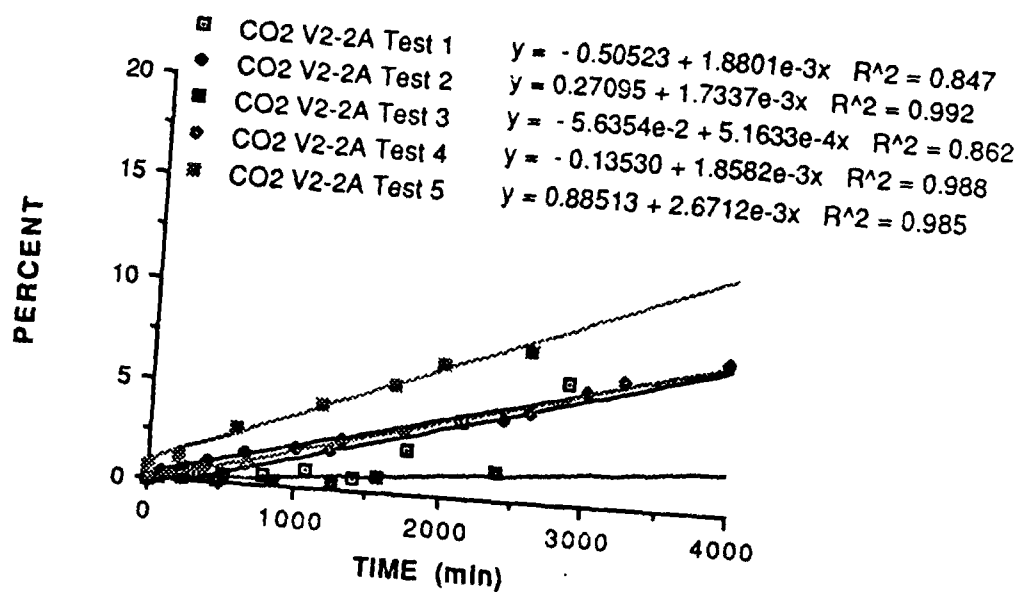


Figure 122. Zero order plot of CO₂ production measured at V2-2A.

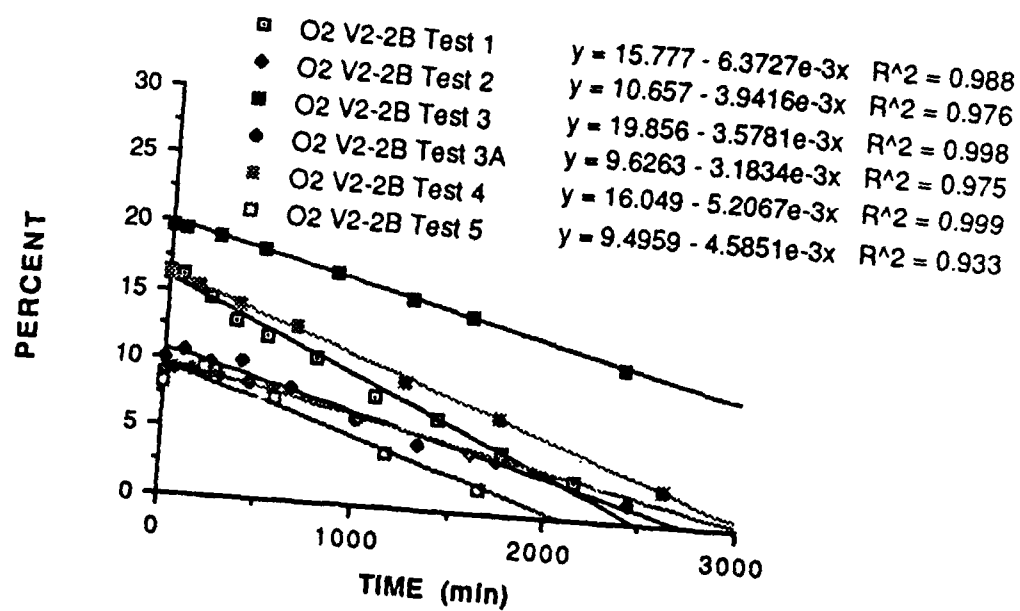


Figure 123. Zero order plot of O₂ consumption measured at V2-2B.

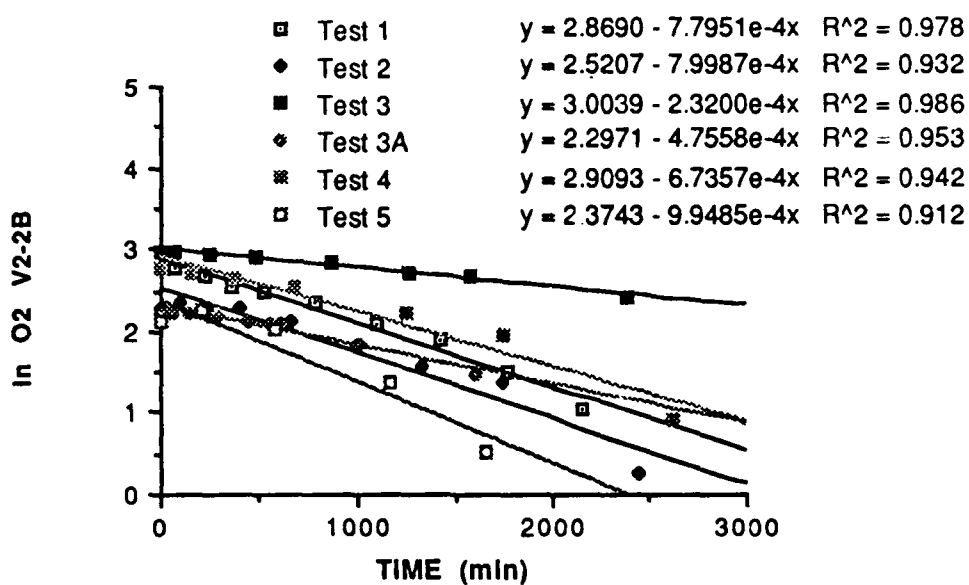


Figure 124. First order plot of O₂ consumption measured at V2-2B.

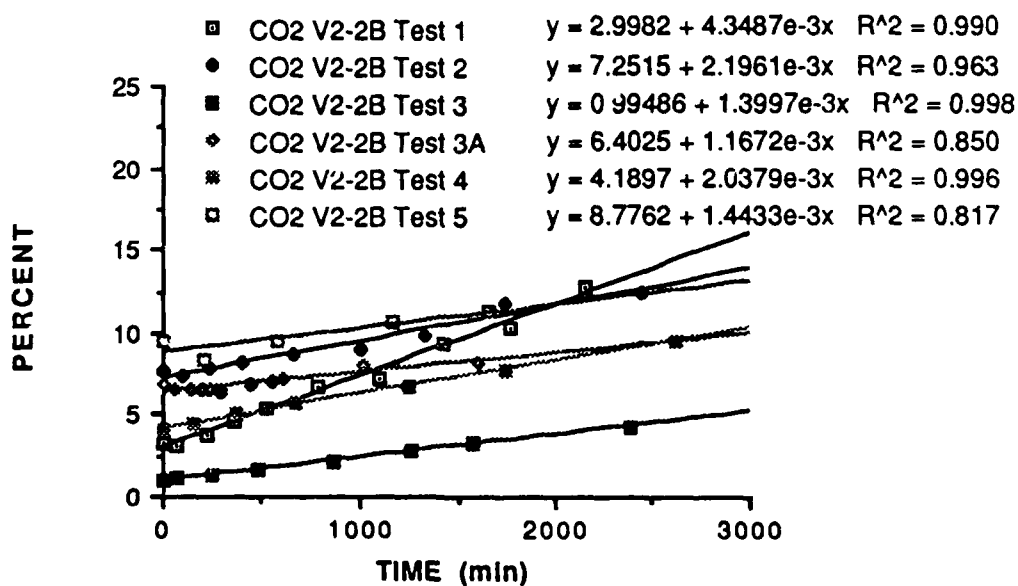


Figure 125. Zero order plot of CO₂ production measured at V2-2B.

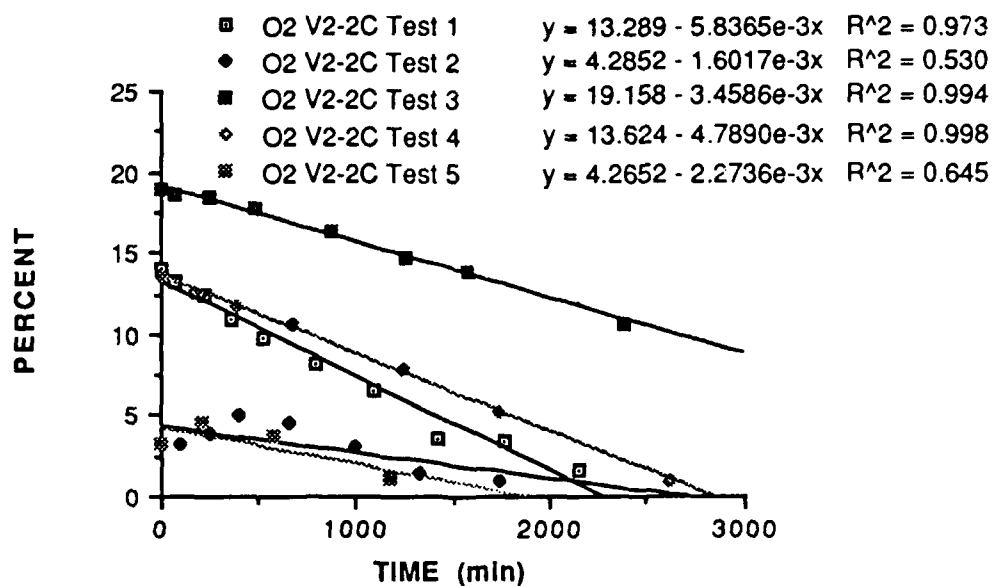


Figure 126. Zero order plot of O₂ consumption measured at V2-2C.

