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.

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

Oxnard 7/90

LFG EFI
29 89

AP42
55

AB2588 SOURCE TEST REPORT

PACIFIC ENERGY SYSTEMS
6055 E. Washington Blvd.
Commerce, CA 90040

ATTENTION: Mr. Terence Hee

UNIT TESTED:

Oxnard Landfill
Superior Internal Combustion Engine #2

DATE TESTED:

July 23 thru July 27, 1990

DATE REPORTED:

October 24, 1990

EMISSIONS DETERMINATION OF:

CARB Method 428: PAH
CARB Method 430: Formaldehyde
CARB Method 436: As, Be, Cd, Cr, Cu, Pb, Mg, Hg, Ni, Se, Zn
CARB Method 423: As
CARB Method 425: Total Chrome/Hexavalent Chromium
CARB Method 421: HCN
CARB Method 1[illegible]: HCl

Report: 62-282

Tested by: [signature]
Tim Manchester

Reviewed by: [signature]

7/27 - 7/27/90

REF #29

no fuel heat rate (taken from ref # 30)

metals

Data Qual = C

Conflicting results for metals en

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SUMMARY OF RESULTS

Using results of fuel analysis from 12/20/90
with metals, PAH, etc analysis from 7/1990

for ICE #2

Molar volume = 40.87% (EPA 'F' Factor for nat gas. 12/90 test, pg 25)

$0.4087 \times 1012 \frac{Btu}{SCF} = 413.6 \frac{Btu}{SCF}$

gas flow rate = 630 CFM × $413.6 \frac{Btu}{CF}$ =

∴ fuel rate = $2.606 \times 10^5 \frac{Btu}{min} \times \frac{60\ min}{hr} \times \frac{MMBtu}{1 \times 10^6\ Btu} = 15.6 \frac{MMBtu}{hr}$

Naphthalene = $5.53 \times 10^{-4} \frac{lb}{hr} / 15.6$ MMBtu/hr = $3.54 \times 10^{-5} \frac{lb}{MMBtu}$

Formaldehyde = 0.0222 lb/hr / 15.6 = 1.42×10^{-3} lb/MMBtu

PAH = $5.22 \times 10^{-5} \frac{lb}{hr} / 15.6$ MMBtu/hr = 3.34×10^{-6} lb/MMBtu

Metals

Arsenic = $1.42 \times 10^{-5} / 15.6 = 9.10 \times 10^{-7}$ lb/MMBtu

? Beryllium = ~~6.15×10^{-7}~~ 1.19×10^{-6} / 15.6 = ~~3.94×10^{-8}~~ lb/MMBtu 7.6×10^{-8} ←

Cadmium = $1.35 \times 10^{-6} / 15.6 = 8.61 \times 10^{-8}$ lb/MMBtu

Chromium = [illegible] / 15.6 = 4.19×10^{-7} lb/MMBtu

Copper = $1.19 \times 10^{-6} / 15.6 = 7.63 \times 10^{-8}$ lb/MMBtu

? Lead = ~~1.49~~ 2.97 $\times 10^{-6} / 15.6 = 9.55 \times 10^{-8}$ lb/MMBtu 1.90×10^{-7} ←

? Manganese = ~~2.97~~ 5.93 $\times 10^{-6} / 15.6 = 1.90 \times 10^{-7}$ lb/MMBtu 3.80×10^{-7} ←

Mercury = [illegible] $\times 10^{-6} / 15.6 = 9.10 \times 10^{-8}$ lb/MMBtu

[illegible] = [illegible] $\times 10^{-5} / 15.6$ = [illegible] lb/MMBtu

? Selenium = ~~1.49~~ 2.97 $\times 10^{-6} / 15.6 = 9.52 \times 10^{-8}$ lb/MMBtu 1.90×10^{-7} ←

Zinc = $5.04 \times 10^{-5} / 15.6 = 3.23 \times 10^{-6}$ lb/MMBtu

HCl = $8.52 \times 10^{-2} / 15.6 = 5.46 \times 10^{-3}$ lb/MMBtu

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for PAH Emissions: CARB Method 429

Pollutant			gr/DSCF	lb/hr
Naphthalene	Average		1.12E-05	5.53E-04
Acenaphthylene	Average		4.65E-08	2.30E-06
Acenaphthene	Average	*	1.56E-07	7.74E-06
Fluorene	Average	*	4.68E-08	2.32E-06
Phenanthrene	Average		2.00E-07	9.90E-06
Anthracene	Average	*	4.18E-08	2.07E-06
Fluoranthene	Average		3.87E-08	1.92E-06
Pyrene	Average		5.67E-08	2.81E-06
Benzo(a)anthracene	Average	*	2.71E-08	1.34E-06
Chrysene	Average		2.64E-08	1.31E-06
Benzo(b)floranthene	Average		3.25E-08	1.61E-06
Benzo(k)floranthene	Average	*	4.78E-08	2.37E-06
Benzo(a)pyrene	Average	*	8.01E-08	3.97E-06
Dibenz(a,h)anthracene	Average	*	1.00E-07	4.97E-06
Benzo(g,h,i)perylene	Average	*	7.45E-08	3.69E-06
Indeno(1,2,3-cd)pyrene	Average	*	7.88E-08	3.90E-06

* Values reported are lower detection limit $= 5.22 \times 10^{-5}$

COMPANY: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Method 430
Formaldehyde Results

Test Run	#1	#2	#3	average
Time	814	825	818	
Formaldehyde ug/l	5900	750	50	
Sample vol. l	0.033	0.033	0.031	
Formaldehyde, ug	195	25	2	
Vm std DSCF	2.06	20.4	20.5	
Vm std DSCM	0.058	0.058	0.058	
Volume Flow, DSCFM 1/	5747	5747	5747	
Concentrations :				
ug/dscf	95	1	0	32
ug/dscm	3357	427	27	1270
ppm	2.49	0.03	0.00	0.84
Emissions :				
lb/hr	0.0657	0.0008	0.0001	0.0222

1/ See Method 436 and Method 423 field data

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

CARB Method 436

Pollutant	Run			gr/DSCF
Manganese	1		*	1.33E-06
	2		*	9.99E-07
	3			9.25E-07
		Average		1.09E-06
Mercury	1		*	5.66E-08
	2		*	1.45E-07
	3		*	6.10E-08
		Average	*	8.74E-08
Nickel	1			5.79E-07
	2			5.14E-07
	3			5.15E-07
		Average		5.36E-07
Selenium	1		*	7.57E-07
	2		*	4.99E-07
	3		*	4.63E-07
		Average	*	5.73E-07
Zinc	1			3.76E-06
	2			3.14E-06
	3			4.93E-06
		Average		3.94E-06

