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

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

SOURCE TEST REPORT Gibson Oil and Refining, Inc.

BC Analytical
September 18, 1990

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B C Analytical

54

Testing Information

Facility:	Gibson Oil and Refining, Inc.
Type of Unit:	Natural gas-fired Boiler
Purpose of Test:	AB 2588 EIR Data
Test Procedure:	Emissions testing for PAHs, dioxins, furans, chlorobenzenes, formaldehyde and acetaldehyde, hydrogen sulfide, NOX, CO, SO2, THC, volatile organics, and metals.
Test Date:	May 14-17, 1990

Client Information

Company:	Gibson Oil and Refining, Inc. 3300 Truxtun Avenue, Suite 200 Bakersfield, CA 93301
Contact:	Mr. Sam I. Haywood

Testing Firm Information

Company:	BC Analytical 2000 Powell Street Suite 1240 Emeryville, California 94608
Contact:	Tom Stucker, manager Air Emissions and Toxics Program (415) 658-9367

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BC Analytical
2000 Powell Street
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Project Number: 5240

Report Date: September 18, 1990

Report Prepared By:

Dan Duncan
Project Engineer

Report Reviewed By:

Tom Stucker, Manager
Air Emissions and Toxics Program

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- Laboratory Results
- Continuous Monitoring Strip Charts
- Field Data Sheets
- Methods Descriptions

INTRODUCTION

From May 14 through May 17, 1990, a BC Analytical test team collected a series of samples for Gibson Oil and Refining, Inc. at their facility in Bakersfield, Ca. All of the samples were collected from the stack of Gibson's natural gas-fired boiler with the exception of two bag samples which were taken from the compressor downstream from a collection tank. This report contains all of the data and results of the sampling and analysis undertaken and descriptions of the methods employed in the study.

The purpose of the study is to provide air toxics emission rates for inclusion in Gibson Oil's AB2588 Emission Inventory Report (EIR). The following table lists the sampling methods, number of sample replicates, sample run duration and approximate sample volume for each determination.

Throughout this report the symbols NA, ND, UTD,and BL are used to denote "Not Analyzed", "Not Detected", "Unable To Determine" (due to sample tube damage), and "indistinguishable from BLank" respectively.

Sampling Determination	Sample Method	Sampling Replicate	Sample Duration	Sample Volume
Traverse Points*1	CARB 1			
Volume Flow Rate*1	CARB 2			
Fixed Gases*1	CARB 3			
Moisture*1	CARB 4			
Dioxins, Furans, PAHs and HCl	CARB 428	3+FB	180 min.	90 ft^3
Aldehydes	CARB 430	3+FB	60 min.	30 ft^3
NOx, SO2, CO, THC, O2, and CO2	CARB 1-100	3	60 min.	-----
Hydrogen Sulfide	EPA 11	3	30 min.	30 L
Volatile Organics	VOST	3+FB	20 min.	20 L
Chromium VI & Total	CARB 425	3+FB	120 min.	60 ft^3
Multiple Metals	EPA MM	3+FB	120 min.	60 ft^3
Lead	CARB 12	3+FB	120 min.	60 ft^3

*1) Determined concurrently with every isokinetic sample run

DATA SUMMARY

Parameter	RUN 2	RUN 3	RUN 4	AVERAGE
PAH - HCl - NH3 Sampling				
Stack Conditions				
Temperature, °F	272	272	276	273
Velocity, ft/sec	21.0	20.5	19.8	20.4
Volume Flow Rate				
ACFM	2231	2179	2100	2170
SDCFM	1486	1455	1395	1445
% H2O	4.8	4.6	4.7	4.7
Fixed Gases				
%O2 vol.dry	16.5	16.5	16.0	16.3
%CO2 vol. dry	2.2	2.2	2.2	2.2
%N2 vol.dry	81.3	81.3	81.8	81.5
Total PAH Emissions				
ng/NM^3@ 12%CO2	7.3	670	1910	863
ng/sec	31.2	2820	7710	3520
lb/hr	2.47E-07	2.23E-05	6.09E-05	2.78E-05
Dioxins and Furans				
Total tetra-octa PCDD				
ng/Nm3 @ 12% CO2	ND	ND	ND	ND
ng/sec	ND	ND	ND	ND
Total tetra-octa PCDF				
ng/Nm3 @ 12% CO2	ND	ND	ND	ND
ng/sec	ND	ND	ND	ND
Total Toxic Equivalent				
(2,3,7,8-TCDD Equivalents)				
(Ca scenario iv)				
ng/Nm3 @ 12%CO2				< 1.984
Dichlorobenzenes				
ng/NM^3@ 12%CO2	ND	ND	94.3	
ng/sec	ND	ND	10.8	
lb/hr	ND	ND	8.51E-08	
Other Chlorobenzenes				
ng/NM^3@ 12%CO2	ND	ND	ND	ND
ng/sec	ND	ND	ND	ND
lb/hr	ND	ND	ND	ND

Parameter	RUN 2	RUN 3	RUN 4	AVERAGE
PAH - HCl - NH3 Sampling (continued)				
NH3 Emissions				
ppm	NA	NA	NA	NA
lb/hr	NA	NA	NA	NA
HCl Emissions				
ppm	0.0040	0.0032	0.0044	0.0039
lb/hr	3.40E-05	2.67E-05	3.56E-05	3.21E-05
Aldehyde Emissions				
mg/L Formaldehyde	6.26E-03	1.24E-03	2.99E-04	2.60E-03
lb/hr Formaldehyde	3.33E-02	6.60E-03	1.59E-03	1.38E-02
mg/L Acetaldehyde	2.14E-03	1.27E-04	4.75E-05	7.72E-04
lb/hr Acetaldehyde	1.14E-03	6.77E-04	2.53E-04	6.90E-04
H2S Emissions				
ppm	BL	BL	BL	BL
lb/hr	BL	BL	BL	BL

Parameter	RUN 1	RUN 2	RUN 3	AVERAGE
Continuous Emissions Monitoring				
CO, ppm vol. dry:	189.8	189.6	191.7	190.4
CO, lb/hr:	1.19	1.19	1.20	1.19
CO2, % vol. dry:	2.50	2.50	2.50	2.50
NOx, ppm vol. dry:	24.0	21.6	21.3	22.3
NOx, lb/hr:	0.248	0.222	0.220	0.230
O2, % vol. dry:	16.9	16.4	16.6	16.6
SO2, ppm vol. dry:	0.29	0.05	0.01	0.12
SO2, lb/hr:	0.004	0.0007	0.0001	0.0016
THC as C1, ppm vol. dry:	646	390	324	453
THC as C1, lb/hr:	1.74	1.05	0.88	1.22

GIBSON 5240

Parameter	RUN 5	RUN 6	RUN 7	AVERAGE
Volatile Organic Compounds				
Compound				
Acetone ppb	UTD	NA	NA	NA
Acetone lb/hr	UTD	NA	NA	
Benzene ppb	UTD	315	629	522
Benzene lb/hr	UTD	0.0055	0.011	0.0083
Carbon tetrachloride ppb	UTD	BL	BL	BL
Carbon tetrachloride lb/hr	UTD	BL	BL	BL
1,1-Dichloroethene ppb	UTD	BL	BL	BL
1,1-Dichloroethene lb/hr	UTD	BL	BL	BL
cis-1,2-Dichloroethene ppb	UTD	BL	BL	BL
cis-1,2-Dichloroethene lb/hr	UTD	BL	BL	BL
trans-1,2-Dichloroethene ppb	UTD	BL	BL	BL
trans-1,2-Dichloroethene lb/hr	UTD	BL	BL	BL
Ethylene dibromide ppb	UTD	NA	NA	NA
Ethylene dibromide lb/hr	UTD	NA	NA	NA
Methylene chloride ppb	UTD	BL	BL	BL
Methylene chloride lb/hr	UTD	BL	BL	BL
Methyl ethyl ketone ppb	UTD	NA	NA	NA
Methyl ethyl ketone lb/hr	UTD	NA	NA	NA
Methyl isobutyl ketone ppb	UTD	NA	NA	NA
Methyl isobutyl ketone lb/hr	UTD	NA	NA	NA
Phenol ppb	UTD	NA	NA	NA
Phenol lb/hr	UTD	NA	NA	NA
Toluene ppb	UTD	401	667	534
Toluene lb/hr	UTD	0.0083	0.014	0.011
Total xylene ppb	UTD	BL	BL	BL
Total xylene lb/hr	UTD	BL	BL	BL
Vinyl chloride ppb	UTD	BL	BL	BL
Vinyl chloride lb/hr	UTD	BL	BL	BL

GIBSON 5240

Parameter	RUN 5	RUN 6	RUN 7	AVERAGE
Chromium Testing				
Stack Conditions				
Temperature, °F	272	279	272	274
Velocity, ft/sec	20.3	20.0	19.4	19.9
Volume Flow Rate				
ACFM	2147	2116	2052	2105
SDCFM	1427	1395	1365	1396
% H2O	5.2	5.1	5.1	5.1
Fixed Gases				
%O2 vol.dry	16.7	16.7	16.7	16.7
%CO2 vol. dry	2.3	2.3	2.3	2.3
%N2 vol.dry	81.0	81.0	81.0	81.0
Total Chromium Emissions				
gr/SDCF	ND	ND	ND	ND
gr/SDCF @ 12% CO2	ND	ND	ND	ND
lb/hr	ND	ND	ND	ND
Hexavalent Chromium Emissions				
gr/SDCF	BL	BL	BL	BL
gr/SDCF @ 12% CO2	BL	BL	BL	BL
lb/hr	BL	BL	BL	BL

Parameter	RUN 9	RUN 10	RUN 11	AVERAGE
Lead Testing				
Stack Conditions				
Temperature, °F	280	278	262	273
Velocity, ft/sec	20.6	19.4	20.1	20.0
Volume Flow Rate				
ACFM	2179	2052	2136	2122
SDCFM	1433	1354	1443	1410
% H2O	5.0	5.0	4.8	5.0
Fixed Gases				
%O2 vol.dry	16.7	16.7	16.2	16.5
%CO2 vol. dry	2.3	2.3	2.9	2.5
%N2 vol.dry	81.0	81.0	80.9	80.9
Lead Emissions				
gr/SDCF	2.26E-08	2.65E-07	1.81E-07	1.56E-07
gr/SDCF @ 12% CO2	5.22E-08	6.12E-07	2.39E-07	3.01E-07
lb/hr	3.84E-06	4.78E-05	3.03E-05	2.73E-05

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Parameter	RUN 13	RUN 14	RUN 15	AVERAGE
Multiple Metals Testing				
Stack Conditions				
Temperature, °F	270	264	262	265
Velocity, ft/sec	20.2	18.4	21.3	20.0
Volume Flow Rate				
ACFM	2139	1951	2263	2118
SDCFM	1428	1312	1531	1424
% H2O	5.0	5.0	4.7	4.9
Fixed Gases				
%O2 vol.dry	16.7	16.7	16.2	16.5
%CO2 vol. dry	2.3	2.3	2.9	2.5
%N2 vol.dry	81.0	81.0	80.9	81.0
Arsenic Emissions				
gr/SDCF	BL	BL	BL	BL
gr/SDCF @ 12% CO2	BL	BL	BL	BL
lb/hr	BL	BL	BL	BL
Beryllium Emissions				
gr/SDCF	ND	ND	ND	ND
gr/SDCF @ 12% CO2	ND	ND	ND	ND
lb/hr	ND	ND	ND	ND
Cadmium Emissions				
gr/SDCF	BL	BL	5.72E-07	
gr/SDCF @ 12% CO2	BL	BL	2.37E-06	
lb/hr	BL	BL	7.52E-06	
Chromium (Total) Emissions				
gr/SDCF	4.38E-08	7.97E-07	5.53E-07	4.65E-07
gr/SDCF @ 12% CO2	2.28E-07	4.16E-06	2.29E-06	2.23E-06
lb/hr	5.35E-07	8.98E-06	7.26E-06	5.59E-06
Copper Emissions				
gr/SDCF	8.73E-08	2.05E-07	BL	1.46E-07
gr/SDCF @ 12% CO2	4.55E-07	1.07E-06	BL	7.63E-07
lb/hr	1.07E-06	2.31E-06	BL	1.69E-06