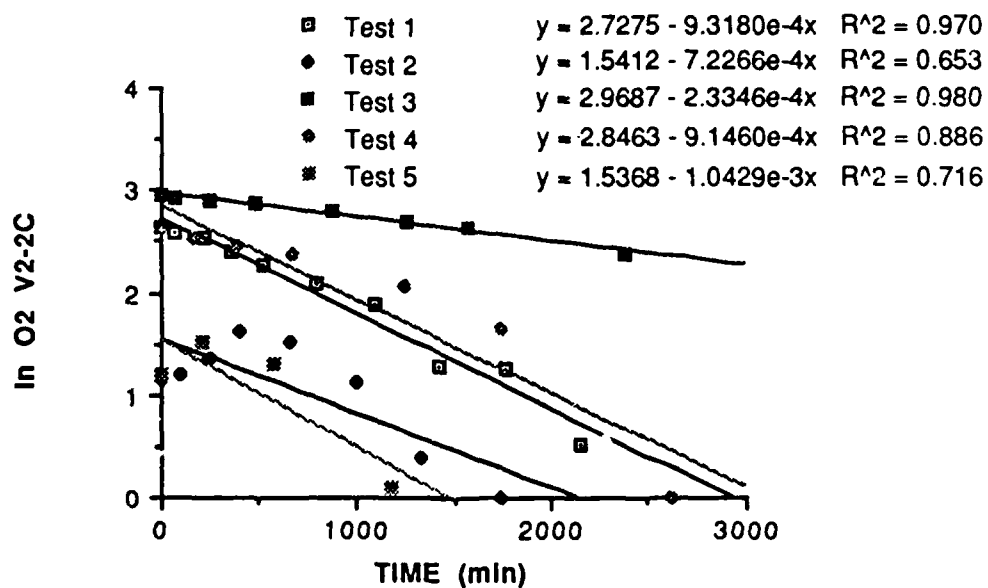


Figure 127. First order plot of O₂ consumption measured at V2-2C.

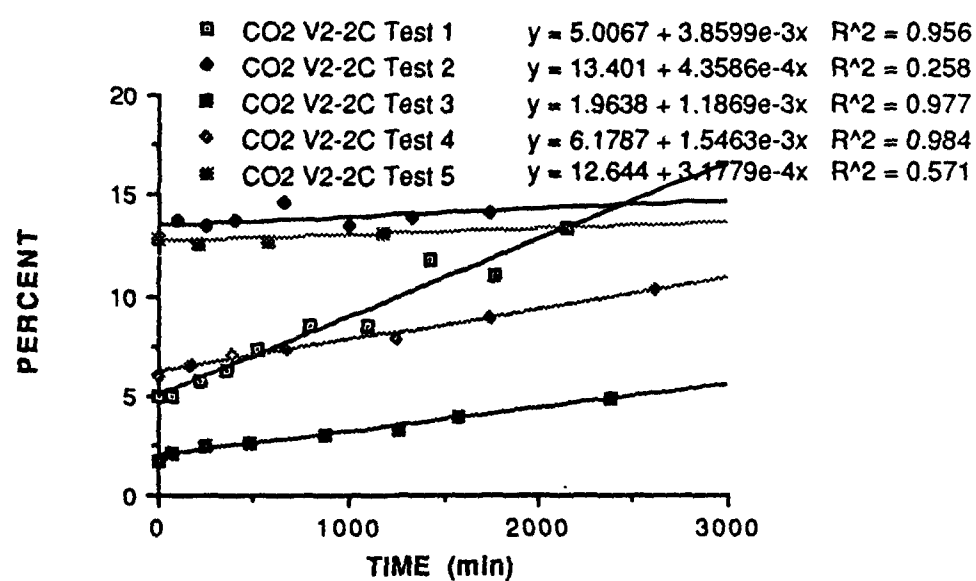


Figure 128. Zero order plot of CO₂ production measured at V2-2C.

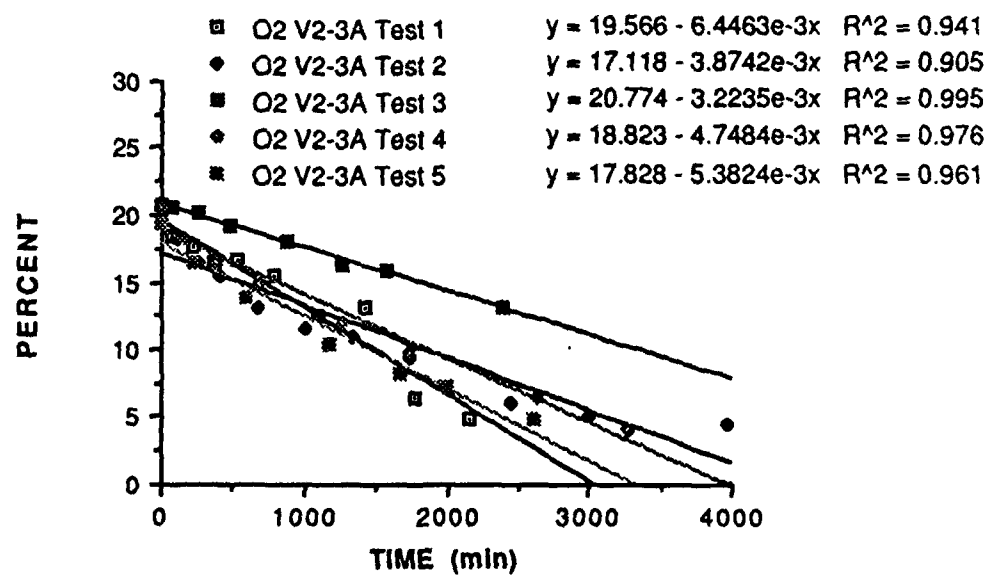


Figure 129. Zero order plot of O₂ consumption measured at V2-3A.

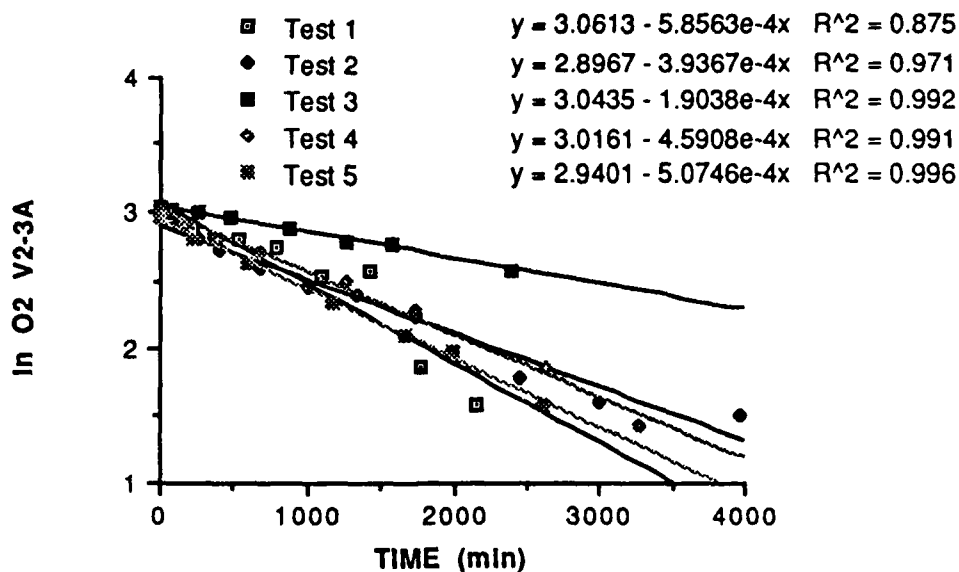


Figure 130. First order plot of O₂ consumption measured at V2-3A.

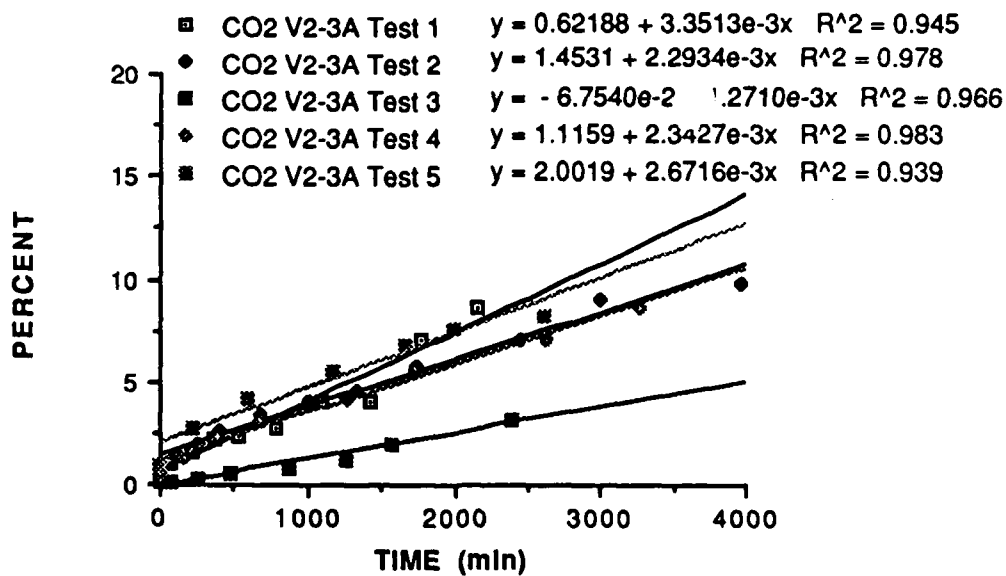


Figure 131. Zero order plot of CO₂ production measured at V2-3A.

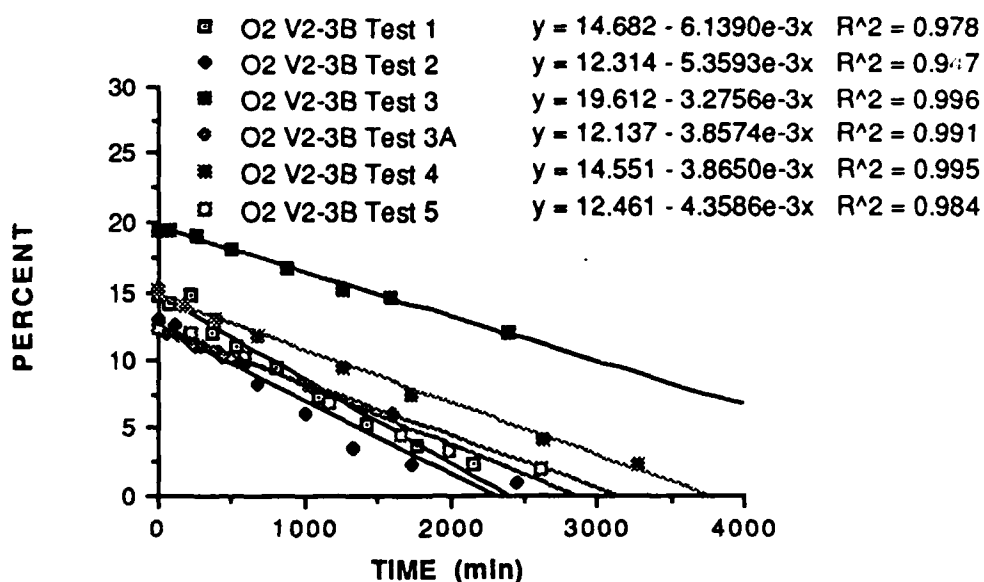


Figure 132. Zero order plot of O₂ consumption measured in V2-3B.