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
REPORT #:62-232
DATE: 7-24 thru 7-27-90

Summary of Results for Metal Emissions

CARB Method 436

Pollutant	mg/l	Sample Vol. (ml)	Vm std	SCFM		gr/DSCF	lb/hr
Arsenic	0.024	350	49.1	630		2.63E-06	1.42E-05
Beryllium	0.002	350	49.1	630	*	2.20E-07	1.19E-06
Cadmium	0.0021	350	49.1	630		2.31E-07	1.25E-06
Chromium	0.011	350	49.1	630		1.21E-06	6.53E-06
Copper	0.002	350	49.1	630		2.20E-07	1.19E-06
Lead	0.005	350	49.1	630	*	5.49E-07	2.97E-06
Manganese	0.01	350	49.1	630	*	1.10E-06	5.93E-06
Mercury	0.0016	522	49.1	630		2.62E-07	1.42E-06
Nickel	0.13	350	49.1	630		1.43E-05	7.71E-05
Selenium	0.005	350	49.1	630	*	5.49E-07	2.97E-06
Zinc	0.085	350	49.1	630		9.33E-06	5.04E-05

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
REPORT #: 62-232
DATE: 7-24 thru 7-27-90

Summary of Results for Metal Emissions

mgs metal / Kg fuel: Method 436

Pollutant	mg/l	Sample Vol. (ml)	Total mgs		mgs/Kg Fuel
Arsenic	0.024	350	8.40E-03		4.45E-06
Beryllium	0.002	350	7.00E-04	*	3.71E-07
Cadmium	0.0021	350	7.35E-04		3.90E-07
Chromium	0.011	350	3.85E-03		2.04E-06
Copper	0.002	350	7.00E-04		3.71E-07
Lead	0.005	350	1.75E-03	*	9.27E-07
Manganese	0.01	350	3.50E-03	*	1.85E-06
Mercury	0.0016	522	8.35E-04		4.43E-07
Nickel	0.13	350	4.55E-02		2.41E-05
Selenium	0.005	350	1.75E-03	*	9.27E-07
Zinc	0.085	350	2.98E-02		1.58E-05

Test Duration	90	minutes
Fuel Rate=	630	scfm
Total fuel Consumption=	5670	scf
Total Kgs Fuel Consumed=	1886.92	Kgs
Fuel Specific Volume=	13.63	cu.ft./lb
U.S. to Metric Weigth Conversion=	0.45359	Kgs/lb

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Arsenic

Test	Fraction	Vm std	DSCFM	Total ug		gr/DSCF	lb/hr
1	p/n	44.18	5787	0.88	*	3.07E-07	1.52E-05
	Filter	44.18	5787	0.62		2.16E-07	1.07E-05
	Imp	44.18	5787	1.30	*	4.53E-07	2.25E-05
				total		9.76E-07	4.85E-05
2	p/n	44.32	5805	0.73	*	2.54E-07	1.26E-05
	Filter	44.32	5805	0.62		2.15E-07	1.07E-05
	Imp	44.32	5805	3.00	*	1.04E-06	5.19E-05
				total		1.51E-06	7.53E-05
3	p/n	43.59	5695	0.65	*	2.30E-07	1.12E-05
	Filter	43.59	5695	0.38		1.34E-07	6.56E-06
	Imp	43.59	5695	3.00	*	1.06E-06	5.18E-05
				total		1.42E-06	6.96E-05
				Three Run Average		1.30E-06	6.44E-05

* Values Reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Total Chrome and Hexavalent Chrome

Test	Fraction	Vm std	DSCFM	Total ug		gr/DSCF	lb/hr
1	p/n	44.30	5808	2.4	*	8.34E-07	4.16E-05
	Filt/Imp	44.30	5808	5.3	*	1.84E-06	9.18E-05
	Total Chrome				*	2.68E-06	1.33E-04
1	p/n	44.30	5808	4.6	*	1.60E-06	7.97E-05
	Filt/Imp	44.30	5808	10.4	*	3.62E-06	1.80E-04
	Total Hexavalent Chrome				*	5.21E-06	2.60E-04
2	p/n	44.18	5787	2.3	*	8.02E-07	3.98E-05
	Filt/Imp	44.18	5787	4.9	*	1.71E-06	8.48E-05
	Total Chrome				*	2.51E-06	1.25E-04
2	p/n	44.18	5787	4.5	*	1.57E-06	7.79E-05
	Filt/Imp	44.18	5787	9	*	3.14E-06	1.56E-04
	Total Hexavalent Chrome				*	4.71E-06	2.34E-04
3	p/n	44.18	5787	2.3	*	8.02E-07	3.98E-05
	Filt/Imp	44.18	5787	5.0	*	1.74E-06	8.65E-05
	Total Chrome				*	2.54E-06	1.26E-04
3	p/n	44.18	5787	4.4	*	1.53E-06	7.62E-05
	Filt/Imp	44.18	5787	9.9	*	3.45E-06	1.71E-04
	Total Hexavalent Chrome				*	4.98E-06	2.47E-04
	Total Chrome: Average of three runs					2.58E-06	1.28E-04
	Hexavalent Chrome: Average of three runs					4.97E-06	2.47E-04

* Values Reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #: 62-232

Summary of Results for Hydrochloric Acid

Pollutant	Test	Vm std	DSCFM	Total ug	gr/DSCF	lb/hr
Hydro-chloric Acid	1	43.12	5755	4860	1.74E-03	8.57E-02
	2	43.92	5769	4820	1.69E-03	8.37E-02
	3	43.68	5752	4950	1.75E-03	8.61E-02
				average	1.72E-03	8.52E-02
Blank 1/		43.57	5759	8510	3.01E-03	1.49E-01

1/ High Sample Blank Recorded For Run #4

* Values Reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #: 62-232

Summary of Results for Hydrogen Fluoride

Pollutant	Test	Vm std	DSCFM	Total mg	gr/DSCF	lb/hr
Hydrogen fluoride	1	45.15	5744	1.6	5.46E-04	2.69E-02
	2	45.17	5716	1.4	4.77E-04	2.34E-02
	3	45.64	5764	1.4	4.72E-04	2.34E-02
				average	4.98E-04	2.46E-02