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Parameter	RUN 1	RUN 2	RUN 3	AVERAGE
Lead Emissions				
gr/SDCF	2.18E-08	BL	1.97E-08	2.08E-08
gr/SDCF @ 12% CO2	1.14E-07	BL	8.17E-08	9.79E-08
lb/hr	2.67E-07	BL	2.59E-07	2.63E-07
Manganese Emissions				
gr/SDCF	ND	ND	ND	ND
gr/SDCF @ 12% CO2	ND	ND	ND	ND
lb/hr	ND	ND	ND	ND
Mercury Emissions				
gr/SDCF	BL	BL	5.92E-08	
gr/SDCF @ 12% CO2	BL	BL	2.45E-07	
lb/hr	BL	BL	7.78E-07	
Nickel Emissions				
gr/SDCF	5.02E-07	1.37E-07	1.18E-07	2.52E-07
gr/SDCF @ 12% CO2	2.62E-06	7.13E-07	4.90E-07	1.27E-06
lb/hr	6.15E-06	1.54E-06	1.56E-06	3.08E-06
Selenium Emissions				
gr/SDCF	ND	ND	ND	ND
gr/SDCF @ 12% CO2	ND	ND	ND	ND
lb/hr	ND	ND	ND	ND
Zinc Emissions				
gr/SDCF	BL	4.56E-06	BL	
gr/SDCF @ 12% CO2	BL	2.38E-05	BL	
lb/hr	BL	5.13E-05	BL	

Compressor Gas Testing

	Bag 1	Bag 2	Average
Methane, ppm	910	920	915
Ethane, ppm	56	56	56
Propane, ppm	16	16	16
n-Butane, ppm	140	140	140
Ethylene, ppm	< 2	< 2	< 2
Propylene, ppm	< 2	< 2	< 2
Isobutane, ppm	14	16	15

GIBSON 5240

FORMALDEHYDE AND ACETALDEHYDE
DATA AND RESULTS:

CLIENT:	Gibson Oil	RUN #:	ALD-1
DATE:	May 14, 1990	LOG #:	05-292-1
UNIT:	Boiler	FIELD BLANK:	05-292-4
SAMPLE:	Outlet	TRIP BLANK:	05-292-5

SAMPLING DATA:

		Meter Vol., Liters	Meter Temp., deg. F	Std.Vol. Meter, Liters	Std.Vol. Meter, SDCF
Bar. Press. (in.Hg)	29.50				
Standard Temp. (F)	60				
Std Press. (in.Hg.)	29.92				
SDCFM	1419				
		68.00	72.5	65.47	2.312

ANALYTICAL DATA:
ND = Not Detected

Compound Name	MW gm/mole	Total Sample mg	Conc. mg/L Vol.Dry	Emission Rate g/sec	Conc. ppm Vol.Dry	Emission Rate Lb/Hr	TOTAL MILLIGRAMS FIELD BLANK 05-292-4
Formaldehyde	30.03	0.410	6.26E-03	4.19E-03	4.94	3.33E-02	0.0014
Acetaldehyde	44.05	0.014	2.14E-04	1.43E-04	0.11	1.14E-03	0.0002

GIBSON 5240

FORMALDEHYDE AND ACETALDEHYDE

DATA AND RESULTS:

CLIENT:	Gibson Oil	RUN #:	ALD-2
DATE:	May 14, 1990	LOG #:	05-292-2
UNIT:	Boiler	FIELD BLANK:	05-292-4
SAMPLE:	Outlet	TRIP BLANK:	05-292-5

SAMPLING DATA:

		Meter Vol., Liters	Meter Temp., deg. F	Std.Vol. Meter, Liters	Std.Vol. Meter, SDCF
Bar. Press. (in.Hg)	29.50				
Standard Temp. (F)	60				
Std Press. (in.Hg.)	29.92				
SDCFM	1419	64.00	76.1	61.21	2.161

ANALYTICAL DATA:

ND = Not Detected

Compound Name	MW gm/mole	Total Sample mg	Conc. mg/L Vol.Dry	Emission Rate g/sec	Conc. ppm Vol.Dry	Emission Rate Lb/Hr	TOTAL MILLIGRAMS FIELD BLANK 05-292-4
Formaldehyde	30.03	0.0760	1.24E-03	8.32E-04	0.98	6.60E-03	0.0014
Acetaldehyde	44.05	0.0078	1.27E-04	8.54E-05	0.07	6.77E-04	0.0002

GIBSON 5240

FORMALDEHYDE AND ACETALDEHYDE

DATA AND RESULTS:

CLIENT:	Gibson Oil	RUN #:	ALD-3
DATE:	May 14, 1990	LOG #:	05-292-3
UNIT:	Boiler	FIELD BLANK:	05-292-4
SAMPLE:	Outlet	TRIP BLANK:	05-292-5

SAMPLING DATA:

		Meter Vol., Liters	Meter Temp., deg. F	Std.Vol. Meter, Liters	Std.Vol. Meter, SDCF
Bar. Press. (in.Hg)	29.50				
Standard Temp. (F)	60				
Std Press. (in.Hg.)	29.92				
SDCFM	1419	60.00	81.2	56.84	2.007

ANALYTICAL DATA:

ND = Not Detected

Compound Name	MW gm/mole	Total Sample mg	Conc. mg/L Vol.Dry	Emission Rate g/sec	Conc. ppm Vol.Dry	Emission Rate Lb/Hr	TOTAL MILLIGRAMS FIELD BLANK 05-292-4
Formaldehyde	30.03	0.0170	2.99E-04	2.00E-04	0.24	1.59E-03	0.0014
Acetaldehyde	44.05	0.0027	4.75E-05	3.18E-05	0.03	2.53E-04	0.0002

GIBSON 5240

VOLATILE ORGANIC HYDROCARBON
DATA AND RESULTS:

CLIENT:	Gibson Oil	RUN #:	5 A&B
DATE:	May 14, 1990	TUBE #s:	05-293-1
UNIT:	Boiler	FIELD BLANK:	05-293-4
SAMPLE:	Outlet	TRIP BLANK:	05-293-5

SAMPLING DATA:

		Meter Vol., Liters	Meter Temp., deg. F	Std.Vol. Meter, Liters	Std.Vol. Meter, SDCF
Bar. Press. (in.Hg)	30.04				
Standard Temp. (F)	60				
Std Press. (in.Hg.)	29.92				
SDCFM	1419				
		20	79.7	19.347	0.683

ANALYTICAL DATA: UTD = Unable to determine due to sample tube breakage
ND = Not Detected BL = Indistinguishable from Blank
NA = Not Analyzed

Compound Name	MW gm/mole	Total Sample ng	Conc. ug/L Vol.Dry	Emission Rate g/sec	Conc. ppb Vol.Dry	Emission Rate Lb/Hr	TOTAL MICROGRAMS FIELD BLANK 05-293-4	TRIP BLANK 05-293-5
Benzene	78.11	UTD	UTD	UTD	UTD	UTD	UTD	<5
Carbon tetrachloride	153.84	UTD	UTD	UTD	UTD	UTD	UTD	<5
1,1-Dichloroethene	96.95	UTD	UTD	UTD	UTD	UTD	UTD	<5
trans-1,2-Dichloroethene	96.95	UTD	UTD	UTD	UTD	UTD	UTD	<5
Methylene chloride	84.94	UTD	UTD	UTD	UTD	UTD	UTD	<5
Toluene	92.13	UTD	UTD	UTD	UTD	UTD	UTD	<5
Vinyl chloride	62.98	UTD	UTD	UTD	UTD	UTD	UTD	<5
Acetone	58.08	UTD	UTD	UTD	UTD	UTD	UTD	<5
Methyl ethyl ketone (MEK)	72.11	UTD	UTD	UTD	UTD	UTD	UTD	<5
Methyl isobutyl ketone	100.16	UTD	UTD	UTD	UTD	UTD	UTD	<5
Total xylene isomers	106.16	UTD	UTD	UTD	UTD	UTD	UTD	<25
cis-1,2-Dichloroethene	96.95	UTD	UTD	UTD	UTD	UTD	UTD	<5

VOLATILE ORGANIC HYDROCARBON
DATA AND RESULTS:

CLIENT:	Gibson Oil	RUN #:	6 A&B
DATE:	May 14, 1990	TUBE #s:	05-293-2
UNIT:	Boiler	FIELD BLANK:	05-293-4
SAMPLE:	Outlet	TRIP BLANK:	05-293-5

SAMPLING DATA:

		Meter Vol., Liters	Meter Temp., deg. F	Std.Vol. Meter, Liters	Std.Vol. Meter, SDCF
Bar. Press. (in.Hg)	30.04				
Standard Temp. (F)	60				
Std Press. (in.Hg.)	29.92				
SDCFM	1419				
		20	82.22	19.257	0.680

ANALYTICAL DATA: UTD = Unable to determine due to sample tube breakage
ND = Not Detected BL = Indistinguishable from Blank
NA = Not Analyzed

Compound Name	MW gm/mole	Total Sample ng	Conc. ug/L Vol.Dry	Emission Rate g/sec	Conc. ppb Vol.Dry	Emission Rate Lb/Hr	TOTAL NANOGRAMS FIELD BLANK 05-293-4	TRIP BLANK 05-293-5
Benzene	78.11	20000	1.0386	7.00E-04	314.99	5.52E-03	UTD	<5000
Carbon tetrachloride	153.84	BL	BL	BL	BL	BL	UTD	<5000
1,1-Dichloroethene	96.95	BL	BL	BL	BL	BL	UTD	<5000
trans-1,2-Dichloroethene	96.95	BL	BL	BL	BL	BL	UTD	<5000
Methylene chloride	84.94	BL	BL	BL	BL	BL	UTD	<5000
Toluene	92.13	30000	1.5578	1.05E-03	400.58	8.28E-03	UTD	<5000
Vinyl chloride	62.98	BL	BL	BL	BL	BL	UTD	<5000
Acetone	58.08	NA	NA	NA	NA	NA	UTD	<5000
Methyl ethyl ketone (MEK)	72.11	NA	NA	NA	NA	NA	UTD	<5000
Methyl isobutyl ketone	100.16	NA	NA	NA	NA	NA	UTD	<5000
Total xylene isomers	106.16	BL	BL	BL	BL	BL	UTD	<25000
cis-1,2-Dichloroethene	96.95	BL	BL	BL	BL	BL	UTD	<5000

GIBSON 5240

VOLATILE ORGANIC HYDROCARBON
DATA AND RESULTS:

CLIENT:	Gibson Oil	RUN #:	7 A&B
DATE:	May 14, 1990	TUBE #s:	05-293-3
UNIT:	Boiler	FIELD BLANK:	05-293-4
SAMPLE:	Outlet	TRIP BLANK:	05-293-5

SAMPLING DATA:

		Meter Vol., Liters	Meter Temp., deg. F	Std.Vol. Meter, Liters	Std.Vol. Meter, SDCF
Bar. Press. (in.Hg)	30.04				
Standard Temp. (F)	60				
Std Press. (in.Hg.)	29.92				
SDCFM	1419				
		20	81.68	19.277	0.681

ANALYTICAL DATA: UTD = Unable to determine due to sample tube breakage
ND = Not Detected BL = Indistinguishable from Blank
NA = Not Analyzed

Compound Name	MW gm/mole	Total Sample ng	Conc. ug/L Vol.Dry	Emission Rate g/sec	Conc. ppb Vol.Dry	Emission Rate Lb/Hr	TOTAL NANOGRAMS FIELD BLANK 05-293-4	TRIP BLANK 05-293-5
Benzene	78.11	40000	2.0751	1.40E-03	629.35	1.10E-02	UTD	<5000
Carbon tetrachloride	153.84	BL	BL	BL	BL	BL	UTD	<5000
1,1-Dichloroethene	96.95	BL	BL	BL	BL	BL	UTD	<5000
trans-1,2-Dichloroethene	96.95	BL	BL	BL	BL	BL	UTD	<5000
Methylene chloride	84.94	BL	BL	BL	BL	BL	UTD	<5000
Toluene	92.13	50000	2.5938	1.75E-03	666.97	1.38E-02	UTD	<5000
Vinyl chloride	62.98	BL	BL	BL	BL	BL	UTD	<5000
Acetone	58.08	NA	NA	NA	NA	NA	UTD	<5000
Methyl ethyl ketone (MEK)	72.11	NA	NA	NA	NA	NA	UTD	<5000
Methyl isobutyl ketone	100.16	NA	NA	NA	NA	NA	UTD	<5000
Total xylene isomers	106.16	BL	BL	BL	BL	BL	UTD	<25000
cis-1,2-Dichloroethene	96.95	BL	BL	BL	BL	BL	UTD	<5000