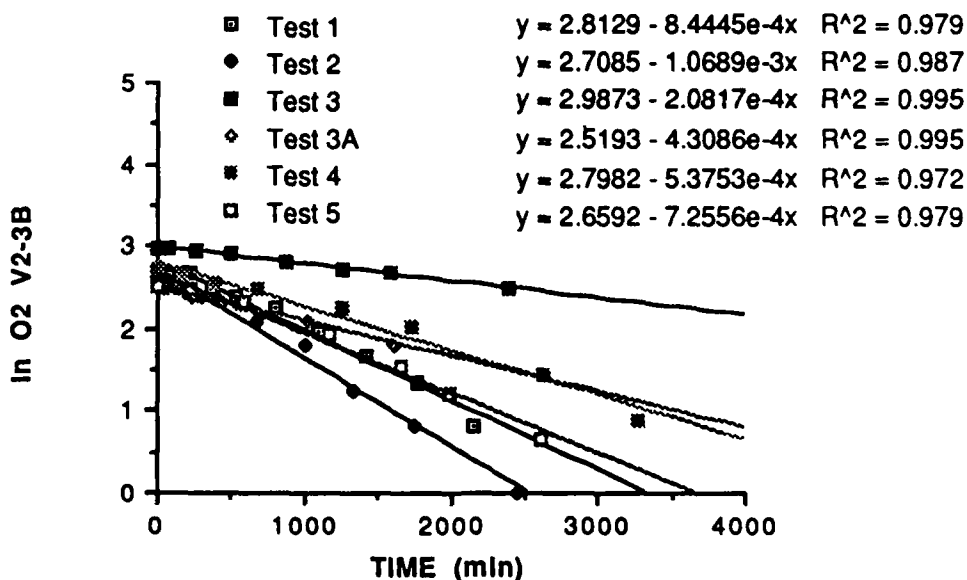


Figure 133. First order plot of O₂ consumption measured at V2-3B.

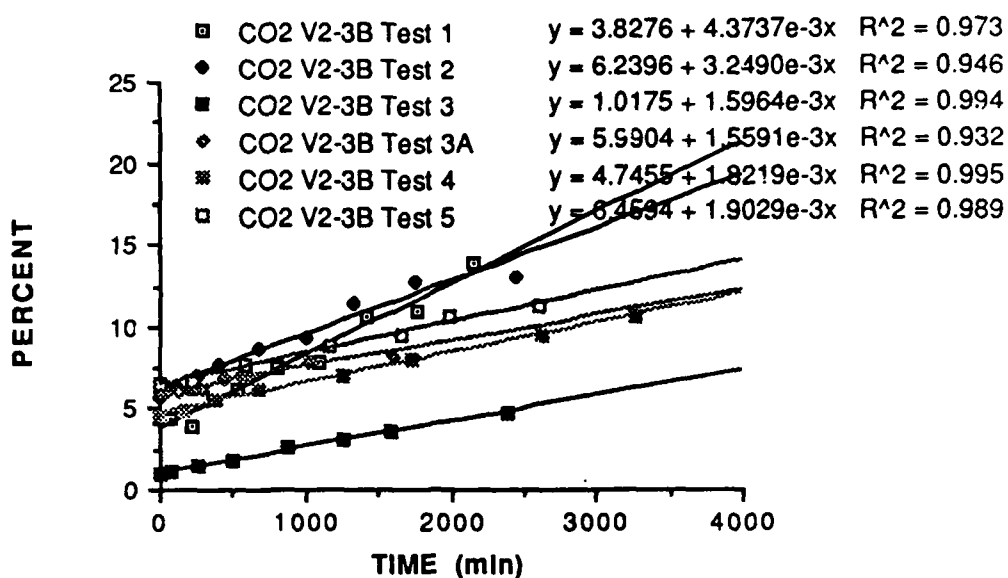


Figure 134. Zero order plot of CO₂ production measured at V2-3B.

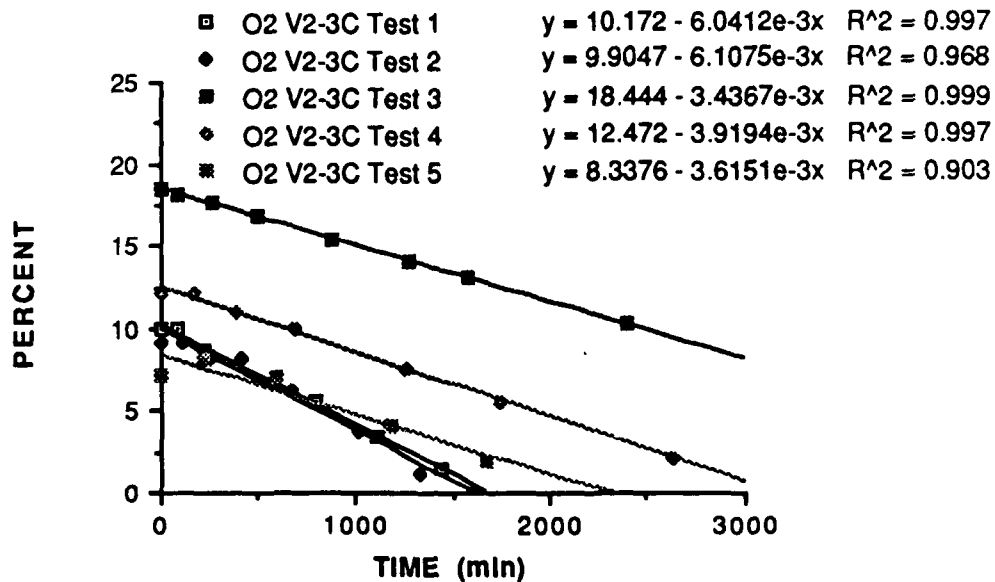


Figure 135. Zero order plot of O₂ consumption measured at V2-3C.

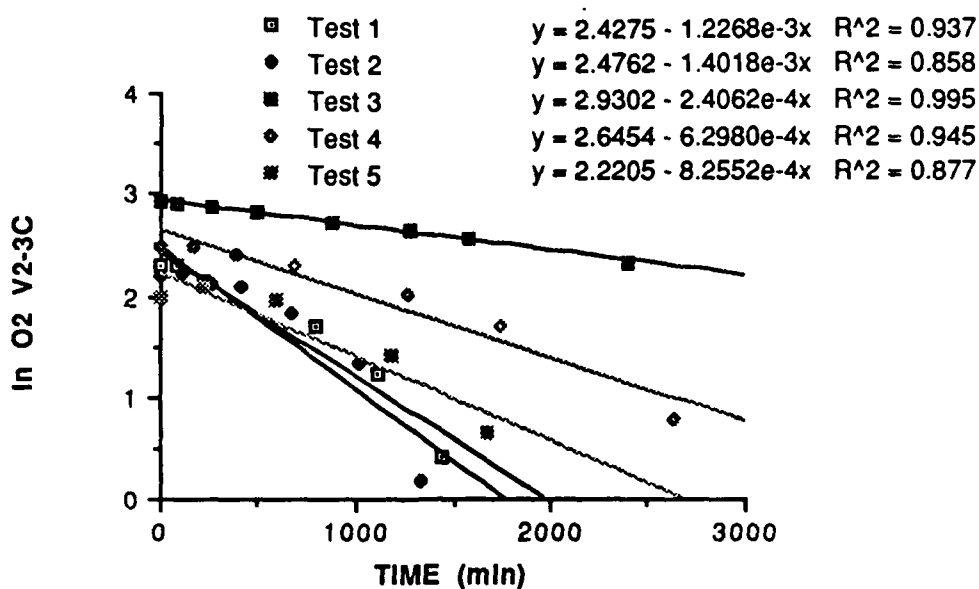


Figure 136. First order plot of O₂ consumption measured at V2-3C.

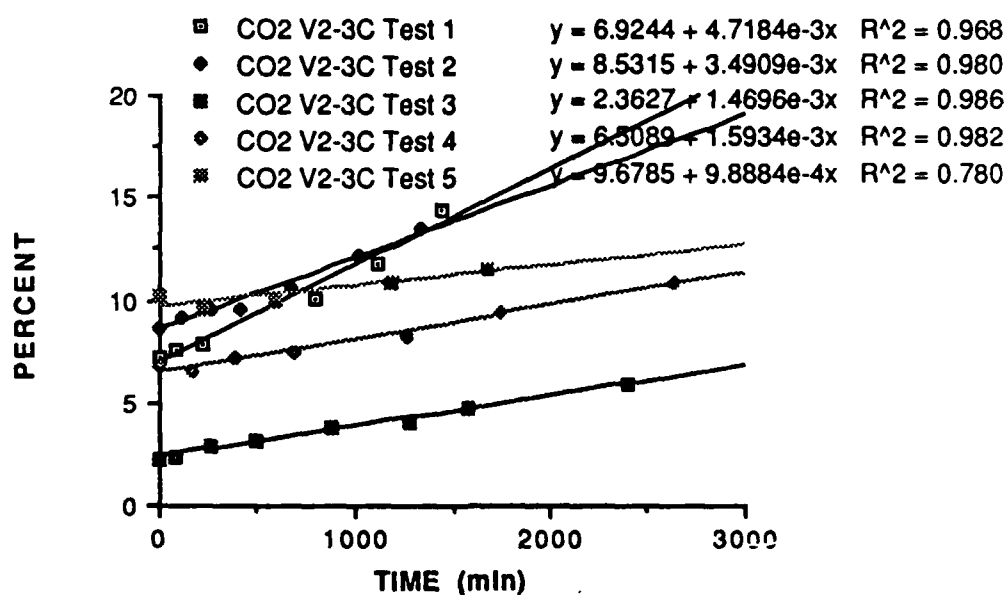


Figure 137. Zero order plot of CO₂ production measured at V2-3C.

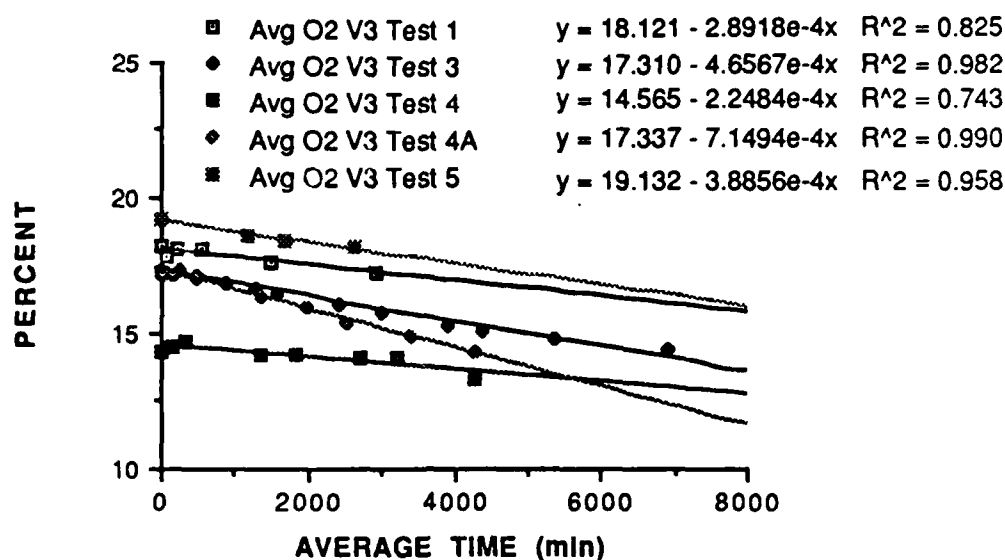


Figure 138. Zero order plot of average O₂ consumption measured at V3.