* Values Reported are lower detection limit

INTRODUCTION

INTRODUCTION

At the request of Pacific Energy Systems, Petro Chem Environmental Services (PCES) performed a series of source tests on one Superior internal combustion engine. The unit is located at the Oxnard Landfill and uses landfill gas as fuel. The purpose of the testing was to document emissions of various pollutants to satisfy the requirements for the State of California AB2588, Air Toxics "Hot Spots" Information and Assessment Act of 1987. The following tests were performed:

Pollutant	Date	Method	No. Runs
PAH	7/24,25,26,90	CARB 429	3 + Blank
Formaldehyde	7/27/90	CARB 430	3 + Blank
As,Be,Cd,Cr,Cv,Pb,Mn,Hg, Ni,Se,Zn	7/24,27/90	CARB 436	3 + Blank
As	7/24,27/90	CARB 423	3 + Blank
Cr,Crt6	7/25/90	CARB 425	3 + Blank
HCL	7/26/90	CARB 421	3 + Blank
HFL	7/23/90	EPA 13B	3 + Blank

The samples were analyzed by the following laboratories:

Test Method	Analytical Laboratory
CARB 429	Triangle Laboratories of Texas
CARB 430	Coast to Coast Analytical of San Luis Obispo
CARB 436	Enesco Labs of Garden Grove
CARB 423	Enesco Labs of Garden Grove
CARB 425	Enesco Labs of Garden Grove
CARB 421	Enesco Labs of Garden Grove
EPA 13B	Zalco Labs of Bakersfield

All sampling was conducted by Mr. John Nylin of Petro Chem Environmental Services. Mr. James Marchesini supervised all testing and performed all testing equipment turnaround and method recovery procedures. Mr. Dennis Marsh of Pacific Energy Systems supervised all testing.

DISCUSSION

DISCUSSION

The testing of Pacific Energy System's Superior engine located at the Oxnard Landfill began on July 23, and continued through July 27, 1990. All testing proceeded smoothly without any upsets due to testing equipment or engine operational problems. All testing was conducted upstream of the exhaust outlet. Two sample ports were placed on the same cross sectional plane 90 degrees apart, approximately five diameters downstream and two diameters upstream from disturbance in flow.

Prior to testing a cyclonic flow check was conducted and showed an average angle of deviation of five degrees from sixteen traverse points.

Metals emissions were determined by sampling the inlet fuel gas and outlet exhaust gas. Fuel gas consumption rates were documented to determine the units inlet metals rate. CARB Method 436 was used to determine metals exhaust emission rate.

All methods consisted of sixteen point traverses from two ports (eight points/port) and sampled for one hour. The exception was for the CARB 429 testing which consisted of three-three hour runs.

SAMPLING METHODS

METHOD 429 PAH

METHOD 429 SAMPLING:

The sampling apparatus is the same as that which is described for EPA Method #5 and consisted of a quartz nozzle, heat traced quartz probe, borosilicate filter holder with a teflon-coated screen filter support, a teflon filter to condenser line, XAD-2 resin trap and four modified Greenburg Smith impingers containing 100 ml DI H_2O, 100 ml DI H_2O dry and silica gel.

Prior to the testing all sampling equipment was cleaned with successive rinses of soapy water, tap water, chronic acid, distilled water, methanol toluene, and methylene chloride. All sample containers were pre-cleaned by rinsing with methanol toluene and methylene chloride. Soapy water, tap, chromic acid, distilled water, methanol, toluene, methylene chloride.

The sample train was charged, a pre-cleaned Whatman QMA Quartz fiber filter was placed into the filter holder and the probe/nozzle/filter was put together and all sampling equipment was sealed with hexane rinsed foil and transported to the stack for assembly.

The sampling equipment was assembled and leak tested at 10 inches Hg vacuum. The probe and filter components were heated to 250 + or - 25 degrees F. The probe was inserted into the stack and isokinetic sampling was initiated as per EPA Method #5.

Triplicate test runs were performed. All lasting 180 minutes.

Upon completion of a test the probe was withdrawn from the stack and leak tested at a vacuum equal to or greater than the maximum vacuum observed during the test. The equipment was then disassembled and the components were then sealed with aluminum hexane rinsed foil and transported to the mobile laboratory for sample recovery.

A field blank was similarly treated: charged, transported to the stack, leak tested, disassembled, and transported to the mobile laboratory for sample recovery. No additional gases were pulled through the field blank train.

METHOD 429 SAMPLE RECOVERY:

The filter and nozzle were separated from the probe. The probe was tilted and brushed three successive times while rinsing with methylene toluene and methylene chloride and rotating. Sterile surgical gloves were used during this process. All rinses were caught in an amber glass sample bottle. The nozzle, and filter top half were then similarly cleaned and the rinsings were combined with the probe wash. The filter was removed from the filter holder with teflon coated forceps, folded and wrapped in hexane rinsed foil, placed into a petri dish and sealed with teflon tape.

The first, second and third impingers were disassembled, weighed, and their contents transferred to an amber sample bottle. The impingers cross overs and filter bottom half were rinsed three times with methanol toluene and methylene chloride, and the rinses were combined with the impingate sample.

Aliquots of the reagents grade chemicals and filters were recovered for analysis as reagent blanks. All samples were sealed, fluid levels marked, labeled and logged on a chain of custody form. Upon completion of the test they were transported to the laboratory for analysis.

CARB METHOD 430: FORMALDEHYDE

The sampling apparatus consisted of a heated stainless steel probe, followed by three midget impingers containing 15 ml of acidified DNPH in the first two and silica gel in the third. The impinger train was connected to a vacuum pump/rotometer/dry gas meter assembly. Prior to the test the impingers were cleaned with chromic acid, distilled water, methylene chloride, methanol, and oven dried. The impinger bottoms were sent to the analytical laboratory for charging. The impinger bottoms were charged, capped and returned to PCES for sampling within a 48 hour period of making the DNPH solution.

CARB METHOD 430: SAMPLING:

The charged impinger bottoms were stored in a friction top can with 1-2 inches of a activated charcoal and shipped to the sample location. The impingers were uncapped, the impinger tops added and then the sampling train was assembled. The train was transported to the stack, and leak tested by closing the teflon stopcock at the first impinger while applying the vacuum to the system. The stopcock was then opened and sampling proceeded at a sample rate of 1.01pm. (.035 ft/min). Upon completion of the test the train was leak tested again, and a 5 ml distilled water probe wash was performed and allowed to drain into the first impinger. The train was then disconnected from the probe and lowed down to the mobile laboratory the impinger tops were removed, impingers capped and sealed with teflon tape labeled, and placed back into the friction top can with activated charcoal. The samples were then shipped back to the analytical laboratory for extraction and analysis of formaldehyde by CARB Method 430, HPLC.