GIBSON 5240

H2S DATA AND RESULTS

CLIENT:	Gibson Oil	Pbar (in.Hg)	29.87
DATE:	16-May-90	Pstd (in.Hg)	29.92
UNIT:	Boiler	Standard (F)	60
SAMPLE:	Outlet	N KI3	0.00974
SDCFM	1419	N Na2S2O3	0.00998

METER DATA	Run 1	Run 2	Run 3
Initial Meter	0.000	0.000	0.000
Final Meter	1.059	1.059	1.413
Meter Temp (F)	85	85	85
Delta H (in.H2O	0.00	0.00	0.00
Vm std.	1.009	1.009	1.346

TITRATIONS	Run 1	Run 2	Run 3	Blank
Vol. KI3	50.00	50.00	50.00	50.00
Vol. Na2S2O3	50.70	49.35	48.90	47.95
Net Milli. Eqv.	-0.0192	-0.0057	-0.0012	0.0083

RESULTS	Run 1	Run 2	Run 3	Average
ppm	-11.4	-5.8	-2.9	-6.7
Lb/Hr	-2.55E-03	-1.30E-03	-6.60E-04	-1.50E-03

CONTINUOUS EMISSIONS MONITORING
Sample Run #1 of 3

Client: Gibson Oil and Refining

Date	Start Time	Stop Time	Interval
5/16/90	12:34	13:34	5 Min.

Interval	O2 % vol. dry	NOx ppm	So2 ppm	CO ppm	CO2 % vol. dry	THC as C3 ppm
1	16.7	20.1	0.6	188.8	2.5	192.3
2	16.8	21.1	0.4	193.2	2.5	236.1
3	16.9	22.0	0.4	185.5	2.5	204.4
4	17.0	22.4	0.3	189.6	2.5	230.2
5	17.0	23.2	0.2	182.2	2.5	208.7
6	16.9	23.7	0.2	191.6	2.5	206.7
7	17.0	24.3	0.1	189.1	2.5	225.4
8	17.0	25.5	0.1	188.9	2.5	230.5
9	16.9	25.9	0.2	190.2	2.5	248.4
10	17.0	26.1	0.2	192.6	2.5	196.7
11	17.0	26.4	0.3	192.6	2.5	182.6
12	17.1	27.5	0.5	193.8	2.5	222.2

CONTINUOUS EMISSIONS MONITORING
Sample Run #2 of 3

Client: Gibson Oil and Refining

Date	Start Time	Stop Time	Interval
5/16/90	13:49	14:49	5 Min.

Interval	O2 % vol. dry	NOx ppm	So2 ppm	CO ppm	CO2 % vol. dry	THC as C3 ppm
1	16.7	21.1	0.5	182.3	2.5	142.2
2	16.5	21.6	0.1	192.4	2.5	124.6
3	16.4	21.2	0.0	193.1	2.5	126.0
4	16.4	21.0	0.0	198.1	2.5	134.9
5	16.4	21.4	0.0	184.7	2.5	128.4
6	16.5	20.7	0.0	170.6	2.4	104.5
7	16.3	21.7	0.0	187.4	2.5	140.3
8	16.3	21.8	0.0	194.5	2.5	143.9
9	16.3	21.6	0.0	190.5	2.5	114.8
10	16.3	21.8	0.0	189.4	2.5	114.5
11	16.3	22.2	0.0	192.6	2.5	134.5
12	16.3	22.5	0.0	200.0	2.5	149.5

CONTINUOUS EMISSIONS MONITORING
Sample Run #3 of 3

Client: Gibson Oil and Refining

Date	Start Time	Stop Time	Interval
5/16/90	15:04	16:04	5 Min.

Interval	O2 % vol. dry	NOx ppm	So2 ppm	CO ppm	CO2 % vol. dry	THC as C3 ppm
1	16.6	19.3	0.1	186.0	2.5	114.2
2	16.6	20.1	0.0	188.0	2.5	109.6
3	16.6	20.4	0.0	195.4	2.5	123.4
4	16.7	21.2	0.0	192.7	2.5	112.1
5	16.7	21.5	0.0	194.7	2.5	115.9
6	16.6	22.1	0.0	190.4	2.5	100.2
7	16.7	22.2	0.0	190.5	2.5	98.7
8	16.7	22.2	0.0	191.3	2.5	122.9
9	16.6	22.2	0.0	190.4	2.5	103.9
10	16.6	21.5	0.0	196.8	2.5	112.2
11	16.7	21.4	0.0	193.0	2.5	94.2
12	16.5	21.8	0.0	191.1	2.6	93.8

CLIENT: Gibson Oil
RESULTS: Tetra - Octa PCDDs and PCDFs
DATE: 05-15-90
TIME: 15:01
RUN: 2

@ O' C		DRY	
STACK NM3/S	ME NM3	%CO2	%O2
0.663789	3.25	2.2	0

COMPOUND		ng		ng/NM3 @12% CO2		ng/s		lbs/hr
2378 TCDD	<	0.490	<	0.822	<	0.100	<	7.94E-10
TOTAL TCDD	<	1.300	<	2.181	<	0.265	<	2.11E-09
12378 PeCDD	<	0.500	<	0.839	<	0.102	<	8.10E-10
TOTAL PeCDD	<	0.500	<	0.839	<	0.102	<	8.10E-10
123478 HxCDD	<	0.640	<	1.074	<	0.131	<	1.04E-09
123678 HxCDD	<	0.620	<	1.040	<	0.127	<	1.00E-09
123789 HxCDD	<	0.640	<	1.074	<	0.131	<	1.04E-09
TOTAL HxCDD	<	0.640	<	1.074	<	0.131	<	1.04E-09
1234678 HpCDD	<	0.290	<	0.487	<	0.059	<	4.70E-10
TOTAL HpCDD	<	0.290	<	0.487	<	0.059	<	4.70E-10
TOTAL OCDD	<	0.087	<	0.146	<	0.018	<	1.41E-10
TOTAL PCDD	<	2.817	<	4.727	<	0.575	<	4.57E-09
2378 TCDF	<	0.780	<	1.309	<	0.159	<	1.26E-09
TOTAL TCDF	<	0.780	<	1.309	<	0.159	<	1.26E-09
12378 PeCDF	<	0.780	<	1.309	<	0.159	<	1.26E-09
23478 PeCDF	<	0.200	<	0.336	<	0.041	<	3.24E-10
TOTAL PeCDF	<	0.200	<	0.336	<	0.041	<	3.24E-10
123478 HxCDF	<	0.460	<	0.772	<	0.094	<	7.45E-10
123678 HxCDF	<	0.460	<	0.772	<	0.094	<	7.45E-10
234678 HxCDF	<	0.440	<	0.738	<	0.090	<	7.13E-10
123789 HxCDF	<	0.450	<	0.755	<	0.092	<	7.29E-10
TOTAL HxCDF	<	0.460	<	0.772	<	0.094	<	7.45E-10
1234678 HpCDF	<	0.330	<	0.554	<	0.067	<	5.35E-10
1234789 HpCDF	<	0.300	<	0.503	<	0.061	<	4.86E-10
TOTAL HpCDF	<	0.330	<	0.554	<	0.067	<	5.35E-10
TOTAL OCDF	<	0.080	<	0.134	<	0.016	<	1.30E-10
TOTAL PCDF	<	1.850	<	3.104	<	0.378	<	3.00E-09
TOTAL PCDD & PCDF	<	4.667	<	7.831	<	0.953	<	7.56E-09

MDLs: Minimum Detection Limits are used for Non-Detectable congeners.

GIBSON 5240

CLIENT: Gibson Oil
RESULTS: Tetra - Octa PCDDs and PCDFs
DATE: 05-15-89
TIME: 14:25
RUN: 3

	@ O' C		DRY	
	STACK NM3/S	METER NM3	%CO2	%O2
	0.649708	4.44719	2.2	0

COMPOUND		ng		ng/NM3 @12% CO2		ng/s		lbs/hr
2378 TCDD	<	0.140	<	0.172	<	0.020	<	1.62E-10
TOTAL TCDD	<	0.400	<	0.491	<	0.058	<	4.64E-10
12378 PeCDD	<	0.081	<	0.099	<	0.012	<	9.39E-11
TOTAL PeCDD	<	0.081	<	0.099	<	0.012	<	9.39E-11
123478 HxCDD	<	0.080	<	0.098	<	0.012	<	9.28E-11
123678 HxCDD	<	0.080	<	0.098	<	0.012	<	9.28E-11
123789 HxCDD	<	0.080	<	0.098	<	0.012	<	9.28E-11
TOTAL HxCDD	<	0.080	<	0.098	<	0.012	<	9.28E-11
1234678 HpCDD	<	0.074	<	0.091	<	0.011	<	8.58E-11
TOTAL HpCDD	<	0.083	<	0.102	<	0.012	<	9.62E-11
TOTAL OCDD	<	0.088	<	0.108	<	0.013	<	1.02E-10
TOTAL PCDD	<	0.732	<	0.898	<	0.107	<	8.49E-10
2378 TCDF	<	0.080	<	0.098	<	0.012	<	9.28E-11
TOTAL TCDF	<	0.083	<	0.102	<	0.012	<	9.62E-11
12378 PeCDF	<	0.052	<	0.064	<	0.008	<	6.03E-11
23478 PeCDF	<	0.054	<	0.066	<	0.008	<	6.26E-11
TOTAL PeCDF	<	0.054	<	0.066	<	0.008	<	6.26E-11
123478 HxCDF	<	0.054	<	0.066	<	0.008	<	6.26E-11
123678 HxCDF	<	0.053	<	0.065	<	0.008	<	6.15E-11
234678 HxCDF	<	0.052	<	0.064	<	0.008	<	6.03E-11
123789 HxCDF	<	0.052	<	0.064	<	0.008	<	6.03E-11
TOTAL HxCDF	<	0.054	<	0.066	<	0.008	<	6.26E-11
1234678 HpCDF	<	0.074	<	0.091	<	0.011	<	8.58E-11
1234789 HpCDF	<	0.076	<	0.093	<	0.011	<	8.81E-11
TOTAL HpCDF	<	0.079	<	0.097	<	0.012	<	9.16E-11
TOTAL OCDF	<	0.081	<	0.099	<	0.012	<	9.39E-11
TOTAL PCDF	<	0.351	<	0.431	<	0.051	<	4.07E-10
TOTAL PCDD & PCDF	<	1.083	<	1.328	<	0.158	<	1.26E-09

MDLs: Minimum Detection Limits are used for Non-Detectable congeners

GIBSON 5240
CLIENT: Gibson Oil
RESULTS: Tetra - Octa PCDDs and PCDFs
DATE: 05-16-90
TIME: 08:44
RUN: 4