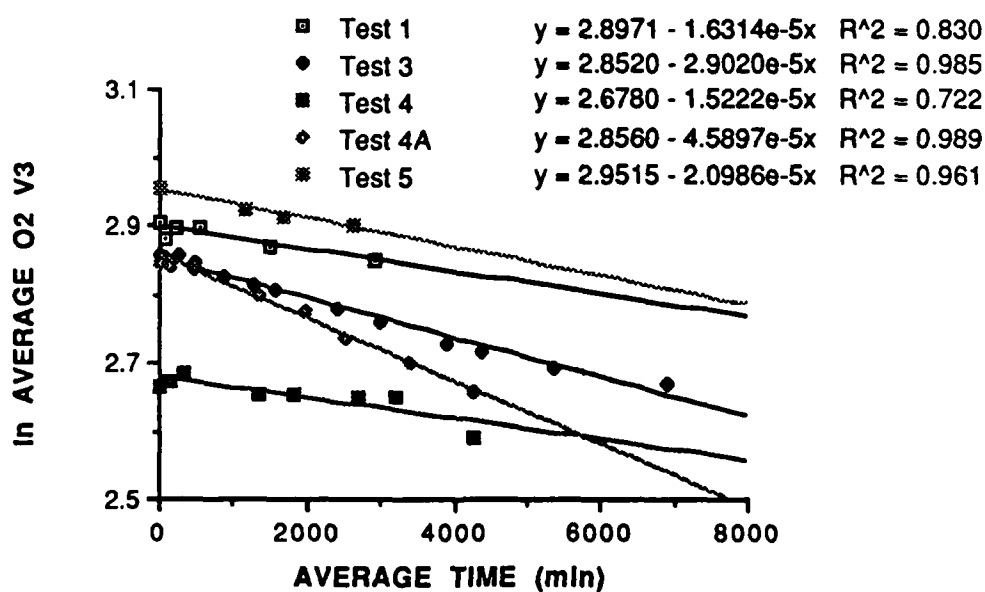


Figure 139. First order plot of average O₂ consumption measured at V3.

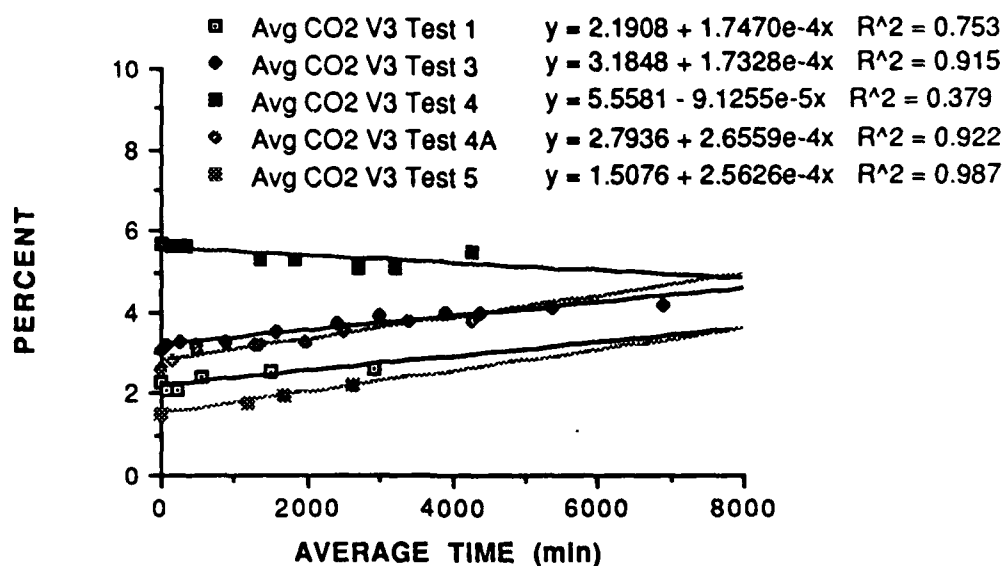


Figure 140. Zero order plot of average CO₂ production measured at V3.

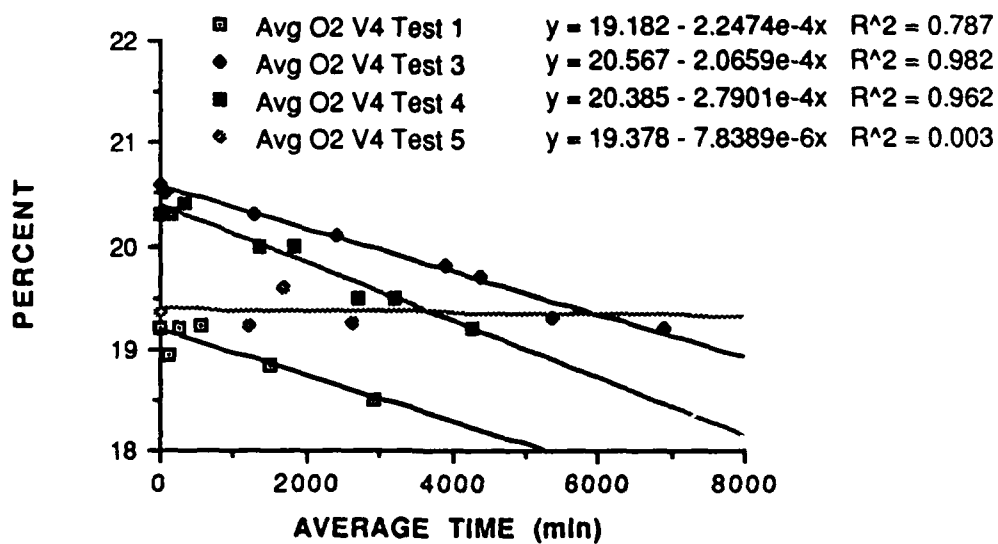


Figure 141. Zero order plot of average O₂ consumption measured at V4.

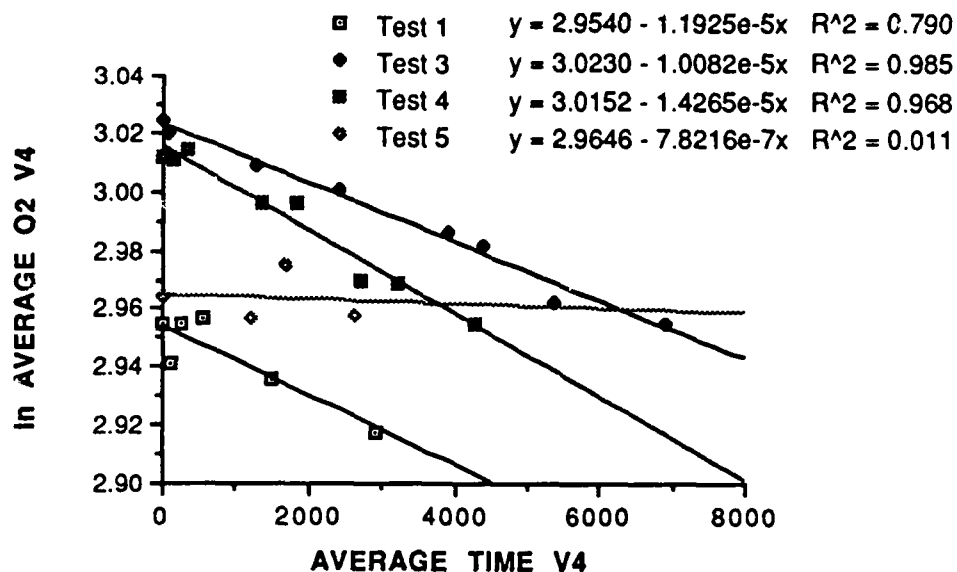


Figure 142. First order plot of average O₂ consumption measured at V4.

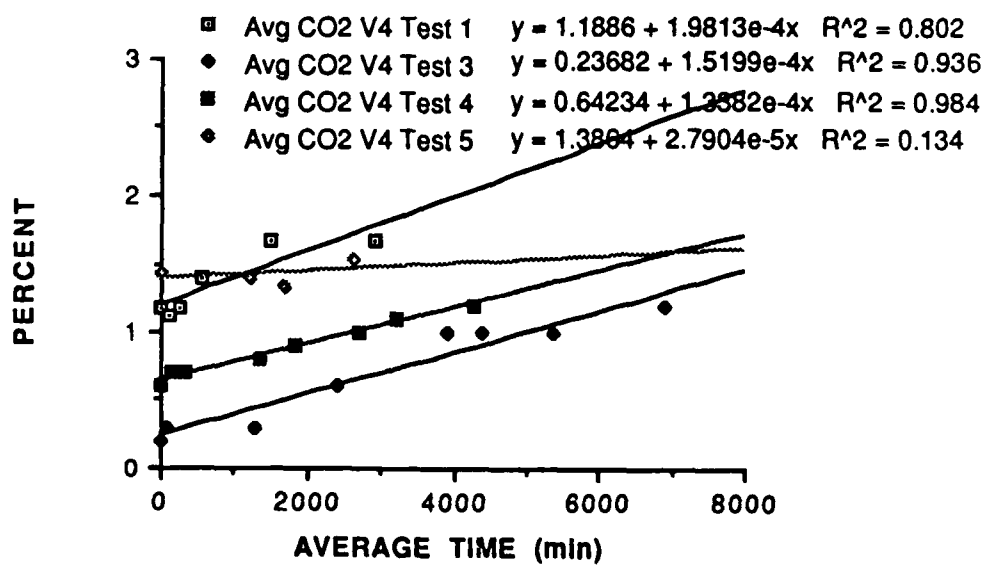


Figure 143. Zero order plot of average CO₂ production measured at V4.