A field blank was similarly treated but, instead of sampling stack gas zero grade nitrogen was flushed through the impingers. A 5 ml distilled water aliquot was added to the first impinger to represent a probe wash. A sample spike was performed by the analytical laboratory and that impinger was transported to the sample location where it remained for the duration of a test run. The sample spike was then sent back to the analytical laboratory along with the other samples for analysis.

METHOD 436: MULTIMETALS
Cr,Cd,As,Ni,Mn,Be,Cu,Zn,Pb,Se,P,Ti,Ag,Sb,Ba,Hg

METHOD 436 SAMPLING:

The sampling apparatus is the same as that which is described for EPA Method #5 and consisted of a quartz nozzle, heat traced quartz probe, borosilicate filter holder with a teflon-coated screen filter support, a teflon filter to impinger line and six modified Greenburg Smith impingers containing 100 ml 5% HNO_3, 10% H_2O_2, 100 ml 5% HNO_3, 10% H_2O_2 dry, 100 ml Acidified $KMnO_4$, 100 ml Acidified $KMnO_4$ dry and silica gel.

Prior to the testing all sampling equipment was cleaned with successive rinses of soapy water, tap water, 6N HNO_3 soak, and distilled H_2O. All sample containers were pre-cleaned by rinsing with 6N HNO_3 rinse and distilled H_2O.

The sample train was charged, a Whatman QMA Quartz fiber filter was placed into the filter holder and the probe/nozzle/ filter was put together and all sampling equipment was sealed and transported to the stack for assembly.

The sampling equipment was assembled and leak tested at 10 inches Hg vacuum. The probe and filter components were heated to 250 + or - 25 degrees F. The probe was inserted into the stack and isokinetic sampling was initiated as per EPA Method #5.

Upon completion of a test the probe was withdrawn from the stack and leak tested at a vacuum equal to or greater than the maximum vacuum observed during the test. The equipment was then disassembled the filter to impinger line was rinsed with a known amount of 0.1N HNO_3 into the first impinger, and the components were then sealed with aluminum foil and transported to the mobile laboratory for sample recovery.

A field blank was similarly treated: charged, transported to the stack, leak tested, disassembled, and transported to the mobile laboratory for sample recovery. No additional gases were pulled through the field blank train.

METHOD 436 SAMPLE RECOVERY:

The filter and nozzle were separated from the probe. The probe was tilted and brushed three successive times while rinsing with Acetone and rotating. Sterile surgical gloves were used during this process. All rinses were caught in an amber glass sample bottle. The nozzle and filter top half were then similarly cleaned and the rinsings were combined with the probe wash. The afore mentioned procedure was repeated with 0.1N HNO_3 and placed into a second rinse jar. The filter was removed from the filter holder with teflon coated forceps, folded and placed into a petri dish.

The first, second and third impingers were disassembled, weighed, and their contents transferred to an amber sample bottle. The impingers and cross overs were rinsed three times with 0.1N HNO_3, and the rinses were combined with the impingate sample.

The forth and fifth impingers were disassembled, weighted, and their contents transferred to amber sample bottles. The impingers were then rinsed three times with Acidified $KMnO_4$, 8N HCL, and combined with impingate sample.

Aliquots of the reagents grade chemicals and filters were recovered for analysis as reagent blanks. All samples were sealed, fluid levels marked, labeled and logged on a chain of custody form. Upon completion of the test they were transported to the laboratory for analysis.

METHOD 436 SAMPLE ANALYSIS:

For each test five samples are generated for analysis. Method 436 protocol details the analysis of metals using cold vapor atomic absorption, inductively coupled Argon plasma emission spectroscopy (ICAP), and Graphite furnace atomic absorption (GFAAS).

The reagent blanks were similarly analyzed and an in-house spike was performed with a similar sample matrix, percent recoveries are reported.

METHOD 423: ARSENIC (As)

METHOD 423 SAMPLING:

The sampling apparatus is the same as that which is described for EPA Method #5 and consisted of a quartz nozzle, heat traced quartz probe, borosilicate filter holder with a teflon-coated screen filter support, a teflon filter to impinger line and four modified Greenburg Smith impingers containing 100 ml DI Distilled H_2O, 100 ml DI Distilled H_2O dry and silica gel.

Prior to the testing all sampling equipment was cleaned with successive rinses of soapy water, tap water, 6N HNO_3 soak, distilled H_2O, and 0.1N NaOH. All sample containers were pre-cleaned by rinsing with 6N HNO_3 rinse and distilled H_2O and 0.1N NaOH.

The sample train was charged, a Whatman QMA Quartz fiber filter was placed into the filter holder and the probe/nozzle/filter was put together and all sampling equipment was sealed and transported to the stack for assembly.

The sampling equipment was assembled and leak tested at 10 inches Hg vacuum. The probe and filter components were heated to 250 + or - 25 degrees F. The probe was inserted into the stack and isokinetic sampling was initiated as per EPA Method #5.

Upon completion of a test the probe was withdrawn from the stack and leak tested at a vacuum equal to or greater than the maximum vacuum observed during the test. The equipment was then disassembled the filter to impinger line was rinsed with a known amount of 0.1N NaOH into the first impinger, and the components were then sealed with aluminum foil and transported to the mobile laboratory for sample recovery.

A field blank was similarly treated: charged, transported to the stack, leak tested, disassembled, and transported to the mobile laboratory for sample recovery. No additional gases were pulled through the field blank train.

METHOD 423 SAMPLE RECOVERY:

The filter and nozzle were separated from the probe. The probe was tilted and brushed three successive times while rinsing with 0.1N NaOH and rotating. Sterile surgical gloves were used during this process. All rinses were caught in an amber glass sample bottle. The nozzle, and filter top half were then similarly cleaned and the rinsings were combined with the probe wash. The filter was removed from the filter holder with teflon coated forceps, folded and placed into a petri dish.

The first, second and third impingers were disassembled, weighed, and their contents transferred to an amber sample bottle. The impingers cross overs and filter bottom half were rinsed three times with 0.1N NaOH, and the rinses were combined with the impingate sample.

Aliquots of the reagents grade chemicals and filters were recovered for analysis as reagent blanks. All samples were sealed, fluid levels marked, labeled and logged on a chain of custody form. Upon completion of the test they were transported to the laboratory for analysis.