@ 0' C		DRY	
STACK NM3/S	MET NM3	%CO2	%O2
0.622911	2.776	2.2	0

COMPOUND		ng		ng/NM3 @12% CO2		ng/s		lbs/hr
2378 TCDD	<	0.080	<	0.157	<	0.018	<	1.42E-10
TOTAL TCDD	<	0.084	<	0.165	<	0.019	<	1.50E-10
12378 PeCDD	<	0.051	<	0.100	<	0.011	<	9.08E-11
TOTAL PeCDD	<	0.051	<	0.100	<	0.011	<	9.08E-11
123478 HxCDD	<	0.080	<	0.157	<	0.018	<	1.42E-10
123678 HxCDD	<	0.081	<	0.159	<	0.018	<	1.44E-10
123789 HxCDD	<	0.080	<	0.157	<	0.018	<	1.42E-10
TOTAL HxCDD	<	0.081	<	0.159	<	0.018	<	1.44E-10
1234678 HpCDD	<	0.083	<	0.163	<	0.019	<	1.48E-10
TOTAL HpCDD	<	0.083	<	0.163	<	0.019	<	1.48E-10
TOTAL OCDD	<	0.085	<	0.167	<	0.019	<	1.51E-10
TOTAL PCDD	<	0.384	<	0.754	<	0.086	<	6.84E-10
2378 TCDF	<	0.047	<	0.092	<	0.011	<	8.37E-11
TOTAL TCDF	<	0.047	<	0.092	<	0.011	<	8.37E-11
12378 PeCDF	<	0.049	<	0.096	<	0.011	<	8.72E-11
23478 PeCDF	<	0.046	<	0.090	<	0.010	<	8.19E-11
TOTAL PeCDF	<	0.049	<	0.096	<	0.011	<	8.72E-11
123478 HxCDF	<	0.063	<	0.124	<	0.014	<	1.12E-10
123678 HxCDF	<	0.061	<	0.120	<	0.014	<	1.09E-10
234678 HxCDF	<	0.061	<	0.120	<	0.014	<	1.09E-10
123789 HxCDF	<	0.063	<	0.124	<	0.014	<	1.12E-10
TOTAL HxCDF	<	0.063	<	0.124	<	0.014	<	1.12E-10
1234678 HpCDF	<	0.076	<	0.149	<	0.017	<	1.35E-10
1234789 HpCDF	<	0.083	<	0.163	<	0.019	<	1.48E-10
TOTAL HpCDF	<	0.076	<	0.149	<	0.017	<	1.35E-10
TOTAL OCDF	<	0.081	<	0.159	<	0.018	<	1.44E-10
TOTAL PCDF	<	0.316	<	0.621	<	0.071	<	5.63E-10
TOTAL PCDD & PCDF	<	0.700	<	1.375	<	0.157	<	1.25E-09

MDLs: Minimum Detection Limits are used for Non-Detectable congeners.

GIBSON 5240
CLIENT: Gibson Oil
RESULTS: Tetra - Octa PCDDs and PCDFs
THREE RUN AVERAGE CONCENTRATION

ng/Nm3 AT 12 % CO2

COMPOUND		RUN 2		RUN 3		RUN 4		AVERAGE
2378 TCDD	<	0.822	<	0.172	<	0.157	<	0.384
TOTAL TCDD	<	2.181	<	0.491	<	0.165	<	0.946
12378 PeCDD	<	0.839	<	0.099	<	0.100	<	0.346
TOTAL PeCDD	<	0.839	<	0.099	<	0.100	<	0.346
123478 HxCDD	<	1.074	<	0.098	<	0.157	<	0.443
123678 HxCDD	<	1.040	<	0.098	<	0.159	<	0.433
123789 HxCDD	<	1.074	<	0.098	<	0.157	<	0.443
TOTAL HxCDD	<	1.074	<	0.098	<	0.159	<	0.444
1234678 HpCDD	<	0.487	<	0.091	<	0.163	<	0.247
TOTAL HpCDD	<	0.487	<	0.102	<	0.163	<	0.250
TOTAL OCDD	<	0.146	<	0.108	<	0.167	<	0.140
TOTAL PCDD	<	4.727	<	0.898	<	0.754	<	2.126
2378 TCDF	<	1.309	<	0.098	<	0.092	<	0.500
TOTAL TCDF	<	1.309	<	0.102	<	0.092	<	0.501
12378 PeCDF	<	1.309	<	0.064	<	0.096	<	0.490
23478 PeCDF	<	0.336	<	0.066	<	0.090	<	0.164
TOTAL PeCDF	<	0.336	<	0.066	<	0.096	<	0.166
123478 HxCDF	<	0.772	<	0.066	<	0.124	<	0.321
123678 HxCDF	<	0.772	<	0.065	<	0.120	<	0.319
234678 HxCDF	<	0.738	<	0.064	<	0.120	<	0.307
123789 HxCDF	<	0.755	<	0.064	<	0.124	<	0.314
TOTAL HxCDF	<	0.772	<	0.066	<	0.124	<	0.321
1234678 HpCDF	<	0.554	<	0.091	<	0.149	<	0.265
1234789 HpCDF	<	0.503	<	0.093	<	0.163	<	0.253
TOTAL HpCDF	<	0.554	<	0.097	<	0.149	<	0.267
TOTAL OCDF	<	0.134	<	0.099	<	0.159	<	0.131
TOTAL PCDF	<	3.104	<	0.431	<	0.621	<	1.385
TOTAL PCDD & PCDF	<	7.831	<	1.328	<	1.375	<	3.511

MDLs: Minimum Detection Limits are used for Non-Detectable congeners.

CLIENT: Gibson Oil
RESULTS: Tetra - Octa PCDDs and PCDFs

Average Toxic Equivalent Emissions
EPA Scenario (ng/Nm3 at 12 % CO2)

COMPOUND	Multiplying factor		Average		Toxic equivalent
2378 TCDD	1.00000	<	0.384	<	0.384
Other TCDD	0.01000	<	0.562	<	0.006
12378 PeCDD	0.50000	<	0.346	<	0.173
Other PeCDD	0.00500	<	0.000	<	0.000
123478 HxCDD	0.04000	<	0.443	<	0.018
123678 HxCDD	0.04000	<	0.433	<	0.017
123789 HxCDD	0.04000	<	0.443	<	0.018
Other HxCDD	0.00040	<	-0.875	<	0.000
1234678 HpCDD	0.00100	<	0.247	<	0.000
Other HpCDD	0.00001	<	0.004	<	0.000
OCDD	0.00000	<	0.140	<	0.000
TOTAL PCDD		<	2.126	<	0.615
2378 TCDF	0.10000	<	0.500	<	0.050
Other TCDF	0.00100	<	0.001	<	0.000
12378 PeCDF	0.10000	<	0.490	<	0.049
23478 PeCDF	0.10000	<	0.164	<	0.016
Other PeCDF	0.00100	<	-0.488	<	0.000
123478 HxCDF	0.01000	<	0.321	<	0.003
123678 HxCDF	0.01000	<	0.319	<	0.003
234678 HxCDF	0.01000	<	0.307	<	0.003
123789 HxCDF	0.01000	<	0.314	<	0.003
Other HxCDF	0.00010	<	-0.940	<	0.000
1234678 HpCDF	0.00100	<	0.265	<	0.000
1234789 HpCDF	0.00100	<	0.253	<	0.000
Other HpCDF	0.00100	<	-0.251	<	0.000
OCDF	0.00000	<	0.131	<	0.000
TOTAL PCDF		<	1.385	<	0.128

Total Toxic Equivalent (2,3,7,8-TCDD Equivalents) 0.743

MDLs: Minimum Detection Limits are used for Non-Detectable congeners.

CLIENT: Gibson Oil
RESULTS: Tetra - Octa PCDDs and PCDFs

Average Toxic Equivalent Emissions
CA Scenario iv (ng/Nm3 at 12 % CO2)

COMPOUND	Multiplying factor		Average		Toxic Equivalent
2378 TCDD	1.00	<	0.384	<	0.384
Other TCDD	0.00	<	0.562	<	0.000
12378 PeCDD	1.00	<	0.346	<	0.346
Other PeCDD	0.00	<	0.000	<	0.000
123478 HxCDD	0.03	<	0.443	<	0.013
123678 HxCDD	0.03	<	0.433	<	0.013
123789 HxCDD	0.03	<	0.443	<	0.013
Other HxCDD	0.00	<	-0.875	<	0.000
1234678 HpCDD	0.03	<	0.247	<	0.007
Other HpCDD	0.00	<	0.004	<	0.000
OCDD	0.00	<	0.140	<	0.000
TOTAL PCDD		<	2.126	<	0.777
2378 TCDF	1.00	<	0.500	<	0.500
Other TCDF	0.00	<	0.001	<	0.000
12378 PeCDF	1.00	<	0.490	<	0.490
23478 PeCDF	1.00	<	0.164	<	0.164
Other PeCDF	0.00	<	-0.488	<	0.000
123478 HxCDF	0.03	<	0.321	<	0.010
123678 HxCDF	0.03	<	0.319	<	0.010
234678 HxCDF	0.03	<	0.307	<	0.009
123789 HxCDF	0.03	<	0.314	<	0.009
Other HxCDF	0.00	<	-0.940	<	0.000
1234678 HpCDF	0.03	<	0.265	<	0.008
1234789 HpCDF	0.03	<	0.253	<	0.008
Other HpCDF	0.00	<	-0.251	<	0.000
OCDF	0.00	<	0.131	<	0.000
TOTAL PCDF		<	1.385	<	1.207
Total Toxic Equivalent (2,3,7,8-TCDD Equivalents)				<	1.984

MDLs: Minimum Detection Limits are used for Non-Detectable congeners.

GIBSON 5240

SEMI-VOLATILE EMISSIONS TEST MONITOR DATA

DATE:	May 15, 1990	Pbar(in. Hg):	29.49	Nozzle	q90009	Diameter (mm):	9.680
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.48	LCD Meter	789	Cor.Fact.:	1.0319
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	2	Orifice Km:	0.60
RUN #:	2	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT NORTH				DATA					CALCULATIONS			
#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
1	4	15	1	276	0.08	86	792.933		19.1	1.87	0.64	
2	3	16	38	276	0.06	86		7	16.5	1.46	0.55	
3	2	17	1	278	0.10	85			21.4	2.27	0.71	
4	1	17	23	280	0.13	86		12	24.4	2.88	0.81	
		17	46				853.611					
Sample Time =			90	278	0.09	86	62.614		20.3	2.12		103.6

PORT WEST				DATA					CALCULATIONS			
#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
1	4	18	0	244	0.12	82	853.611	11	22.9	2.78	0.79	
2	3	18	23	271	0.13	84			24.2	2.90	0.81	
3	2	18	45	279	0.09	84		8	20.3	2.06	0.67	
4	1	19	8	271	0.09	84			20.2	2.08	0.67	
		19	30				917.099					
Sample Time =			90	266	0.11	83	65.513		21.9	2.46		99.0

Post-Test Leak Rate 0.020 CFM at 8 in. Hg.

Test Summary

Sample Time =	180	272	84	128.127	21.1	2.29	101.2
				NET CU. FT.			

SEMI-VOLATILE EMISSIONS

Data and Results:

Date:	May 15, 1990	Run #:	2
Client:	Gibson Oil	Time:	15:01
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	H2O	700.60	599.50	101.10
Lg. Grnbg.	H2O	595.50	598.60	-3.10
Mod. Grnbg.	EMPTY	530.00	527.40	2.60
Mod. Grnbg.	SILICA GEL	803.10	771.30	31.80
				0.00
			Total	132.40

Gas Composition:

%CO2 volume	2.2
%O2 volume	16.5
%CO volume	0.0
%N2 volume	81.3
%H2O volume	4.8

Selected Results:

Wet MW	28.48
Excess Air	
Vm Standard	121.319
%Isokinetic	104.1
Standard T	60

PAH and Chlorobenzene Analysis

COMPOUND	ng	ng/NM3 @12% CO2	ng/s	lbs/hr
Naphthalene	BL	BL	BL	BL
Acenaphthylene	28	46.98	5.7	4.52E-08
Acenaphthene	57	95.64	11.6	9.19E-08
Fluorene	68	114.10	13.9	1.10E-07
Phenanthrene	BL	BL	BL	BL
Anthracene	BL	BL	BL	BL
Fluoranthene	BL	BL	BL	BL
Pyrene	BL	BL	BL	BL
Chrysene	BL	BL	BL	BL
Benz(a)anthracene	BL	BL	BL	BL
Benzo(b+k)fluoranthene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND
Dibenzo(ah)anthracene	ND	ND	ND	ND
Benzo(ghi)perylene	ND	ND	ND	ND
Dichlorobenzenes	ND	ND	ND	ND
Trichlorobenzenes	ND	ND	ND	ND
Tetrachlorobenzenes	ND	ND	ND	ND
Pentachlorobenzenes	ND	ND	ND	ND
Hexachlorobenzenes	ND	ND	ND	ND