Appendix K
Normalized Plots of Respiration Test Data

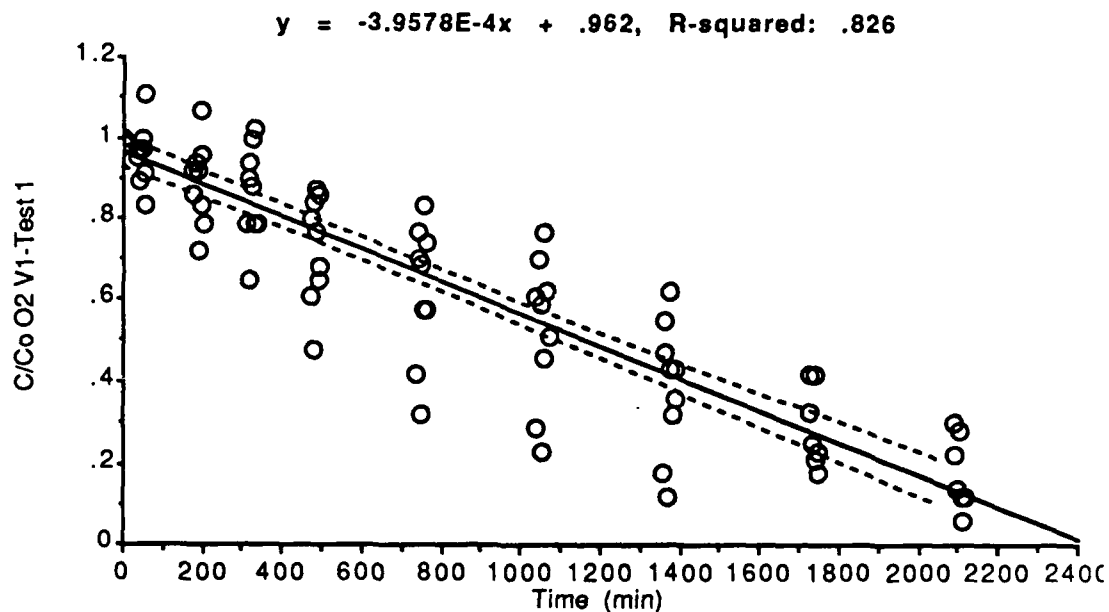


Figure 144. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 1.

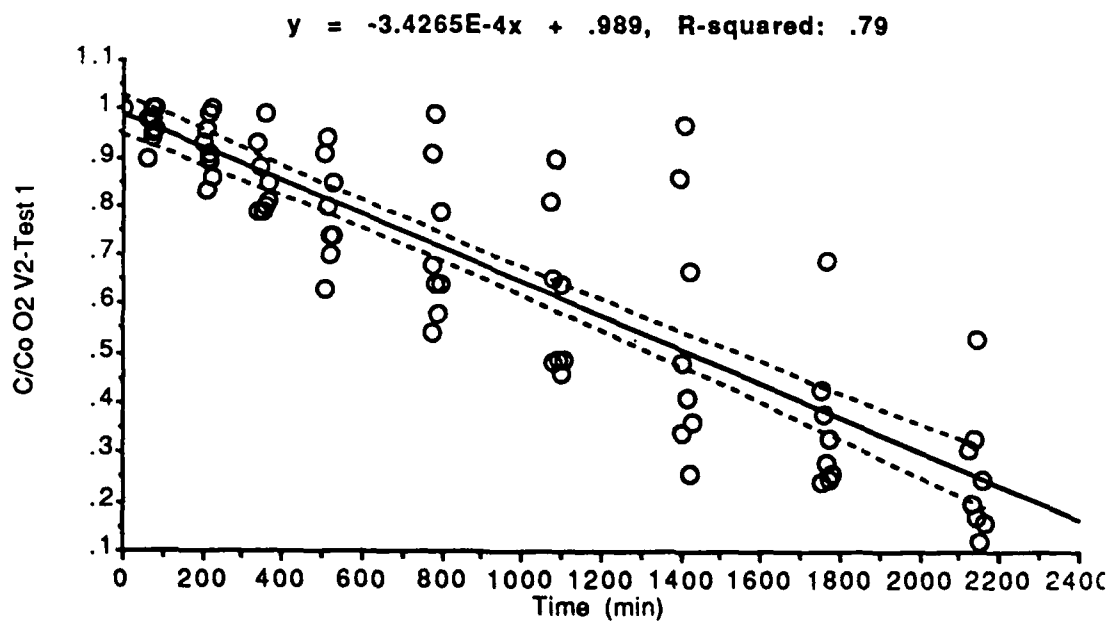


Figure 145. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 1.

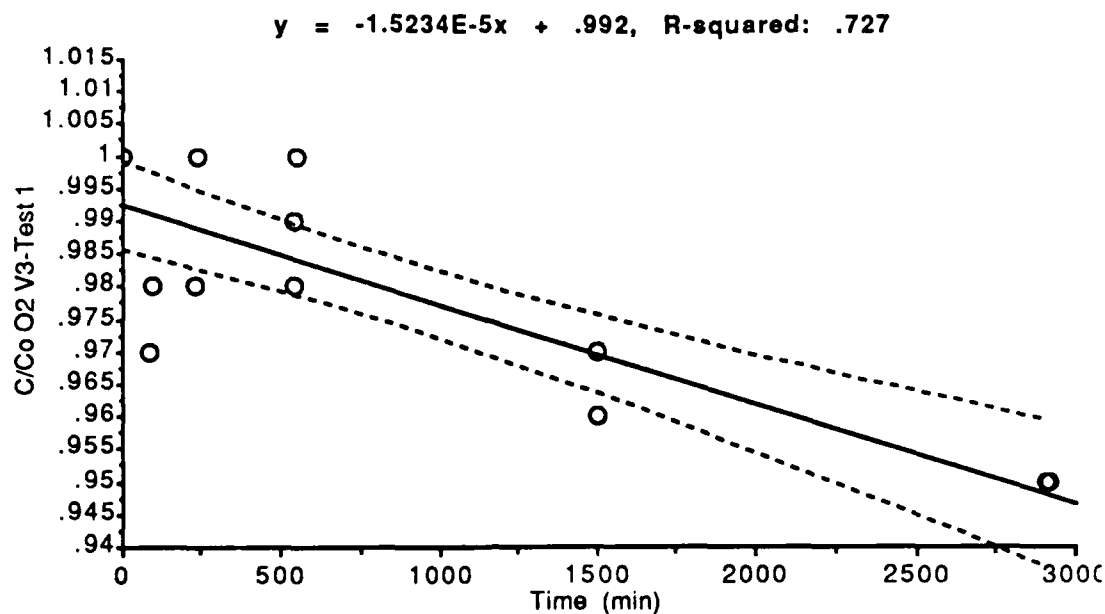


Figure 146. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 1.

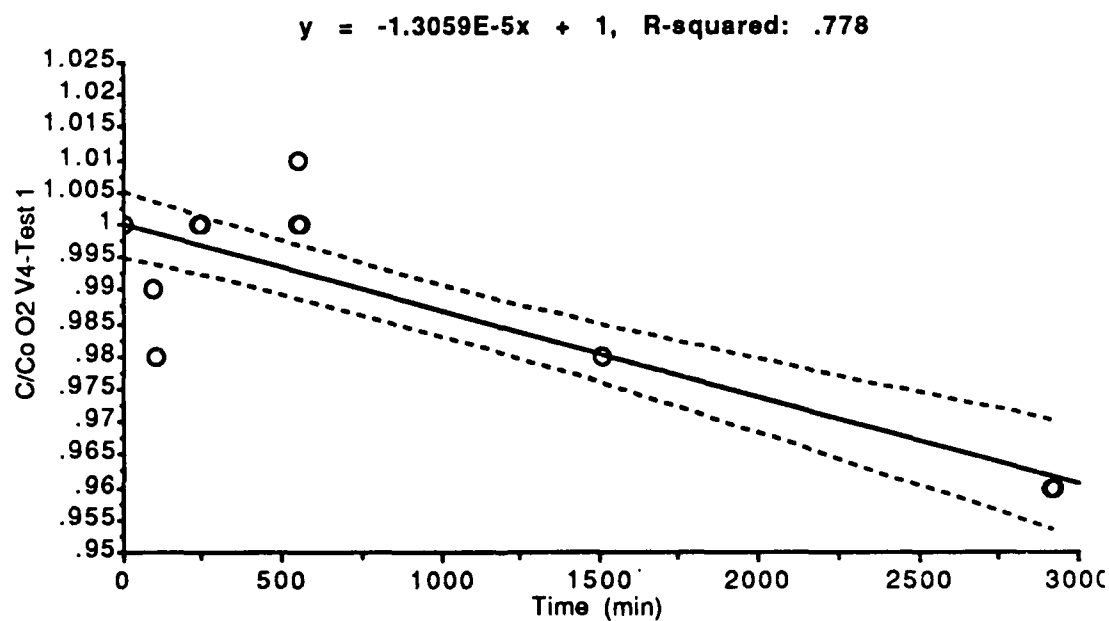


Figure 147. Regression of normalized data and 95% confidence interval for Treatment Plot V4 Test 1.

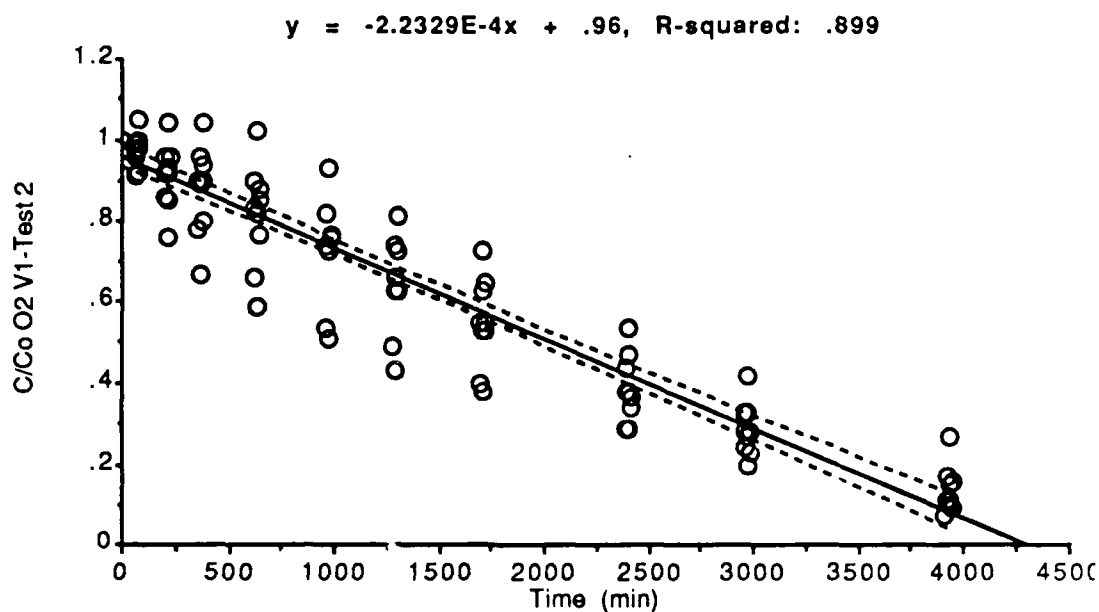


Figure 148. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 2.