METHOD 423 SAMPLE ANALYSIS:

The filter was digested and combined with the probe wash and impingate contents. The sample was then analyzed for Arsenic by Hydride atomic absorption (CARB 423).

The reagent blanks were similarly analyzed and an in-house spike was performed with a similar sample matrix, percent recoveries are reported.

METHOD 425: HEXAVALENT CHROMIUM (Cr+6) AND TOTAL CHROMIUM (Cr)

METHOD 425 SAMPLING:

The sampling apparatus is the same as that which is described for EPA Method #5 and consisted of a quartz nozzle, heat traced quartz probe, borosilicate filter holder with a teflon-coated screen filter support, a teflon filter to impinger line and four modified Greenburg Smith impingers containing 100 ml DI distilled H2O, 100 ml DI distilled H2O, dry and silica gel.

Prior to the testing all sampling equipment was cleaned with successive rinses of soapy water, tap water, 6N HNO3 soak, and distilled H2O. All sample containers were pre-cleaned by rinsing with 6N HNO3 rinse and distilled H2O.

The sample train was charged, a teflon coated glass fiber filter was placed into the filter holder and the probe/nozzle/filter was put together and all sampling equipment was sealed and transported to the stack for assembly.

The sampling equipment was assembled and leak tested at 10 inches Hg vacuum. The probe and filter components were heated to 250 + or - 25 degrees F. The probe was inserted into the stack and isokinetic sampling was initiated as per EPA Method #5.

Upon completion of a test the probe was withdrawn from the stack and leak tested at a vacuum equal to or greater than the maximum vacuum observed during the test. The equipment was then disassembled the filter to impinger line was rinsed with a known amount of DI Distilled H2O into the first impinger, and the components were then sealed with aluminum foil and transported to the mobile laboratory for sample recovery.

A field blank was similarly treated: charged, transported to the stack, leak tested, disassembled, and transported to the mobile laboratory for sample recovery. No additional gases were pulled through the field blank train.

METHOD 425 SAMPLE RECOVERY:

The filter and nozzle were separated from the probe. The probe was tilted and brushed three successive times while rinsing with DI Distilled H2O and rotating. Sterile surgical gloves were used during this process. All rinses were caught in an amber glass sample bottle. The nozzle and filter top half were then similarly cleaned and the rinsings were combined with the probe wash. The filter was removed from the filter holder with teflon coated forceps, folded and placed into a petri dish.

The first, second and third impingers were disassembled, weighed, and their contents transferred to an amber sample bottle. The impingers cross overs and filter bottom half were rinsed three times with DI Distilled H2O, and the rinses were combined with the impingate sample.

Aliquots of the reagents grade chemicals and filters were recovered for analysis as reagent blanks. All samples were sealed, fluid levels marked, labeled and logged on a chain of custody form. Upon completion of the test they were transported to the laboratory for analysis.

METHOD 425 SAMPLE ANALYSIS:

The probe/nozzle rinse was analyzed separately. The filter was digested and combined with the probe wash and impingate contents. A portion of the sample was analyzed for Hexavalent Chromium by the Diphenylcarbazide calorimetric method. The remainder of the sample was analyzed for total Chromium by atomic absorption.

The reagent blanks were similarly analyzed and an in-house spike was performed with a similar sample matrix, percent recoveries are reported.

METHOD 421: HYDROCHLORIC ACID (HCL)

METHOD 421 SAMPLING:

The sampling apparatus is the same as that which is described for EPA Method #5 and consisted of a quartz nozzle, heat traced quartz probe, borosilicate filter holder with a teflon-coated screen filter support, a teflon filter to impinger line and four modified Greenburg Smith impingers containing 100 ml sodium bicarbonate/sodium carbonate solution, 100 ml sodium bicarbonate/sodium carbonate solution, dry and silica gel.

Prior to the testing all sampling equipment was cleaned with successive rinses of soapy water, tap water, and distilled H2O. All sample containers were pre-cleaned by rinsing with sodium bicarbonate/sodium carbonate solution rinse and distilled H2O.

The sample train was charged, a Whatman QMA Quartz fiber filter was placed into the filter holder and the probe/nozzle/filter was put together and all sampling equipment was sealed and transported to the stack for assembly.

The sampling equipment was assembled and leak tested at 10 inches Hg vacuum. The probe and filter components were heated to 250 + or - 25 degrees F. The probe was inserted into the stack and isokinetic sampling was initiated as per EPA Method #5.

Upon completion of a test the probe was withdrawn from the stack and leak tested at a vacuum equal to or greater than the maximum vacuum observed during the test. The equipment was then disassembled the filter to impinger line was rinsed with a known amount of sodium bicarbonate/sodium carbonate solution into the first impinger, and the components were then sealed with aluminum foil and transported to the mobile laboratory for sample recovery.

A field blank was similarly treated: charged, transported to the stack, leak tested, disassembled, and transported to the mobile laboratory for sample recovery. No additional gases were pulled through the field blank train.

METHOD 421 SAMPLE RECOVERY:

The filter and nozzle were separated from the probe. The probe was tilted and brushed three successive times while rinsing with sodium bicarbonate/sodium carbonate solution and rotating. Sterile surgical gloves were used during this process. All rinses were caught in an amber glass sample bottle. The nozzle and filter top half were then similarly cleaned and the rinsings were combined with the probe wash. The filter was removed from the filter holder with teflon coated forceps, folded and placed into a petri dish.

The first, second and third impingers were disassembled, weighed, and their contents transferred to an amber sample bottle. The impingers cross overs and filter bottom half were rinsed three times with sodium bicarbonate/sodium carbonate solution, and the rinses were combined with the impingate sample.

Aliquots of the reagents grade chemicals and filters were recovered for analysis as reagent blanks. All samples were sealed, fluid levels marked, labeled and logged on a chain of custody form. Upon completion of the test they were transported to the laboratory for analysis.

METHOD 421 SAMPLE ANALYSIS:

The filter was digested and combined with the probe wash and impingate contents. The sample was analyzed for Chloride by ion chromagraphy conductivity detection.

The reagent blanks were similarly analyzed and an in-house spike was performed with a similar sample matrix, percent recoveries are reported.

METHOD 13B: FLUORIDE

METHOD 13B SAMPLING:

The sampling apparatus is the same as that which is described for EPA Method #5 and consisted of a quartz nozzle, heat traced quartz probe, borosilicate filter holder with a teflon-coated screen filter support, a teflon filter to impinger line and four modified Greenburg Smith impingers containing 100 ml DI H_2O, 100 ml DI H_2O dry and silica gel.