HCL Analysis

	Total mg HCL	ppm HCL	lb/hr HCL
Sample	0.09		
Blank	0.07		
Net	0.02	0.0040	3.40E-05

GIBSON 5240

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 15, 1990 TIME: 15:01 -19:30

UNIT: Boiler

SAMPLE: Outlet RUN #: 2

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.48
Vol. Per Cent H2O	4.83
Molecular Wt. (wet)	28.48
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	NORTH Td	NORTH Dp	NORTH Vd	WEST Td	WEST Dp	WEST Vd
1	1.2	276	0.08	19.0	244	0.12	22.8
2	4.5	276	0.06	16.5	271	0.13	24.2
3	13.5	278	0.10	21.3	279	0.09	20.2
4	16.8	280	0.13	24.3	271	0.09	20.1

RESULTS:

Avg. Vel. (Vd) 21.0 FPS @ 272 F and 29.5 in. Hg

Volume Flow Rate	Qd	2231	ACFM
	Qstd (wet)	1562	SCFM
	Qstd (dry)	1486	SDCFM
	Qstd (dry)	0.66	Nm3 @ 0C

SEMI-VOLATILE EMISSIONS TEST MONITOR DATA

DATE:	May 15, 1990	Pbar(in. Hg):	29.49	Nozzle	q90011	Diameter (mm):	11.510
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.48	LCD Meter	1288	Cor.Fact.:	1.0255
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	1	Orifice Km:	0.60
RUN #:	3	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT WEST				DATA					CALCULATIONS			
#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
1	4	14	25	270	0.10	85	497.828	12	21.2	4.39	1.01	
2	3	14	56	279	0.11	87			22.4	4.80	1.05	
3	2	16	1	306	0.07	83		6	18.2	2.97	0.82	
4	1	16	24	257	0.09	87			20.0	4.04	0.97	
		16	46				583.253					
Sample Time =			90	278	0.09	85	87.603		20.5	4.05		101.2

PORT NORTH				DATA					CALCULATIONS			
#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
1	4	18	33	231	0.07	83	583.253	9	17.3	3.27	0.86	
2	3	18	56	275	0.08	83			19.1	3.50	0.89	
3	2	19	18	279	0.11	84			22.4	4.77	1.05	
4	1	19	41	279	0.13	83			24.4	5.66	1.14	
		20	3				667.876					
Sample Time =			90	266	0.10	83	86.781		20.8	4.30		97.9

Post-Test Leak Rate 0.018 CFM at 16 in. Hg.

Test Summary

Sample Time =			180	272		84	174.384		20.6	4.17		99.5
							NET CU. FT.					

SEMI-VOLATILE EMISSIONS

Data and Results:

Date:	May 15, 1990	Run #:	3
Client:	Gibson Oil	Time:	14:25
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	H2O	748.70	612.10	136.60
Lg. Grnbg.	H2O	607.30	618.20	-10.90
Mod. Grnbg.	EMPTY	504.30	503.70	0.60
Mod. Grnbg.	SILICA GEL	790.30	745.00	45.30
				0.00
			Total	171.60

Gas Composition:

%CO2 volume	2.2
%O2 volume	16.5
%CO volume	0.0
%N2 volume	81.3
%H2O volume	4.6

Selected Results:

Wet MW	28.51
Excess Air	
Vm Standard	165.967
%Isokinetic	102.2
Standard T	60

PAH and Chlorobenzene Analysis

COMPOUND	ng	ng/NM3 @12% CO2	ng/s	lbs/hr
Naphthalene	18000	22077.27	2629.7	2.08E-05
Acenaphthylene	130	159.45	19.0	1.50E-07
Acenaphthene	190	233.04	27.8	2.19E-07
Fluorene	290	355.69	42.4	3.35E-07
Phenanthrene	410	502.87	59.9	4.73E-07
Anthracene	BL	BL	BL	BL
Fluoranthene	80	98.12	11.7	9.23E-08
Pyrene	140	171.71	20.5	1.62E-07
Chrysene	BL	BL	BL	BL
Benz(a)anthracene	55	67.46	8.0	6.35E-08
Benzo(b+k)fluoranthene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND
Dibenzo(ah)anthracene	ND	ND	ND	ND
Benzo(ghi)perylene	ND	ND	ND	ND
Dichlorobenzenes	ND	ND	ND	ND
Trichlorobenzenes	ND	ND	ND	ND
Tetrachlorobenzenes	ND	ND	ND	ND
Pentachlorobenzenes	ND	ND	ND	ND
Hexachlorobenzenes	ND	ND	ND	ND

HCL Analysis

	Total mg HCL	ppm HCL	lb/hr HCL
Sample	0.09		
Blank	0.07		
Net	0.02	0.0032	2.67E-05

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 15, 1990 TIME: 14:25 -20:03
UNIT: Boiler
SAMPLE: Outlet RUN #: 3

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.48
Vol. Per Cent H2O	4.59
Molecular Wt. (wet)	28.51
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	WEST Td	WEST Dp	WEST Vd	NORTH Td	NORTH Dp	NORTH Vd
1	1.2	270	0.10	21.2	231	0.07	17.2
2	4.5	279	0.11	22.3	275	0.08	19.0
3	13.5	306	0.07	18.1	279	0.11	22.3
4	16.8	257	0.09	19.9	279	0.13	24.3

RESULTS:

Avg. Vel. (Vd) 20.5 FPS @ 272 F and 29.5 in. Hg

Volume Flow Rate	Qd	2179	ACFM
	Qstd (wet)	1525	SCFM
	Qstd (dry)	1455	SDCFM
	Qstd (dry)	0.65	Nm3 @ 0C

SEMI-VOLATILE EMISSIONS TEST MONITOR DATA

DATE:	May 16, 1990	Pbar(in. Hg):	29.54	Nozzle	q90011	Diameter (mm):	11.510
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.53	LCD Meter	789	Cor.Fact.:	1.0319
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	2	Orifice Km:	0.60
RUN #:	4	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT NORTH				DATA					CALCULATIONS			
#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
1	4	8	44	289	0.13	66	919.472	17	24.0	5.18	1.07	
2	3	8	59	288	0.09	73			20.4	3.78	0.92	
3	2	9	14	285	0.05	80			15.2	2.23	0.70	
4	1	9	29	248	0.06	82		9	16.2	2.77	0.79	
		9	44				968.913					
Sample Time =			60	278	0.08	75	51.018		18.9	3.49		97.8

PORT WEST				DATA					CALCULATIONS			
#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
1	4	10	5	280	0.11	84	968.913		22.4	4.76	1.05	
2	3	10	20	283	0.12	86		17	23.5	5.21	1.09	
3	2	10	35	287	0.08	87			18.6	3.26	0.86	
4	1	10	50	248	0.08	88		12	18.7	3.66	0.92	
		11	5				1024.199					
Sample Time =			60	275	0.10	86	57.050		20.8	4.22		97.0

Post-Test Leak Rate 0.020 CFM at 17 in. Hg.

Test Summary

Sample Time =	120	276	81	108.068	19.9	3.86	97.4
				NET CU. FT.			

SEMI-VOLATILE EMISSIONS

Data and Results:

Date:	May 16, 1990	Run #:	4
Client:	Gibson Oil	Time:	08:44
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	H2O	692.40	601.60	90.80
Lg. Grnbg.	H2O	587.60	600.70	-13.10
Mod. Grnbg.	EMPTY	503.90	504.20	-0.30
Mod. Grnbg.	SILICA GEL	785.40	751.80	33.60
				0.00
			Total	111.00

Gas Composition:

%CO2 volume	2.2
%O2 volume	16.0
%CO volume	0.0
%N2 volume	81.8
%H2O volume	4.7

Selected Results:

Wet MW	28.47
Excess Air	
Vm Standard	103.634
%Isokinetic	100.5
Standard T	60

PAH and Chlorobenzene Analysis

COMPOUND	ng	ng/NM3 @12% CO2	ng/s	lbs/hr
Naphthalene	34000	66783.95	7626.8	6.03E-05
Acenaphthylene	56	110.00	12.6	9.92E-08
Acenaphthene	37	72.68	8.3	6.56E-08
Fluorene	ND	ND	ND	ND
Phenanthrene	160	314.28	35.9	2.84E-07
Anthracene	ND	ND	ND	ND
Fluoranthene	BL	BL	BL	BL
Pyrene	80	157.14	17.9	1.42E-07
Chrysene	3	5.89	0.7	5.32E-09
Benz(a)anthracene	17	33.39	3.8	3.01E-08
Benzo(b+k)fluoranthene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND
Dibenzo(ah)anthracene	ND	ND	ND	ND
Benzo(ghi)perylene	ND	ND	ND	ND
Dichlorobenzenes	48	94.28	10.8	8.51E-08
Trichlorobenzenes	ND	ND	ND	ND
Tetrachlorobenzenes	ND	ND	ND	ND
Pentachlorobenzenes	ND	ND	ND	ND
Hexachlorobenzenes	ND	ND	ND	ND

HCL Analysis

	Total mg HCL	ppm HCL	lb/hr HCL
Sample	0.09		
Blank	0.07		
Net	0.02	0.0044	3.56E-05

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 16, 1990 TIME: 08:44 -11:05
UNIT: Boiler
SAMPLE: Outlet RUN #: 4

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.53
Vol. Per Cent H2O	4.74
Molecular Wt. (wet)	28.47
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	NORTH Td	NORTH Dp	NORTH Vd	WEST Td	WEST Dp	WEST Vd
1	1.2	289	0.13	24.0	280	0.11	22.3
2	4.5	288	0.09	20.3	283	0.12	23.4
3	13.5	285	0.05	15.1	287	0.08	18.5
4	16.8	248	0.06	16.1	248	0.08	18.6

RESULTS:

Avg. Vel. (Vd) 19.8 FPS @ 276 F and 29.5 in. Hg

Volume Flow Rate	Qd	2100	ACFM
	Qstd (wet)	1464	SCFM
	Qstd (dry)	1395	SDCFM
	Qstd (dry)	0.62	Nm3 @ 0C

CHROMIUM EMISSIONS TEST MONITOR DATA

DATE:	May 16, 1990	Pbar(in. Hg):	29.54	Nozzle	q90011	Diameter (mm):	11.510
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.53	LCD Meter	789	Cor.Fact.:	1.0319
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	1	Orifice Km:	0.60
RUN #:	5	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT WEST				DATA					CALCULATIONS			
#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
1	4	14	4	275	0.11	91	25.981		22.3	4.86	1.06	
2	3	14	13	289	0.12	89		5	23.3	5.06	1.08	
3	2	14	22	289	0.07	91			18.0	3.07	0.84	
4	1	14	31	250	0.08	92			18.6	3.63	0.92	
		14	40				59.184					
Sample Time =			36	276	0.09	91	34.262		20.5	4.15		97.5

PORT NORTH				DATA					CALCULATIONS			
#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
1	4	14	49	277	0.14	89	59.184		25.2	6.23	1.19	
2	3	14	58	287	0.11	90			22.5	4.77	1.05	
3	2	15	7	280	0.06	92			16.6	2.70	0.78	
4	1	15	16	231	0.06	93			16.0	2.87	0.81	
		15	25				91.124					
Sample Time =			36	269	0.09	91	32.959		20.1	4.14		95.3

Post-Test Leak Rate 0.014 CFM at 7 in. Hg.

Test Summary

Sample Time =			72	272		91	67.221		20.3	4.15		96.5
							NET CU. FT.					