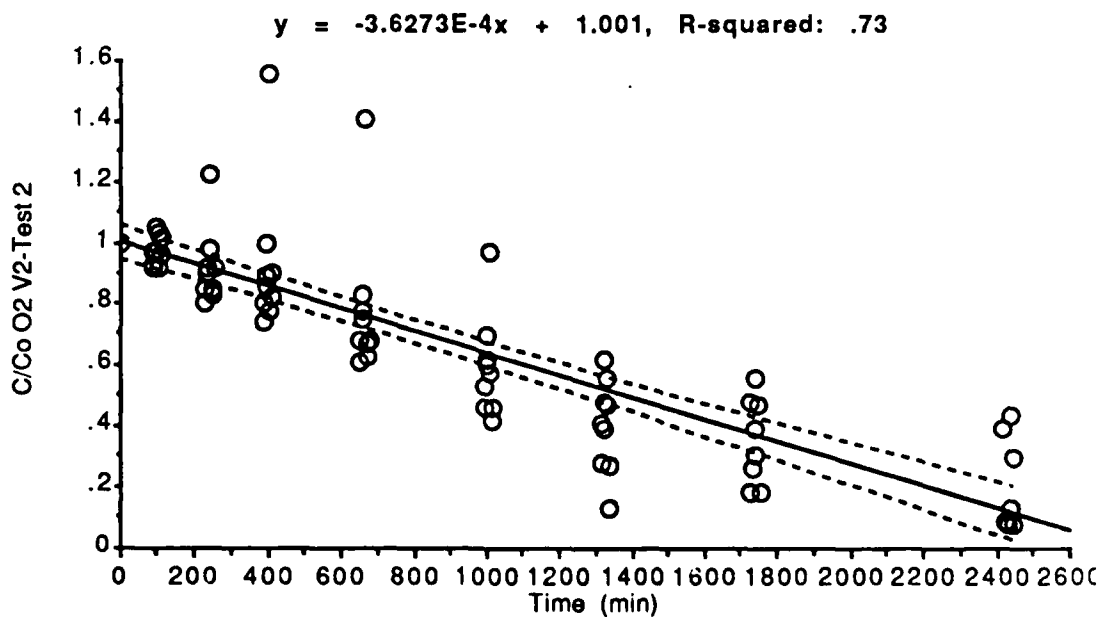


Figure 149. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 2.

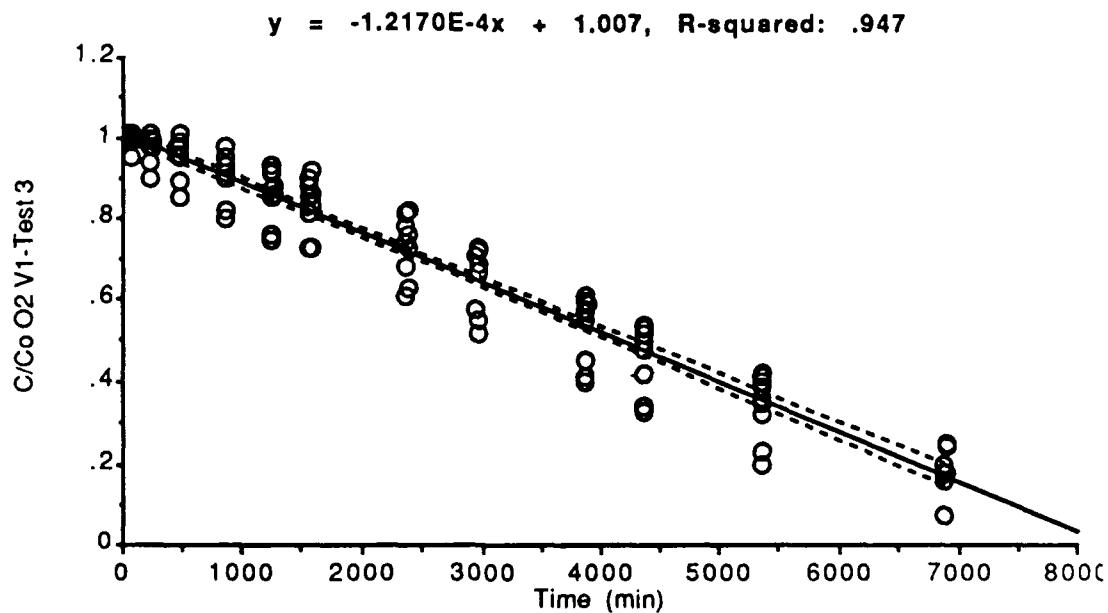


Figure 150. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 3.

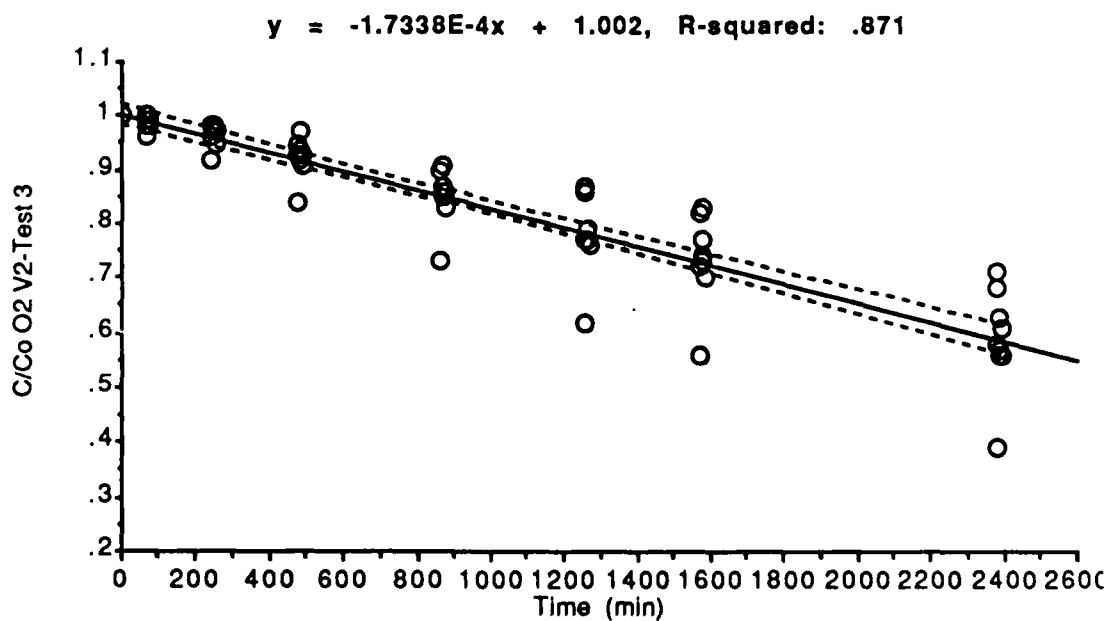


Figure 151. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 3.

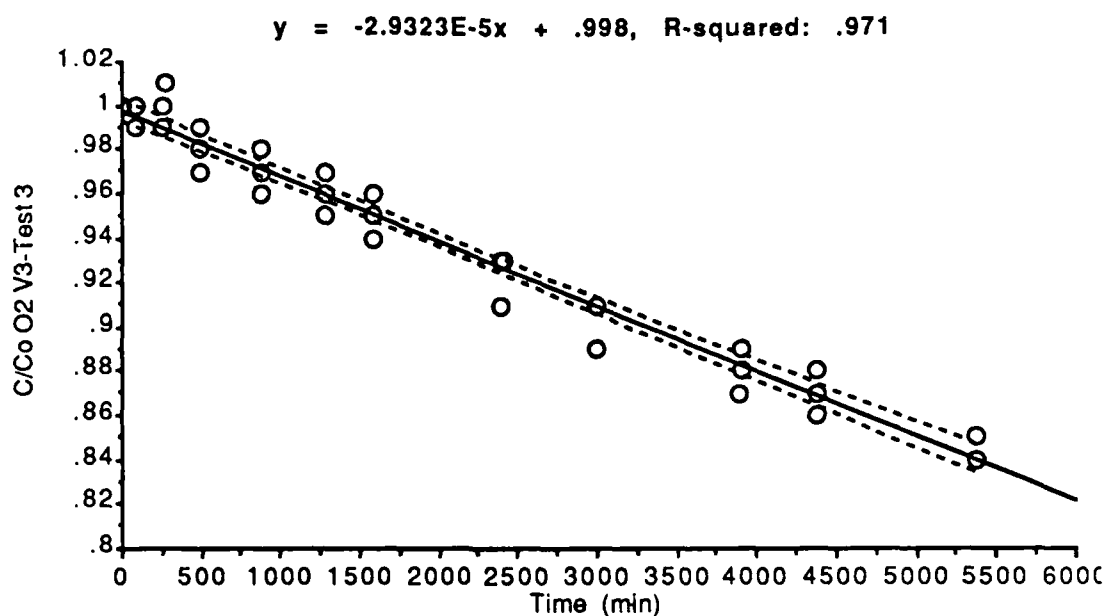


Figure 152. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 3.

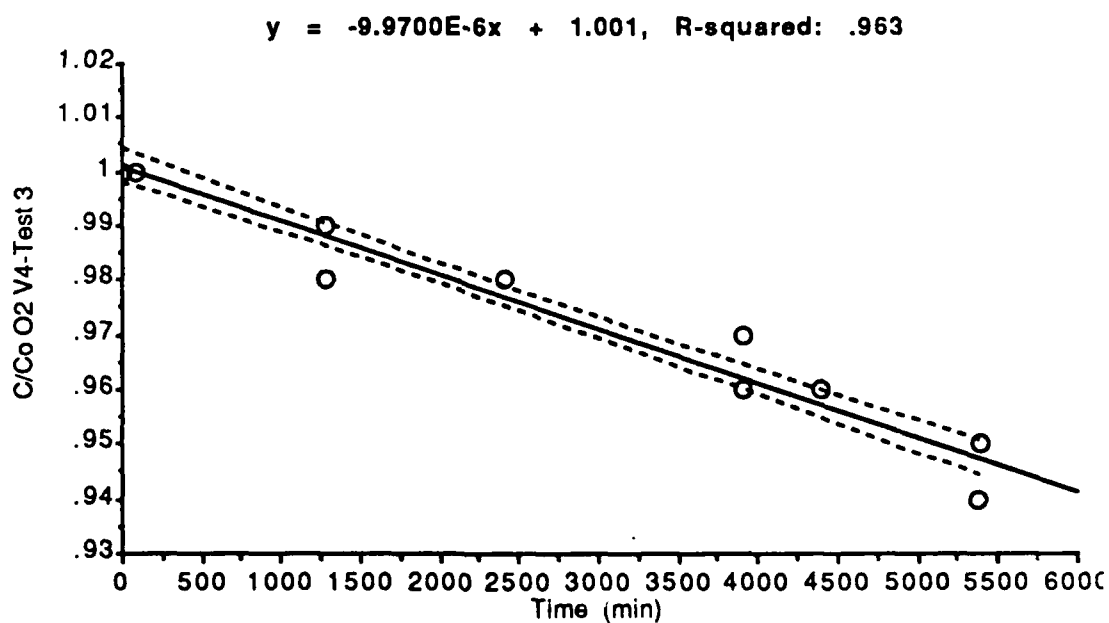


Figure 153. Regression of normalized data and 95% confidence interval for Treatment Plot V4 Test 3.