Prior to the testing all sampling equipment was cleaned with successive rinses of soapy water, tap water, and distilled H_2O. All sample containers were pre-cleaned by rinsing with 6N HNO_3 rinse and distilled H_2O.

The sample train was charged, a Whatman filter was placed into the filter holder and installed between the 3rd and 4th impinger. The probe/nozzle bypass was put together and all sampling equipment was sealed and transported to the stack for assembly.

The sampling equipment was assembled and leak tested at 10 inches Hg vacuum. The probe and filter components were heated to 250 + or - 25 degrees F. The probe was inserted into the stack and isokinetic sampling was initiated as per EPA Method #5.

Upon completion of a test the probe was withdrawn from the stack and leak tested at a vacuum equal to or greater than the maximum vacuum observed during the test. The equipment was then disassembled the filter to impinger line was rinsed with a known amount of 0.1N NaOH into the first impinger, and the components were then sealed with aluminum foil and transported to the mobile laboratory for sample recovery.

A field blank was similarly treated: charged, transported to the stack, leak tested, disassembled, and transported to the mobile laboratory for sample recovery. No additional gases were pulled through the field blank train.

METHOD 13B SAMPLE RECOVERY:

The filter and nozzle were separated from the probe. The probe was tilted and brushed three successive times while rinsing with DI H2O and rotating. Sterile surgical gloves were used during this process. All rinses were caught in an amber glass sample bottle. The nozzle was then similarly cleaned and the rinsings were combined with the probe wash. The filter was removed from the filter holder with teflon coated forceps, folded and placed into a petri dish.

The first, second and third impingers were disassembled, weighed, and their contents transferred to an amber sample bottle. The impingers cross overs and filter bottom half were rinsed three times with DI H2O, and the rinses were combined with the impingate sample.

Aliquots of the reagents grade chemicals and filters were recovered for analysis as reagent blanks. All samples were sealed, fluid levels marked, labeled and logged on a chain of custody form. Upon completion of the test they were transported to the laboratory for analysis.

METHOD 429 DATA

COMPANY: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-26-90
REPORT #:62-232

METHOD 429
FIELD DATA @ 70'

RUN #:	1	2	3
TIME:	814	825	818
Vm (dry gas sampled)	130.02	131.43	130.4
Y (meter calib. factor)	0.991696	0.991696	0.991696
P bar (Barometric pressure)	30.25	30.34	30.4
P static (stack pressure, " H2O)	2.1	2.1	2.1
Delta H (differential meter press. " H2O)	1.05	1.06	1.05
Tm (meter temperature, R')	562	566	566
Vol H2O mls	397.1	408.1	412.8
Vm(std),dscf	123.25	124.08	123.35
Bws-H2O vapor	0.1324	0.1348	0.1368
MF-moisture factor	0.8676	0.8652	0.8632
% CO2	7.3	7.6	7.3
% O2	8.2	8	8
% N2	84.5	84.4	84.7
Md-MW stk gas,dry	29.5	29.54	29.49
Ms-MW stk gas,wet	27.98	27.98	27.92
Cp-pitot tube	0.84	0.84	0.84
Avg sq rt ^p	1.852	1.881	1.868
T stack, R'	1363	1399	1398
Stack area,ft2	1.67	1.67	1.67
Vs-fps	168.34	172.97	171.72
Qstd-dscfm	5783	5790	5750
Area noz,ft2	1.97E-04	1.97E-04	1.97E-04
Sample time	180	180	180
% Isokinetic	100.4	101	101.1

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
REPORT #:62-232
DATE: 7-24 thru 7-27-90

Summary of Results for PAH Emissions

CARB Method 429; Run-1

Pollutant	ng/train	Vm std	DSCFM		gr/DSCF	lb/hr
Naphthalene Total	102320	123.25	5783		1.28E-05	6.34E-04
Acenaphthylene Total	374	123.25	5783	*	4.67E-08	2.32E-06
Acenaphthene Total	2080	123.25	5783	*	2.60E-07	1.29E-05
Fluorene Total	332	123.25	5783	*	4.15E-08	2.06E-06
Phenanthrene Total	1800	123.25	5783		2.25E-07	1.12E-05
Anthracene Total	311	123.25	5783	*	3.89E-08	1.93E-06
Fluoranthene Total	490	123.25	5783		6.12E-08	3.04E-06
Pyrene Total	625	123.25	5783		7.81E-08	3.87E-06
Benzo(a)anthracene Total	208	123.25	5783	*	2.60E-08	1.29E-06
Chrysene Total	304	123.25	5783		3.80E-08	1.88E-06
Benzo(b)floranthene Total	169	123.25	5783		2.11E-08	1.05E-06
Benzo(k)floranthene Total	356	123.25	5783	*	4.45E-08	2.21E-06
Benzo(a)pyrene Total	659	123.25	5783	*	8.23E-08	4.09E-06
Dibenz(a,h)anthracene Total	726	123.25	5783	*	9.07E-08	4.50E-06
Benzo(g,h,i)perylene Total	525	123.25	5783	*	6.56E-08	3.25E-06
Indeno(1,2,3-cd)pyrene Total	556	123.25	5783	*	6.95E-08	3.45E-06

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for PAH Emissions

CARB Method 429; Run-2

Pollutant	ng/train	Vm std	DSCFM		gr/DSCF	lb/hr
Naphthalene Total	80430	124.08	5790		9.98E-06	4.96E-04
Acenaphthylene Total	301	124.08	5790		3.74E-08	1.86E-06
Acenaphthene Total	484	124.08	5790	*	6.01E-08	2.98E-06
Fluorene Total	462	124.08	5790		5.73E-08	2.85E-06
Phenanthrene Total	1470	124.08	5790		1.82E-07	9.06E-06
Anthracene Total	318	124.08	5790	*	3.95E-08	1.96E-06
Fluoranthene Total	252	124.08	5790		3.13E-08	1.55E-06
Pyrene Total	287	124.08	5790		3.56E-08	1.77E-06
Benzo(a)anthracene Total	198	124.08	5790	*	2.46E-08	1.22E-06
Chrysene Total	132	124.08	5790		1.64E-08	8.14E-07
Benzo(b)floranthene Total	253	124.08	5790	*	3.14E-08	1.56E-06
Benzo(k)floranthene Total	376	124.08	5790	*	4.67E-08	2.32E-06
Benzo(a)pyrene Total	572	124.08	5790	*	7.10E-08	3.53E-06
Dibenz(a,h)anthracene Total	770	124.08	5790	*	9.56E-08	4.75E-06
Benzo(g,h,i)perylene Total	564	124.08	5790	*	7.00E-08	3.48E-06
Indeno(1,2,3-cd)pyrene Total	617	124.08	5790	*	7.66E-08	3.80E-06