GIBSON 5240

CHROMIUM EMISSIONS

Data and Results:

Date:	May 16, 1990	Run #:	5
Client:	Gibson Oil	Time:	14:04
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	0.1 N NaoH	654.60	611.90	42.70
Lg. Grnbg.	0.1 N NaoH	628.50	619.60	8.90
Mod. Grnbg.	EMPTY	532.30	529.30	3.00
Mod. Grnbg.	SILICA GEL	733.90	714.60	19.30
				0.00
			Total	73.90

Gas Composition:

%CO2 volume	2.3
%O2 volume	16.7
%CO volume	0.0
%N2 volume	81.0
%H2O volume	5.1

Selected Results:

Wet MW	28.47
Excess Air	
Vm Standard	63.316
%Isokinetic	100.0
Standard T	60

Chromium Analysis

Filter Sample Type: EPA GLASS FIBER MAT

Sample Fraction		mg Net	gr/SDCF
Hexavalent Cr	Less than	0.0010	2.43E-07
Hexavalent Blank	Less than	-0.0010	-2.43E-07
Net Hexavalent Chromium		0.0000	0.00E+00
Total Cr		0.0011	2.68E-07
Blank		-0.0020	-4.86E-07
Net Total Chromium		-0.0009	-2.19E-07

Chromium Results:

Concentration: grains/SDCF @ STP

Hexavalent Cr	0.00E+00
Total Cr	-2.19E-07

Emission Rate, lbs/hr

Hexavalent Cr	0.00E+00
Total Cr	-2.68E-06

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 16, 1990 TIME: 14:04 -15:25
UNIT: Boiler
SAMPLE: Outlet RUN #: 5

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.53
Vol. Per Cent H2O	5.15
Molecular Wt. (wet)	28.47
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	WEST Td	WEST Dp	WEST Vd	NORTH Td	NORTH Dp	NORTH Vd
1	1.2	275	0.11	22.3	277	0.14	25.2
2	4.5	289	0.12	23.2	287	0.11	22.5
3	13.5	289	0.07	17.9	280	0.06	16.5
4	16.8	250	0.08	18.6	231	0.06	15.9

RESULTS:

Avg. Vel. (Vd) 20.3 FPS @ 272 F and 29.5 in. Hg

Volume Flow Rate	Qd	2147	ACFM
	Qstd (wet)	1505	SCFM
	Qstd (dry)	1427	SDCFM

CHROMIUM EMISSIONS TEST MONITOR DATA

DATE:	May 16, 1990	Pbar(in. Hg):	29.54	Nozzle	q90011	Diameter (mm):	11.510
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.53	LCD Meter	789	Cor.Fact.:	1.0319
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	1	Orifice Km:	0.60
RUN #:	6	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT NORTH

#	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	16	34	285	0.13	85	92.271		24.0	5.41	1.11	
2	3	16	43	288	0.11	87			22.5	4.74	1.05	
3	2	16	52	287	0.07	89			17.3	2.86	0.81	
4	1	17	1	254	0.06	88			15.6	2.56	0.76	
		17	10				124.359					
Sample Time =			36	279	0.09	87	33.112		19.8	3.89		98.7

PORT WEST

#	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	17	41	278	0.11	88	124.359		22.4	4.81	1.05	
2	3	17	50	281	0.11	87		7	22.4	4.79	1.05	
3	2	17	59	289	0.07	88			18.1	3.10	0.84	
4	1	18	8	266	0.07	89		5	17.8	3.19	0.86	
		18	17				157.096					
Sample Time =			36	279	0.09	88	33.781		20.2	3.97		98.7

Post-Test Leak Rate 0.016 CFM at 7 in. Hg.

Test Summary

Sample Time =			72	279		88	66.893		20.0	3.93		98.7
							NET CU. FT.					

CHROMIUM EMISSIONS

Data and Results:

Date:	May 16, 1990	Run #:	6
Client:	Gibson Oil	Time:	16:34
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	0.1 N NaoH	649.60	604.70	44.90
Lg. Grnbg.	0.1 N NaoH	612.10	603.10	9.00
Mod. Grnbg.	EMPTY	507.80	504.30	3.50
Mod. Grnbg.	SILICA GEL	762.80	746.60	16.20
				0.00
			Total	73.60

Gas Composition:

%CO2 volume	2.3
%O2 volume	16.7
%CO volume	0.0
%N2 volume	81.0
%H2O volume	5.1

Selected Results:

Wet MW	28.47
Excess Air	
Vm Standard	63.333
%Isokinetic	102.4
Standard T	60

Chromium Analysis

Filter Sample Type: EPA GLASS FIBER MAT

Sample Fraction		mg Net	gr/SDCF
Hexavalent Cr	Less than	0.0010	2.43E-07
Hexavalent Blank	Less than	-0.0010	-2.43E-07
Net Hexavalent Chromium	_____	0.0000	0.00E+00
Total Cr		0.0014	3.40E-07
Blank		-0.0020	-4.86E-07
Net Total Chromium	_____	-0.0006	-1.46E-07

Chromium Results:

Concentration: grains/SDCF @ STP

Hexavalent Cr	0.00E+00
Total Cr	-1.46E-07

Emission Rate, lbs/hr

Hexavalent Cr	0.00E+00
Total Cr	-1.75E-06

CHROMIUM EMISSIONS TEST MONITOR DATA

DATE:	May 16, 1990	Pbar(in. Hg):	29.54	Nozzle	q90012	Diameter (mm):	12.140
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.53	LCD Meter	1288	Cor.Fact.:	1.0255
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	2	Orifice Km:	0.60
RUN #:	7	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT NORTH

#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
				DATA					CALCULATIONS			
1	4	17	52	221	0.06	86	669.070	5	15.9	3.52	0.90	
2	3	18	1	279	0.06	89			16.5	3.27	0.87	
3	2	18	10	287	0.10	90		6	20.9	5.11	1.09	
4	1	18	19	288	0.13	91			24.5	7.18	1.27	
		18	28				704.958					
Sample Time =			36	269	0.09	89	36.803		19.5	4.77		99.1

PORT WEST

#	TP	Hour	Minute	Td	DP	Tm	Vm	Vacuum	Vd	DH	Qm	%ISO
				DATA					CALCULATIONS			
1	4	18	39	281	0.10	86	704.958		21.4	5.40	1.11	
2	3	18	48	286	0.11	89			22.0	5.67	1.14	
3	2	18	57	287	0.06	89			16.6	3.24	0.86	
4	1	19	6	245	0.07	90			17.5	3.98	0.96	
		19	15				741.203					
Sample Time =			36	275	0.08	88	37.169		19.4	4.57		101.2

Post-Test Leak Rate 0.008 CFM at 10 in. Hg.

Test Summary

Sample Time =	72	272	89	73.972	19.4	4.67	100.1
				NET CU. FT.			

GIBSON 5240

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 16, 1990 TIME: 16:34 -18:17

UNIT: Boiler

SAMPLE: Outlet RUN #: 6

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.53
Vol. Per Cent H2O	5.13
Molecular Wt. (wet)	28.47
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	NORTH Td	NORTH Dp	NORTH Vd	WEST Td	WEST Dp	WEST Vd
1	1.2	285	0.13	23.9	278	0.11	22.3
2	4.5	288	0.11	22.5	281	0.11	22.4
3	13.5	287	0.07	17.3	289	0.07	18.1
4	16.8	254	0.06	15.5	266	0.07	17.8

RESULTS:

Avg. Vel. (Vd) 20.0 FPS @ 279 F and 29.5 in. Hg

Volume Flow Rate	Qd	2116	ACFM
	Qstd (wet)	1470	SCFM
	Qstd (dry)	1395	SDCFM

CHROMIUM EMISSIONS

Data and Results:

Date:	May 16, 1990	Run #:	7
Client:	Gibson Oil	Time:	17:52
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	0.1 N NaoH	647.10	604.50	42.60
Lg. Grnbg.	0.1 N NaoH	635.80	621.90	13.90
Mod. Grnbg.	EMPTY	532.50	529.10	3.40
Mod. Grnbg.	SILICA GEL	729.60	707.90	21.70
				0.00
			Total	81.60

Gas Composition:

%CO2 volume	2.3
%O2 volume	16.7
%CO volume	0.0
%N2 volume	81.0
%H2O volume	5.1

Selected Results:

Wet MW	28.47
Excess Air	
Vm Standard	70.035
%Isokinetic	103.3
Standard T	60

Chromium Analysis

Filter Sample Type: EPA GLASS FIBER MAT

Sample Fraction		mg Net	gr/SDCF
Hexavalent Cr	Less than	0.0010	2.20E-07
Hexavalent Blank	Less than	-0.0010	-2.20E-07
Net Hexavalent Chromium	_____	0.0000	0.00E+00
Total Cr		0.0012	2.64E-07
Blank		-0.0020	-4.40E-07
Net Total Chromium	_____	-0.0008	-1.76E-07

Chromium Results:

Concentration: grains/SDCF @ STP

Hexavalent Cr	0.00E+00
Total Cr	-1.76E-07

Emission Rate, lbs/hr

Hexavalent Cr	0.00E+00
Total Cr	-2.06E-06

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 16, 1990 TIME: 17:52 -19:15
UNIT: Boiler
SAMPLE: Outlet RUN #: 7

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.53
Vol. Per Cent H2O	5.14
Molecular Wt. (wet)	28.47
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	NORTH Td	NORTH Dp	NORTH Vd	WEST Td	WEST Dp	WEST Vd
1	1.2	221	0.06	15.8	281	0.10	21.3
2	4.5	279	0.06	16.5	286	0.11	21.9
3	13.5	287	0.10	20.9	287	0.06	16.6
4	16.8	288	0.13	24.4	245	0.07	17.4

RESULTS:

Avg. Vel. (Vd) 19.4 FPS @ 272 F and 29.5 in. Hg

Volume Flow Rate	Qd	2052	ACFM
	Qstd (wet)	1439	SCFM
	Qstd (dry)	1365	SDCFM

GIBSON 5240

METALS EMISSIONS

Data and Results:

Date:	May 17, 1990	Run #:	13
Client:	Gibson Oil	Time:	09:52
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	HNO3/H2O2	659.00	605.50	53.50
Lg. Grnbg.	HNO3/H2O2	632.00	622.70	9.30
Mod. Grnbg.	EMPTY	525.40	523.30	2.10
Mod. Grnbg.	KMnO4	609.10	610.70	-1.60
Mod. Grnbg.	KMnO4	647.10	647.20	-0.10
Mod. Grnbg.	SILICA GEL	744.50	728.40	16.10
			Total	79.30

Gas Composition:

%CO2 volume	2.3
%O2 volume	16.7
%CO volume	0.0
%N2 volume	81.0
%H2O volume	5.0

Selected Results:

Wet MW	28.49
Excess Air	
Vm Standard	70.561
%Isokinetic	100.1
Standard T	60

Metals Analysis

Metal	mg Sample	mg Blank	mg Net	gr/SDCF	gr/SDCF @ 12% CO2	lbs/hr
Arsenic	0.0018	0.0021	-0.0003	-6.55E-08	-3.42E-07	-8.02E-07
Beryllium	0.0050	0.0050	0.0000	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.0010	0.0053	-0.0043	-9.38E-07	-4.90E-06	-1.15E-05
Chromium (Total)	0.0062	0.0060	0.0002	4.37E-08	2.28E-07	5.35E-07
Copper	0.0082	0.0078	0.0004	8.73E-08	4.55E-07	1.07E-06
Lead	0.0071	0.0070	0.0001	2.18E-08	1.14E-07	2.67E-07
Manganese	0.0500	0.0500	0.0000	0.00E+00	0.00E+00	0.00E+00
Mercury	0.0042	0.0060	-0.0018	-3.93E-07	-2.05E-06	-4.81E-06
Nickel	0.0110	0.0087	0.0023	5.02E-07	2.62E-06	6.15E-06
Selenium	0.0010	0.0010	0.0000	0.00E+00	0.00E+00	0.00E+00
Zinc	0.1400	0.1600	-0.0200	-4.37E-06	-2.28E-05	-5.35E-05

GIBSON 5240

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 17, 1990 TIME: 09:52 -11:32

UNIT: Boiler

SAMPLE: Outlet RUN #: 13

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.49
Vol. Per Cent H2O	4.97
Molecular Wt. (wet)	28.49
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	NORTH Td	NORTH Dp	NORTH Vd	WEST Td	WEST Dp	WEST Vd
1	1.2	240	0.08	18.4	238	0.09	19.6
2	4.5	280	0.07	17.2	282	0.07	17.9
3	13.5	281	0.10	21.3	278	0.11	22.3
4	16.8	282	0.12	23.4	275	0.10	21.2

RESULTS:

Avg. Vel. (Vd) 20.2 FPS @ 270 F and 29.5 in. Hg

Volume Flow Rate	Qd	2139	ACFM
	Qstd (wet)	1502	SCFM
	Qstd (dry)	1428	SDCFM

GIBSON 5240

METALS EMISSIONS TEST MONITOR DATA

DATE:	May 17, 1990	Pbar(in. Hg):	29.50	Nozzle	q90012	Diameter (mm):	12.140
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.49	LCD Meter	789	Cor.Fact.:	1.0319
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	2	Orifice Km:	0.60
RUN #:	14	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT NORTH #	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	13	22	200	0.07	87	231.844		16.9	4.22	0.99	
2	3	13	31	280	0.06	87			16.6	3.26	0.86	
3	2	13	40	279	0.09	90			20.3	4.88	1.06	
4	1	13	49	281	0.12	90			22.9	6.32	1.20	
		13	58				267.912					
Sample Time =		36		260	0.08	88	37.219		19.2	4.67		100.4

PORT WEST #	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	14	8	273	0.09	89	267.912		20.2	4.92	1.07	
2	3	14	17	278	0.09	90			20.3	4.90	1.07	
3	2	14	26	281	0.05	91			15.1	2.77	0.79	
4	1	14	35	238	0.06	92			15.4	3.20	0.86	
		14	44				301.298					
Sample Time =		36		268	0.07	91	34.451		17.7	3.95		101.0

Post-Test Leak Rate 0.010 CFM at 10 in. Hg.