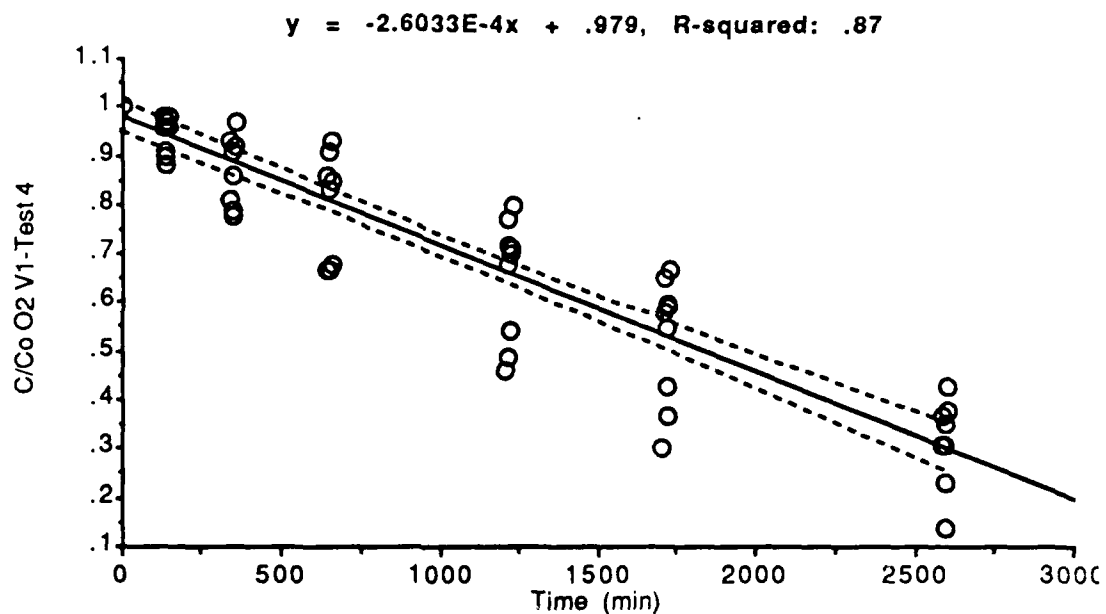


Figure 154. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 4.

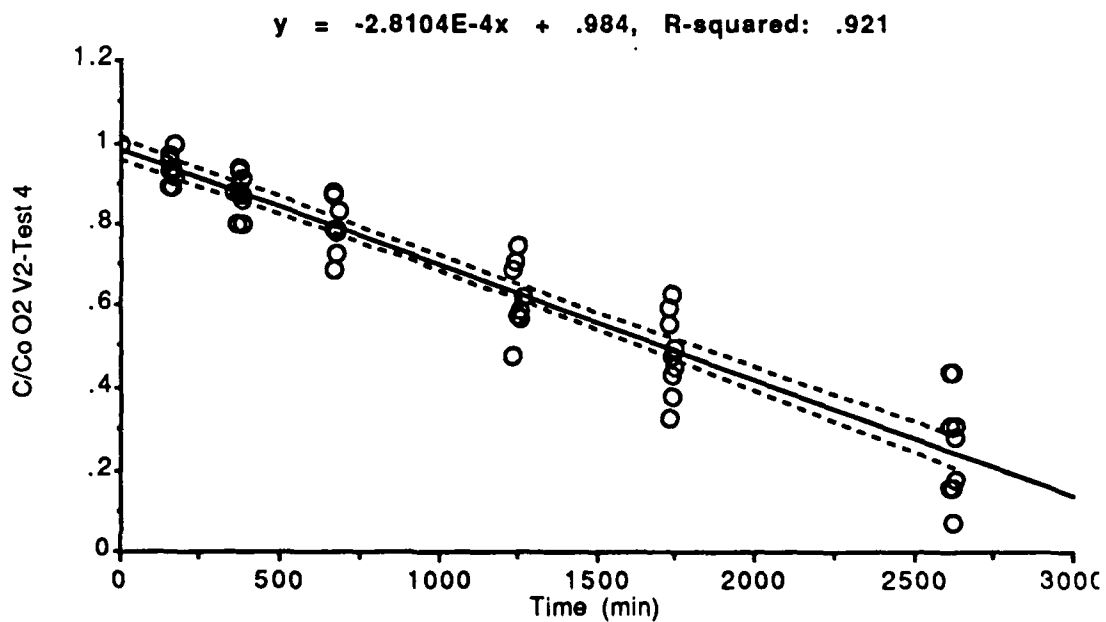


Figure 155. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 4.

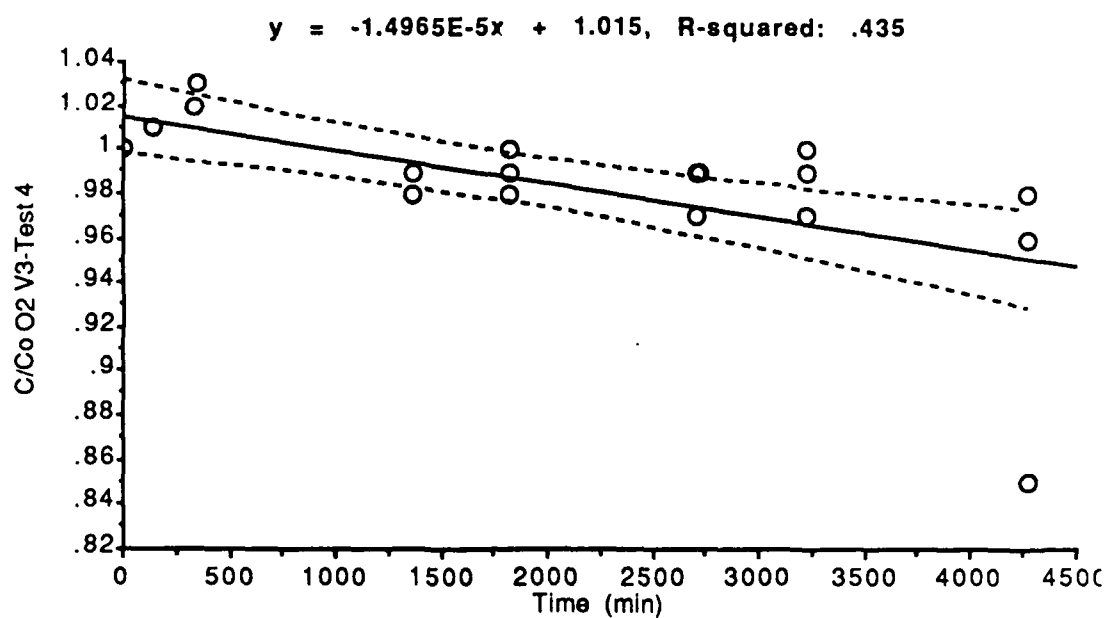


Figure 156. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 4.

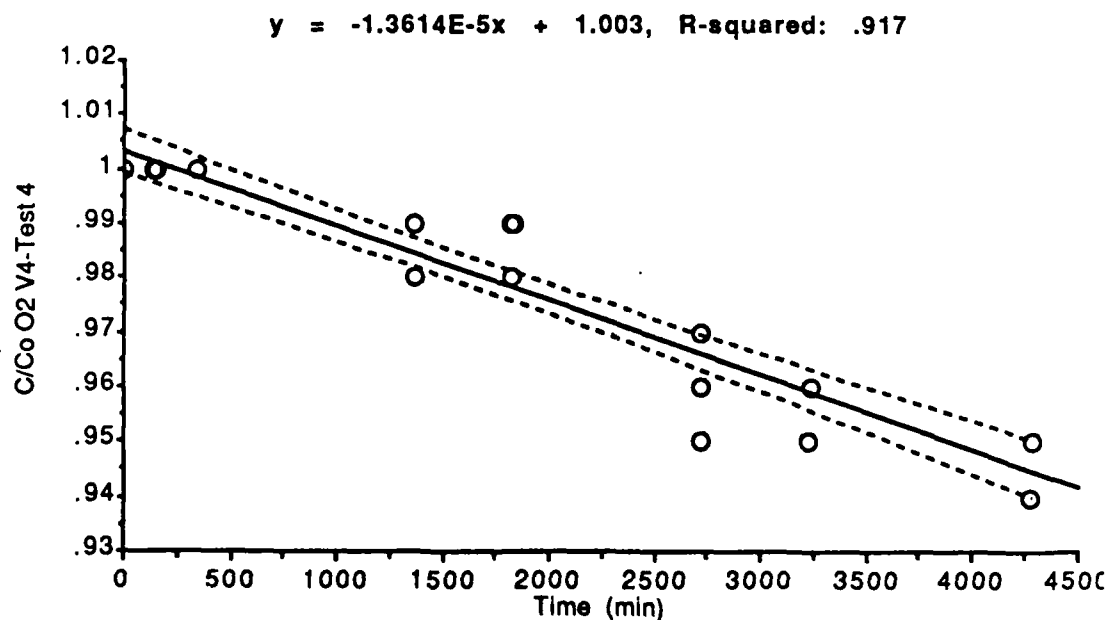


Figure 157. Regression of normalized data and 95% confidence interval for Treatment Plot V4 Test 4.

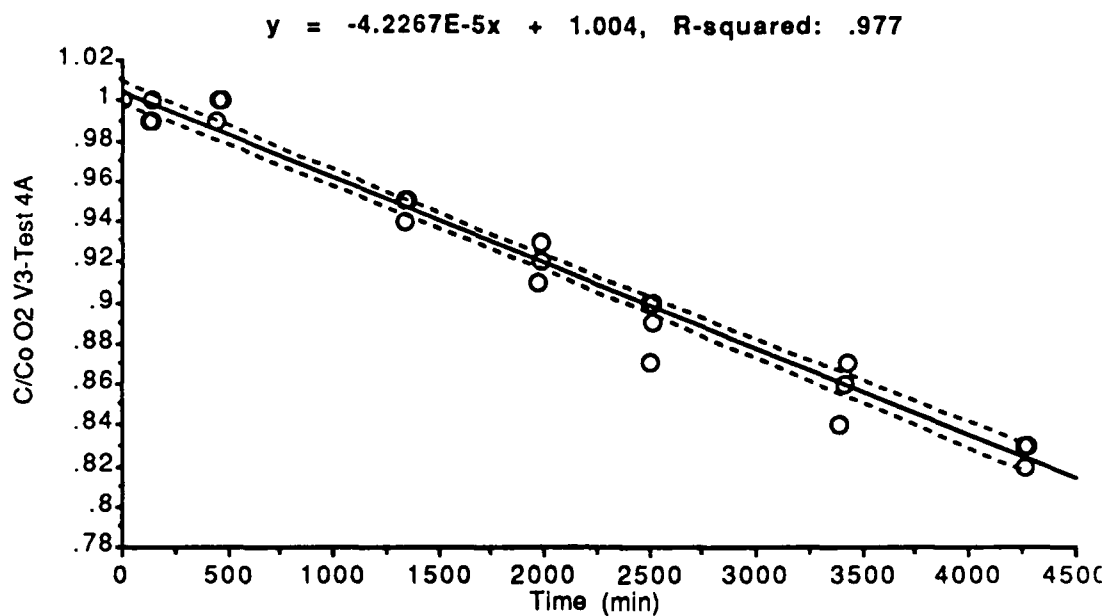


Figure 158. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 4A.