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for PAH Emissions

CARB Method 429; Run-3

Pollutant	ug/train	Vm std	DSCFM		gr/DSCF	lb/hr
Naphthalene Total	85690	123.35	5750		1.07E-05	5.28E-04
Acenaphthylene Total	444	123.35	5750	*	5.54E-08	2.73E-06
Acenaphthene Total	1190	123.35	5750	*	1.49E-07	7.33E-06
Fluorene Total	334	123.35	5750		4.17E-08	2.06E-06
Phenanthrene Total	1540	123.35	5750		1.92E-07	9.49E-06
Anthracene Total	378	123.35	5750	*	4.72E-08	2.33E-06
Fluoranthene Total	190	123.35	5750		2.37E-08	1.17E-06
Pyrene Total	451	123.35	5750		5.63E-08	2.78E-06
Benzo(a)anthracene Total	246	123.35	5750	*	3.07E-08	1.52E-06
Chrysene Total	200	123.35	5750	*	2.50E-08	1.23E-06
Benzo(b)floranthene Total	360	123.35	5750	*	4.49E-08	2.22E-06
Benzo(k)floranthene Total	418	123.35	5750	*	5.22E-08	2.57E-06
Benzo(a)pyrene Total	697	123.35	5750	*	8.70E-08	4.29E-06
Dibenz(a,h)anthracene Total	918	123.35	5750	*	1.15E-07	5.65E-06
Benzo(g,h,i)perylene Total	704	123.35	5750	*	8.79E-08	4.34E-06
Indeno(1,2,3-cd)pyrene Total	724	123.35	5750	*	9.04E-08	4.46E-06

* Values reported are lower detection limit

Method 429; PAH FIELD DATA

Client: PACIFIC ENERGY Report #: _____
Location: OXNARD UNIT-2
Operator: JON JEN
Date: 7-24-90
Run No: 1
Pump No.:
Meter Box No.: 1002 Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 35-2

Post Test Leak Chk.

Leak Rate: _____ cfm
Vacuum: _____ (in Hg)

Ambient Temp: 65° F.
Barometric Pressure: 30.25
Static Pressure, (in Hg): +2.1
Assumed Moisture %: 13.0 MW_w=27.5
Nozzle Ident. No.: _____
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: QUARTZ
Filter Number: 0
Duct Diam. (in): 17.5

6.

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) Ratio	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or L Impinger (°F)
8	8:14	5.0	943	4.10	.766	1.18	62.40	95	90		58.8
7	8:25.25	6.0	947	4.05	.765	1.17	71.02	100	91		57.6
6	8:36.50	6.0	945	3.85	.745	1.12	79.45	100	90		47.6
5	8:47.75	6.0	941	3.65	.725	1.07	87.90	100	88		51.2
4	8:59	5.5	901	3.10	.681	.95	96.06	103	90		46.6
3	9:10.25	6.0	865	3.15	.694	.98	103.72	100	89		50.2
2	9:21.50	5.0	852	2.85	.668	.91	111.53	105	92		52.1
1	9:32.75	5.0	852	2.85	.668	.91	119.05	105	92		53.8
	9:44						126.69				
Total								avg.	avg.		
Average								avg.			

Meth. 429; PAH FIELD DATA

Client: Pacific Energy Report #:
Location: Oxnard Unit #2
Operator: JDN/JEM
Date: 7-24-90
Run No: 1 (cont'd.)
Pump No.: hi-flo
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 3G-2

Post Test Leak Chk.
Leak Rate: <.001 cfm
Vacuum: 8.0 (in Hg)

Ambient Temp: 65°F
Barometric Pressure: 30.25
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13 MW_{mix} = 27.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: Quartz
Filter Number: Ø
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH rate (in H_2O)	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or L Impinger (°F)
1	9:44	5.5	852	2.85	.671	.92	126.69	109	94		52.4
2	9:55.25	5.5	852	2.85	.671	.92	134.22	109	94		51.6
3	10:06.50	6.0	865	3.20	.715	1.02	141.77	114	101		49.4
4	10:17.75	6.0	868	3.15	.707	1.00	149.80	111	100		51.4
5	10:29	6.0	940	3.60	.741	1.08	157.76	116	103		54.6
6	10:40.25	6.5	944	3.80	.766	1.14	166.15	122	106		56.8
7	10:51.50	6.5	944	4.0	.786	1.19	174.75	120	108		55.4
8	11:02.75	6.5	944	4.0	.786	1.19	183.59	120	108		55.2
	11:14						192.42				
		X=	903	3.43					102		
					$\overline{\Delta H}$ = 1.05		130.02				
					ISO= 100.20						
					velfps= 169.70						
								avg.	avg.		
Total								avg.			
Average											

PAH-2 FIELD DATA

Client: Par. Energy Report #:
Location: Oxnard #2
Operator: JDN/JEM
Date: 7-25-90
Run No: 2 (cont'd)
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .90
Pitot Tube No.: 3Q-2

Post Test Leak Chk.

Leak Rate: .012 cfm
Vacuum: 8.5 (in Hg)

Ambient Temp: 75°F
Barometric Pressure: 30.34
Static Pressure, (in Hg): 21
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: quartz
Filter Number:
Duct Diam. (in): 17.5

erse Point umber	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) rate	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
1	9:55	5.5	931	3.15	.693	.96	450.96	112	105		50.6
2	10:06.75	5.5	931	3.15	.693	.96	458.76	112	105		50.8
3	10:17.5	5.5	937	3.20	.695	.97	466.56	109	105		51.8
4	10:28.75	5.5	937	3.45	.722	1.04	474.38	109	105		55.2
5	10:40	6.0	938	3.60	.737	1.08	482.50	109	105		55.8
6	11:51.25	6.0	941	3.75	.751	1.11	490.76	110	104		58.0
7	11:02.5	6.0	940	3.90	.765	1.15	499.23	108	104		58.8
8	11:13.75	6.0	942	4.0	.776	1.18	507.84	110	104		59.0
	11:25						516.63				
			$\bar{X}$ = 939	3.54					106		
					$\bar{\Delta H}$ = 1.06						
					±50 = 100.29						
					vel fps = 174.52						
								avg.	avg.		