Test Summary

Sample Time =	72	264	89	71.670 NET CU. FT.	18.5	4.31	100.7

GIBSON 5240

METALS EMISSIONS

Data and Results:

Date:	May 17, 1990	Run #:	14
Client:	Gibson Oil	Time:	13:22
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	HNO3/H2O2	655.30	601.40	53.90
Lg. Grnbg.	HNO3/H2O2	604.00	596.40	7.60
Mod. Grnbg.	EMPTY	503.60	501.80	1.80
Mod. Grnbg.	KMnO4	622.40	623.30	-0.90
Mod. Grnbg.	SILICA GEL	731.80	717.60	14.20
			Total	76.60

Gas Composition:

%CO2 volume	2.3
%O2 volume	16.7
%CO volume	0.0
%N2 volume	81.0
%H2O volume	5.0

Selected Results:

Wet MW	28.48
Excess Air	
Vm Standard	67.604
%Isokinetic	104.4
Standard T	60

Metals Analysis

Metal	mg Sample	mg Blank	mg Net	gr/SDCF	gr/SDCF @ 12% CO2	lbs/hr
Arsenic	0.0021	0.0021	0.0000	0.00E+00	0.00E+00	0.00E+00
Beryllium	0.0050	0.0050	0.0000	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.0006	0.0053	-0.0047	-1.07E-06	-5.59E-06	-1.21E-05
Chromium (Total)	0.0095	0.0060	0.0035	7.97E-07	4.16E-06	8.98E-06
Copper	0.0087	0.0078	0.0009	2.05E-07	1.07E-06	2.31E-06
Lead	0.0068	0.0070	-0.0002	-4.56E-08	-2.38E-07	-5.13E-07
Manganese	0.0500	0.0500	0.0000	0.00E+00	0.00E+00	0.00E+00
Mercury	0.0056	0.0060	-0.0004	-9.11E-08	-4.75E-07	-1.03E-06
Nickel	0.0093	0.0087	0.0006	1.37E-07	7.13E-07	1.54E-06
Selenium	0.0009	0.0010	-0.0001	-2.28E-08	-1.19E-07	-2.56E-07
Zinc	0.1800	0.1600	0.0200	4.56E-06	2.38E-05	5.13E-05

GIBSON 5240

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 17, 1990

TIME: 13:22 -14:44

UNIT: Boiler

SAMPLE: Outlet

RUN #: 14

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8

Duct Press. (in.Hg)	29.49
Vol. Per Cent H2O	5.00
Molecular Wt. (wet)	28.48
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	NORTH Td	NORTH Dp	NORTH Vd	WEST Td	WEST Dp	WEST Vd
1	1.2	200	0.07	16.8	273	0.09	20.1
2	4.5	280	0.06	16.5	278	0.09	20.2
3	13.5	279	0.09	20.2	281	0.05	15.1
4	16.8	281	0.12	22.9	238	0.06	15.4

RESULTS:

Avg. Vel. (Vd) 18.4 FPS @ 264 F and 29.5 in. Hg

Volume Flow Rate	Qd	1951	ACFM
	Qstd (wet)	1381	SCFM
	Qstd (dry)	1312	SDCFM

GIBSON 5240

METALS EMISSIONS TEST MONITOR DATA

DATE:	May 17, 1990	Pbar(in. Hg):	29.50	Nozzle	q90012	Diameter (mm):	12.140
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.49	LCD Meter	789	Cor.Fact.:	1.0319
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	2	Orifice Km:	0.60
RUN #:	15	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT NORTH #	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	17	21	279	0.14	87	301.533		25.3	7.84	1.32	
2	3	17	34	274	0.11	86			22.3	6.03	1.17	
3	2	17	43	271	0.06	86			16.5	3.29	0.87	
4	1	17	52	240	0.08	85			18.6	4.54	1.02	
		18	1				338.941					
Sample Time =			36	266	0.10	86	38.601		20.7	5.42		97.8

PORT WEST #	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	18	28	223	0.11	82	338.941		21.5	6.47	1.21	
2	3	18	37	280	0.08	83			19.1	4.27	0.99	
3	2	18	46	267	0.13	83			24.2	7.28	1.27	
4	1	18	55	264	0.13	82			24.1	7.30	1.28	
		19	4				380.579					
Sample Time =			36	259	0.11	82	42.966		22.2	6.33		100.6

Post-Test Leak Rate 0.018 CFM at 15 in. Hg.

Test Summary

Sample Time =			72	262		84	81.568		21.5	5.88		99.3
							NET CU. FT.					

METALS EMISSIONS

Data and Results:

Date:	May 17, 1990	Run #:	15
Client:	Gibson Oil	Time:	17:21
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	HNO3/H2O2	663.50	609.60	53.90
Lg. Grnbg.	HNO3/H2O2	640.20	631.80	8.40
Mod. Grnbg.	EMPTY	526.20	523.90	2.30
Mod. Grnbg.	KMnO4	606.50	612.90	-6.40
Mod. Grnbg.	SILICA GEL	754.10	729.80	24.30
			Total	82.50

Gas Composition:

%CO2 volume	2.9
%O2 volume	16.2
%CO volume	0.0
%N2 volume	80.9
%H2O volume	4.7

Selected Results:

Wet MW	28.59
Excess Air	
Vm Standard	78.010
%Isokinetic	103.1
Standard T	60

Metals Analysis

Metal	mg Sample	mg Blank	mg Net	gr/SDCF	gr/SDCF @ 12% CO2	lbs/hr
Arsenic	0.0018	0.0021	-0.0003	-5.92E-08	-2.45E-07	-7.78E-07
Beryllium	0.0050	0.0050	0.0000	0.00E+00	0.00E+00	0.00E+00
Cadmium	0.0082	0.0053	0.0029	5.72E-07	2.37E-06	7.52E-06
Chromium (Total)	0.0088	0.0060	0.0028	5.53E-07	2.29E-06	7.26E-06
Copper	0.0077	0.0078	-0.0001	-1.97E-08	-8.17E-08	-2.59E-07
Lead	0.0071	0.0070	0.0001	1.97E-08	8.17E-08	2.59E-07
Manganese	0.0500	0.0500	0.0000	0.00E+00	0.00E+00	0.00E+00
Mercury	0.0063	0.0060	0.0003	5.92E-08	2.45E-07	7.78E-07
Nickel	0.0093	0.0087	0.0006	1.18E-07	4.90E-07	1.56E-06
Selenium	0.0010	0.0010	0.0000	0.00E+00	0.00E+00	0.00E+00
Zinc	0.1600	0.1600	0.0000	0.00E+00	0.00E+00	0.00E+00

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 17, 1990 TIME: 17:21 -19:04
UNIT: Boiler
SAMPLE: Outlet RUN #: 15

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.49
Vol. Per Cent H2O	4.69
Molecular Wt. (wet)	28.59
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	NORTH Td	NORTH Dp	NORTH Vd	WEST Td	WEST Dp	WEST Vd
1	1.2	279	0.14	25.2	223	0.11	21.4
2	4.5	274	0.11	22.2	280	0.08	19.0
3	13.5	271	0.06	16.4	267	0.13	24.0
4	16.8	240	0.08	18.5	264	0.13	24.0

RESULTS:

Avg. Vel. (Vd) 21.3 FPS @ 262 F and 29.5 in. Hg

Volume Flow Rate	Qd	2263	ACFM
	Qstd (wet)	1606	SCFM
	Qstd (dry)	1531	SDCFM

LEAD EMISSIONS TEST MONITOR DATA

DATE:	May 17, 1990	Pbar(in. Hg):	29.50	Nozzle	q90011	Diameter (mm):	11.510
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.49	LCD Meter	1288	Cor.Fact.:	1.0255
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	1	Orifice Km:	0.60
RUN #:	9	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT WEST

#	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	9	41	276	0.12	74	741.689	6	23.4	5.14	1.08	
2	3	9	50	279	0.11	77			22.6	4.79	1.04	
3	2	9	59	277	0.08	81		5	18.5	3.27	0.86	
4	1	10	8	278	0.09	83			19.7	3.69	0.92	
		10	17				774.817					
Sample Time =			36	278	0.10	79	33.973		21.0	4.22		96.8

PORT NORTH

#	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	10	46	284	0.13	84	774.817	7	24.4	5.64	1.13	
2	3	10	55	286	0.11	86			22.5	4.74	1.05	
3	2	11	4	282	0.06	88			16.6	2.67	0.78	
4	1	11	13	281	0.07	92			17.3	2.90	0.82	
		11	22				807.037					
Sample Time =			36	283	0.09	87	33.042		20.2	3.99		97.3

Post-Test Leak Rate 0.020 CFM at 7 in. Hg.

Test Summary

Sample Time =			72	280		83	67.014		20.6	4.11		97.0
							NET CU. FT.					

LEAD EMISSIONS

Data and Results:

Date:	May 17, 1990	Run #:	9
Client:	Gibson Oil	Time:	09:41
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	0.1 N HNO3	637.10	590.00	47.10
Lg. Grnbg.	0.1 N HNO3	621.90	615.10	6.80
Mod. Grnbg.	EMPTY	503.20	500.80	2.40
Mod. Grnbg.	SILICA GEL	744.10	727.50	16.60
				0.00
			Total	72.90

Gas Composition:

%CO2 volume	2.3
%O2 volume	16.7
%CO volume	0.0
%N2 volume	81.0
%H2O volume	5.0

Selected Results:

Wet MW	28.48
Excess Air	
Vm Standard	63.930
%Isokinetic	100.0
Standard T	60

Lead Analysis

Filter Sample Type: EPA GLASS FIBER MAT

Sample Fraction	mg Net	gr/SDCF
Pb	0.0007	1.69E-07
Pb Blank	-0.0016	-3.85E-07
Net Pb	-0.0009	-2.17E-07

Lead Results:

Concentration: grains/SDCF @ STP

Pb -2.17E-07

Emission Rate, lbs/hr

Pb -2.66E-06

GIBSON 5240

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 17, 1990 TIME: 09:41 -11:22
UNIT: Boiler
SAMPLE: Outlet RUN #: 9

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.49
Vol. Per Cent H2O	5.03
Molecular Wt. (wet)	28.48
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	WEST Td	WEST Dp	WEST Vd	NORTH Td	NORTH Dp	NORTH Vd
1	1.2	276	0.12	23.3	284	0.13	24.4
2	4.5	279	0.11	22.5	286	0.11	22.4
3	13.5	277	0.08	18.4	282	0.06	16.5
4	16.8	278	0.09	19.6	281	0.07	17.2

RESULTS:

Avg. Vel. (Vd) 20.6 FPS @ 280 F and 29.5 in. Hg

Volume Flow Rate	Qd	2179	ACFM
	Qstd (wet)	1508	SCFM
	Qstd (dry)	1433	SDCFM

GIBSON 5240

LEAD EMISSIONS TEST MONITOR DATA

DATE:	May 17, 1990	Pbar(in. Hg):	29.50	Nozzle	q90011	Diameter (mm):	11.510
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.49	LCD Meter	1288	Cor.Fact.:	1.0255
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	1	Orifice Km:	0.60
RUN #:	10	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT WEST

#	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	13	12	277	0.10	88	807.432		21.7	4.51	1.02	
2	3	13	21	278	0.11	89			21.9	4.60	1.03	
3	2	13	30	284	0.07	92			17.3	2.89	0.81	
4	1	13	39	279	0.08	94			19.1	3.54	0.91	
		13	48				840.195					
Sample Time =		36		280	0.09	91	33.598		20.0	3.88		98.8

PORT NORTH

#	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	14	18	272	0.07	92	840.195		17.8	3.14	0.85	
2	3	14	27	277	0.05	93			15.1	2.30	0.72	
3	2	14	36	279	0.08	94			19.1	3.54	0.91	
4	1	14	45	279	0.12	96			23.4	5.34	1.12	
		14	54				870.759					
Sample Time =		36		277	0.08	94	31.343		18.9	3.58		96.8

Post-Test Leak Rate 0.015 CFM at 10 in. Hg.