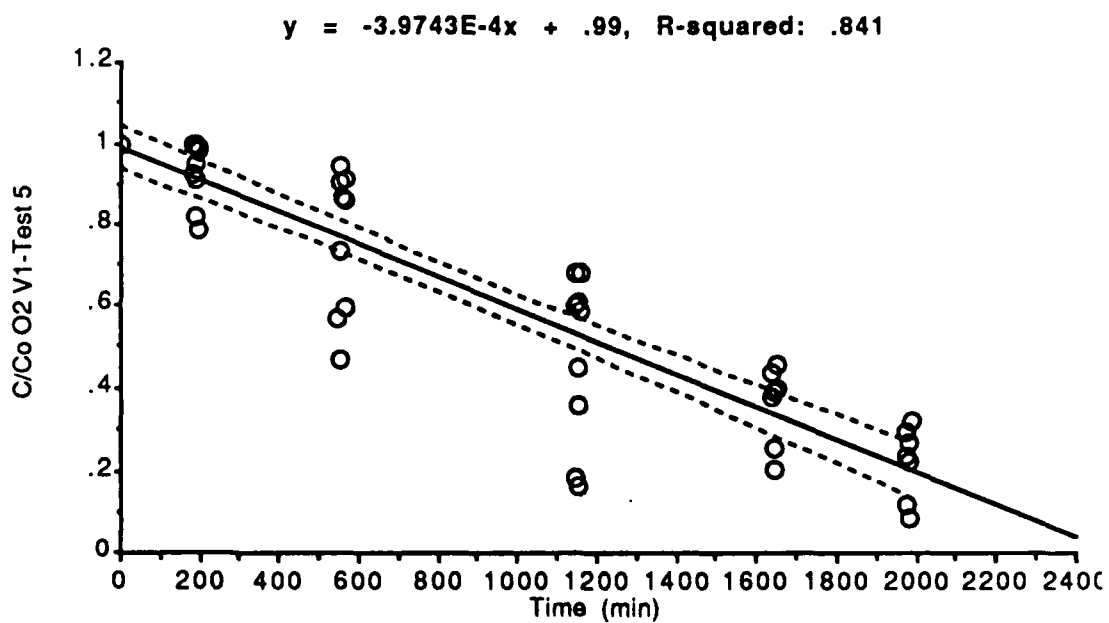


Figure 159. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 5.

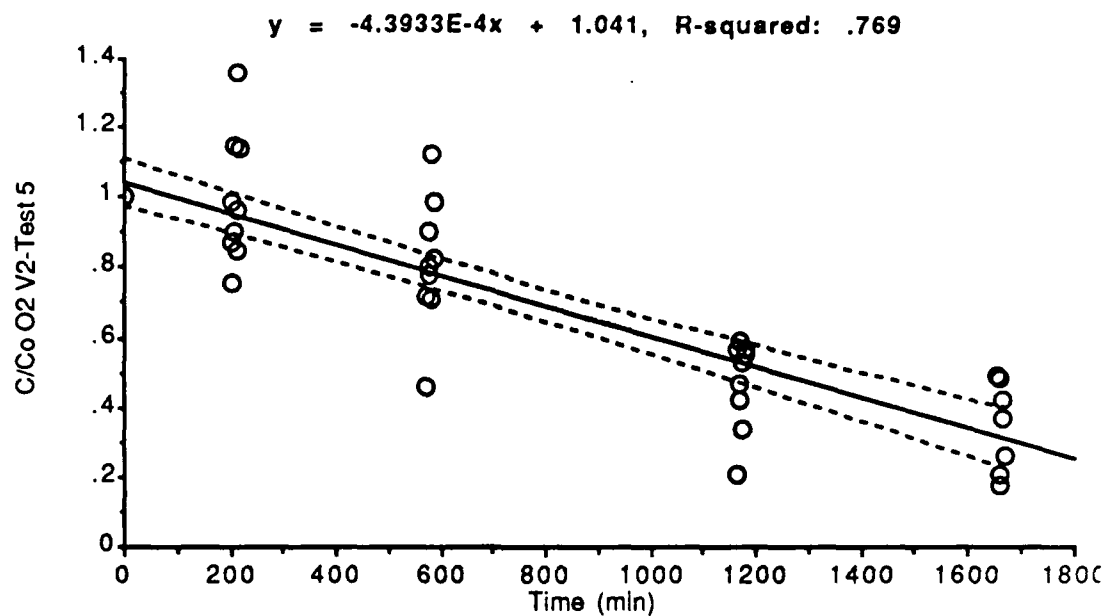


Figure 160. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 5.

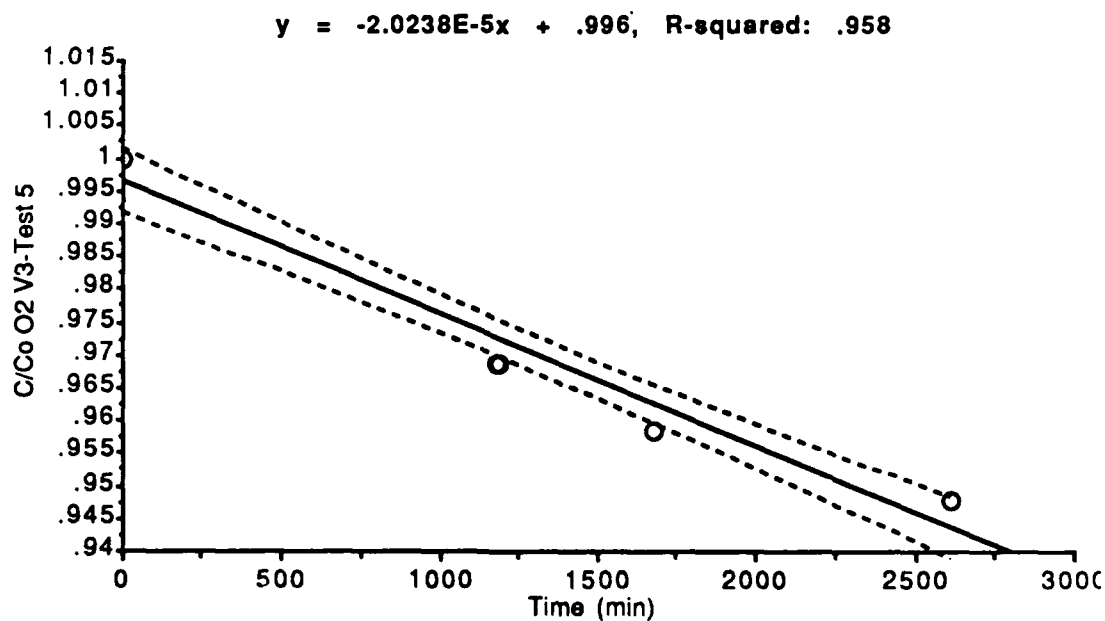


Figure 161. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 5.

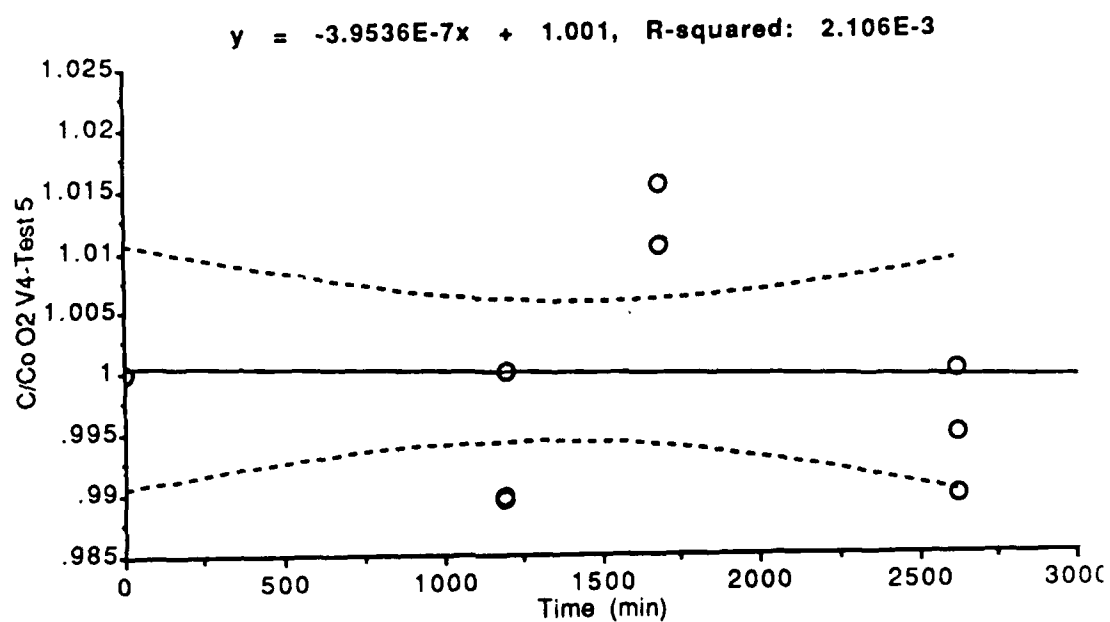


Figure 162. Regression of normalized data and 95% confidence interval for Treatment Plot V4 Test 5.

Appendix L
Soil Moisture Content Analyses
(% by weight)

Table 31. Summary of soil moisture content (by weight) statistics.

Location	Average Initial Soil Moisture July/Sept., 89 (%)	Average Dec., 89 Soil Moisture (%)	Average Final Soil Moisture April, 89 (%)	Paired Students t-test Comparing Initial and Final Soil Moisture (p)
V1 SD $\pm$	7.4 2.7	6.5 2.1	6.5 2	0.19
V2 SD $\pm$	9.8 3.7	9.8 4.1	8.5 4.2	0.16
V3 SD $\pm$	13.4 8		5.2 1.5	0.43
V4 SD $\pm$	6.6 1.8		3.8 0.2	0.28