Test Summary

Sample Time =		72		278		92	64.942 NET CU. FT.		19.4	3.73		97.8

GIBSON 5240

LEAD EMISSIONS

Data and Results:

Date:	May 17, 1990	Run #:	10
Client:	Gibson Oil	Time:	13:12
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	0.1 N HNO3	635.70	591.80	43.90
Lg. Grnbg.	0.1 N HNO3	632.80	626.70	6.10
Mod. Grnbg.	EMPTY	505.50	504.00	1.50
Mod. Grnbg.	SILICA GEL	791.90	774.50	17.40
				0.00
			Total	68.90

Gas Composition:

%CO2 volume	2.3
%O2 volume	16.7
%CO volume	0.0
%N2 volume	81.0
%H2O volume	5.0

Selected Results:

Wet MW	28.48
Excess Air	
Vm Standard	60.873
%Isokinetic	100.7
Standard T	60

Lead Analysis

Filter Sample Type: EPA GLASS FIBER MAT

Sample Fraction	mg Net	gr/SDCF
Pb	0.0027	6.83E-07
Pb Blank	-0.0016	-4.05E-07
Net Pb	0.0011	2.78E-07

Lead Results:

Concentration:	grains/SDCF @ STP
Pb	2.78E-07

Emission Rate,	lbs/hr
Pb	3.23E-06

GIBSON 5240

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 17, 1990 TIME: 13:12 -14:54

UNIT: Boiler

SAMPLE: Outlet RUN #: 10

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8

Duct Press. (in.Hg)	29.49
Vol. Per Cent H2O	5.00
Molecular Wt. (wet)	28.48
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	WEST Td	WEST Dp	WEST Vd	NORTH Td	NORTH Dp	NORTH Vd
1	1.2	277	0.10	21.6	272	0.07	17.7
2	4.5	278	0.11	21.8	277	0.05	15.0
3	13.5	284	0.07	17.2	279	0.08	19.1
4	16.8	279	0.08	19.1	279	0.12	23.3

RESULTS:

Avg. Vel. (Vd) 19.4 FPS @ 278 F and 29.5 in. Hg

Volume Flow Rate	Qd	2052	ACFM
	Qstd (wet)	1425	SCFM
	Qstd (dry)	1354	SDCFM

GIBSON 5240

LEAD EMISSIONS TEST MONITOR DATA

DATE:	May 17, 1990	Pbar(in. Hg):	29.50	Nozzle	q90011	Diameter (mm):	11.510
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.49	LCD Meter	1288	Cor.Fact.:	1.0255
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	1	Orifice Km:	0.60
RUN #:	11	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT WEST #	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	17	35	196	0.10	85	871.176		19.6	4.65	1.04	
2	3	17	44	266	0.07	86			17.7	3.14	0.85	
3	2	17	53	262	0.11	87			22.2	4.91	1.07	
4	1	18	2	294	0.12	87			23.6	5.14	1.09	
		18	11				905.529					
Sample Time =		36		255	0.10	86	35.229		20.8	4.46		97.0

PORT NORTH #	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	18	18	270	0.13	85	905.529		24.0	5.67	1.14	
2	3	18	27	272	0.10	86			20.7	4.17	0.98	
3	2	18	36	271	0.06	86			16.3	2.66	0.77	
4	1	18	45	264	0.07	86			17.7	3.14	0.85	
		18	54				937.647					
Sample Time =		36		269	0.09	86	32.937		19.7	3.91		97.9

Post-Test Leak Rate 0.016 CFM at 10 in. Hg.

Test Summary

Sample Time =		72		262		86	68.166		20.2	4.18		97.4
							NET CU. FT.					

GIBSON 5240

LEAD EMISSIONS

Data and Results:

Date:	May 17, 1990	Run #:	11
Client:	Gibson Oil	Time:	17:35
Unit:	Boiler	Project DRD	
Site:	Outlet	Project 5240	

Liquid Analysis:

Absorber Type	Contents	Final	Tare	Net
Mod. Grnbg.	0.1 N HNO3	637.50	592.00	45.50
Lg. Grnbg.	0.1 N HNO3	620.50	615.80	4.70
Mod. Grnbg.	EMPTY	504.80	502.40	2.40
Mod. Grnbg.	SILICA GEL	755.90	737.70	18.20
				0.00
			Total	70.80

Gas Composition:

%CO2 volume	2.9
%O2 volume	16.2
%CO volume	0.0
%N2 volume	80.9
%H2O volume	4.8

Selected Results:

Wet MW	28.57
Excess Air	
Vm Standard	64.691
%Isokinetic	100.3
Standard T	60

Lead Analysis

Filter Sample Type: EPA GLASS FIBER MAT

Sample Fraction	mg Net	gr/SDCF
Pb	0.0016	3.81E-07
Pb Blank	-0.0016	-3.81E-07
Net Pb	0.0000	0.00E+00

Lead Results:

Concentration:	grains/SDCF @ STP
Pb	0.00E+00

Emission Rate,	lbs/hr
Pb	0.00E+00

VELOCITY TRAVERSE & VOLUME FLOW RATE

CLIENT: Gibson Oil

DATE: May 17, 1990 TIME: 17:35 -18:54
UNIT: Boiler
SAMPLE: Outlet RUN #: 11

Duct Diameter (in.)	18.0
Rectangular Duct	0.0
Area (sq.ft.)	1.8
Duct Press. (in.Hg)	29.49
Vol. Per Cent H2O	4.84
Molecular Wt. (wet)	28.57
Standard Temp. (F)	60
Std Press. (in.Hg)	29.92
Pitot Coeff.	0.840

Pt.	In. From Edge	WEST Td	WEST Dp	WEST Vd	NORTH Td	NORTH Dp	NORTH Vd
1	1.2	196	0.10	19.5	270	0.13	23.9
2	4.5	266	0.07	17.6	272	0.10	20.6
3	13.5	262	0.11	22.0	271	0.06	16.2
4	16.8	294	0.12	23.5	264	0.07	17.6

RESULTS:

Avg. Vel. (Vd) 20.1 FPS @ 262 F and 29.5 in. Hg

Volume Flow Rate	Qd	2136	ACFM
	Qstd (wet)	1516	SCFM
	Qstd (dry)	1443	SDCFM

OPERATING CONDITIONS

CLIENT: Gibson Oil
DATE: May 14, 1990
UNIT: Boiler

Time	Gas Meter cubic feet	Gas Flow Rate ft3/min	Water Meter gal	Water Flow Rate gal/min	Steam Pressure psi
826	23145811				
905			201680.35		30
909	23146367	12.930			
922			201723.55	2.541	
1008					35
1009			201843.15	2.545	
1013	23147206	13.109			
1041					35
1042			201932.74	2.715	
1045	23147622	13.000			
1114					37
1115			202021.23	2.682	
1118	23148055	13.121			
1148					37
1149			202115.85	2.783	
1152	23148499	13.059			
1224					38
1225			202215.40	2.765	
1228	23148966	12.972			
1254			202299.75	2.909	
1255					39
1258	23149358	13.067			
1333					37
1335			202392.79	2.269	
1338	23149888	13.250			
1409					37
1410			202481.50	2.535	
1412	23150331	13.029			
1800					37
1802			203310.00	3.571	
1805	23153465	13.451			

OPERATING CONDITIONS

CLIENT: Gibson Oil
DATE: May 15, 1990
UNIT: Boiler

Time	Gas Meter cubic feet	Gas Flow Rate ft3/min	Water Meter gal	Water Flow Rate gal/min	Steam Pressure psi
745			205322.90		20
749	23163795				
827	23164293	13.105			
830			205444.25	2.697	
913	23164870	12.543			
916			205550.30	2.305	20
1035	23165940	13.049			
1321			206185.40	2.592	20
1324	23168130	12.959			
1513	23169570	13.211			
1516			206478.60	2.550	20
1713	23171125	12.958			
1716			206682.50	1.699	20

OPERATING CONDITIONS

CLIENT: Gibson Oil
DATE: May 16, 1990
UNIT: Boiler

Time	Gas Meter cubic feet	Gas Flow Rate ft3/min	Water Meter gal	Water Flow Rate gal/min	Steam Pressure psi
852					20
853			209196.65		
855	23183132				
921					19
922			209275.15	2.707	
924	23183517	13.276			
1012			209407.20	2.641	20
1015	23184275	14.863			
1511			210192.00	2.625	20
1515	23188085	12.700			
1646			210454.80	2.766	20
1649	23189300	12.926			
1724			210562.40	2.832	21
1727	23189884	15.368			
1913	23191155	11.991			
1918			210871.50	2.711	21
2002			211093.50	5.045	20
2005	23191815	12.692			

GIBSON 5240

OPERATING CONDITIONS

CLIENT: Gibson Oil
DATE: May 17, 1990
UNIT: Boiler

Time	Gas Meter cubic feet	Gas Flow Rate ft3/min	Water Meter gal	Water Flow Rate gal/min	Steam Pressure psi
			212840.50		21
717					
720	23200370				
832	23201305	12.986	213057.40	2.746	20
836					
1203	23204040	12.962			
1249	23204639	13.022	213717.05	2.577	19
1252					
1355	23205495	12.970	213901.70	2.798	20
1358			214220.95	2.752	20
1554					
1557	23207090	13.074	214825.70	2.541	19
1952					
1956	23210208	13.046			

METALS EMISSIONS TEST MONITOR DATA

DATE:	May 17, 1990	Pbar(in. Hg):	29.50	Nozzle	q90012	Diameter (mm):	12.140
CLIENT:	Gibson Oil	Pstat(in.H2O):	-0.2	Probe Length, in.	36	Pitot Cp:	0.840
UNIT:	Boiler	Pduct(in. Hg):	29.49	LCD Meter	789	Cor.Fact.:	1.0319
SITE:	Outlet	Initial MW:	28.3	Impinger Bkt	2	Orifice Km:	0.60
RUN #:	13	Initial %H2O:	5.0			Probe Liner:	SS
						Filter Holder:	SS

PORT NORTH

#	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	9	52	240	0.08	80	158.546	6	18.5	4.44	1.01	
2	3	10	1	280	0.07	79		5	17.2	3.47	0.89	
3	2	10	10	281	0.10	81			21.4	5.34	1.10	
4	1	10	19	282	0.12	82		9	23.5	6.50	1.21	
		10	28				193.459					
Sample Time =			36	271	0.09	80	36.027		20.1	4.94		95.2

PORT WEST

#	TP	Hour	Minute	DATA Td	DP	Tm	Vm	Vacuum	CALCULATIONS Vd	DH	Qm	%ISO
1	4	10	56	238	0.09	84	193.459		19.7	5.12	1.08	
2	3	11	5	282	0.07	83			17.9	3.74	0.93	
3	2	11	14	278	0.11	85			22.4	5.99	1.17	
4	1	11	23	275	0.10	87			21.3	5.45	1.12	
		11	32				230.000					
Sample Time =			36	268	0.09	85	37.707		20.3	5.07		97.5

Post-Test Leak Rate 0.010 CFM at 10 in. Hg.

Test Summary

Sample Time =			72	270		82	73.733		20.2	5.01		96.3
							NET CU. FT.					