PAH-2

FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN/JEM
Date: 7-25-90
Run No: 2
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .90
Pitot Tube No.: 3A-2

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Pre-Test
.01 cfm
8.0 in Hg

Ambient Temp: 70°F
Barometric Pressure: 30.34
Static Pressure, (in Hg): Zero
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: Quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O) raw	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or La Impinger (°F)
8	8:25	6.0	949	4.15	.776	1.20	385.20	98	98		47.6
7	8:36.25	6.0	948	4.10	.780	1.20	393.97	111	98		46.0
6	8:47.50	6.0	944	3.95	.767	1.16	402.74	109	100		47.8
5	8:58.75	5.5	944	3.65	.741	1.08	411.37	111	103		55.4
4	9:10	5.0	940	3.10	.682	.94	419.71	109	102		57.2
3	9:21.25	5.0	936	3.25	.702	.98	427.38	112	104		50.0
2	9:32.50	5.0	931	3.20	.697	.97	435.28	111	104		53.2
1	9:43.75	5.0	931	3.20	.697	.97	443.12	111	104		53.4
	9:55						450.96				
Total								avg.	avg.		
Average								avg.			

Meth 5/429 PAH - 3 FIELD DATA

Client: PACIFIC ENERGY Report #:
Location: OXNARD UNIT #2
Operator: JON JEN
Date: 7-26-90
Run No: 3
Pump No.: GAST
Meter Box No.: 1002 Factor:
Meter ΔH @: .90
Pitot Tube No.: 3Q-2

~~Post~~ Pre- Test Leak Chk.

Leak Rate: .016 cfm
Vacuum: 6.0 (in Hg)

Ambient Temp:
Barometric Pressure: 30.40
Static Pressure, (in Hg): +2.0
Assumed Moisture %: 13 MW_d = 27.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: QUARTZ
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O)		Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
					r	ΔH					
8	8:18	3.5	950	4.15	.782	1.21	664.00	110	96		53.8
7	8:29.25	3.5	942	4.0	.774	1.18	672.82	115	97		54.8
6	8:40.50	3.5	942	3.9	.770	1.16	681.53	117	104		53.2
5	8:51.75	3.0	940	3.6	.743	1.08	690.19	118	107		61.0 } inc.
4	9:03	3.0	931	3.2	.706	.98	698.60	118	112		49.8
3	9:14.25	3.0	933	3.15	.694	.96	706.55	110	110		52.4
2	9:25.50	3.0	930	3.10	.691	.95	714.36	112	111		53.0
1	9:36.75	3.0	928	3.10	.692	.95	722.15	114	111		53.6
	9:48						729.86				
Total								avg.	avg.		
Average								avg.			

Meth. 429 PAH FIELD DATA

Client: Pac Energy Report #:
Location: Oxnard #2
Operator: JDN / JEM
Date: 7-26-90
Run No: 3 (cont'd)
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 3G-2

Post Test Leak Chk.

Leak Rate: .008 cfm
Vacuum: 5.0 (in Hg)

Ambient Temp: 75°
Barometric Pressure: 30.40
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: - Quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
1	9:49	3.5	930	3.10	.680	.94	729.86	100	105		56.0
2	9:59.25	3.5	932	3.15	.686	.95	737.51	101	106		55.4
3	10:10.50	3.5	933	3.20	.691	.97	745.23	101	106		54.8
4	10:21.75	4.0	935	3.40	.708	1.01	753.06	96	105		55.6
5	10:33	4.5	943	3.55	.726	1.05	761.00	109	99		59.6
6	10:44.25	4.5	947	3.70	.737	1.09	769.20	107	96		65.0
7	10:55.5	4.5	947	3.85	.753	1.13	777.49	108	97		52.6
8	11:06.75	4.5	947	3.90	.760	1.14	785.90	109	99		54.4
	11:18						794.40				
		X=	938	3.49					106		
					ΔH=	1.05					

CASE NARRATIVE
TRIANGLE LABORATORIES OF HOUSTON, INC.
12823 PARK ONE DRIVE
SUGAR LAND, TX 77478
(713) 240-5330

DATE: October 23, 1990

TLH PROJECT NO: TLH #158

OBJECTIVE: Determination of polyaromatic hydrocarbons (PAHs) in MM5 trains.

METHOD

Method: California Air Resources Board Method 429 (CARB 429) adopted September 12, 1989.

PAH Extraction and Cleanup:

A modification of CARB 429 was approved to permit analysis of a single pooled extract from all sample containers. An alternate standard (d_{10}-anthracene) was spiked into impinger water in the separatory funnel just prior to extraction. The impinger extract was combined with XAD-2 resin from the trap in a Soxhlet extraction apparatus. Following addition of internal standards, the soxhlet extraction was performed in the manner prescribed in CARB 429. The deuterated standards were spiked at 50 and 100 µg levels.

Following extraction, the samples were brought to 25 ml final volume with methylene chloride and stored in the dark at 4°C. A 0.5 ml sample portion was combined with a 0.5 ml portion of the recovery standard and submitted to GC-MS for final analysis.

GC/MS

High resolution gas chromatography and high resolution mass spectrometry (HRGC/HRMS) were used for analysis of the sample extracts.

The calibration range for PAH extracts was from 0.1 - 5.0 ng/µl. For diluted samples the calibration range represents 5 - 250 µg per train.

The GC-MS analysis conditions are listed below:

GC CONDITIONS:

GC:	HP5890
Column:	60m x 0.25mm DB-5
Injector:	Splitless, 30 sec. valve time, 300°C
Interface Temp:	300°C
Program:	125°C for 5.5 min then 10°/min to 300°C final temperature and hold

MS INSTRUMENT:

Selected Ion Recording Mode

See Table 1 for PAH ions monitored

Total cycle time for SIR mode was less than 1 sec/cycle

Resolving power: 5000 (10% valley definition)

REPORT

The report is divided into the following sections:

1. Sample Documentation
2. Sample Data
3. Calibration Data

These sections provide all available information for complete sample tracking and sample review, including quality assurance evaluations.

1. Sample Documentation: This section provides information on sample tracking and handling during shipment, receiving and processing. Included are the chain-of-custody and log-in instrument sheets.

2. Sample Data: This section contains tabulated results along with raw data that is useful for data review and quality assurance or for reconstructing the results. Included in this section is the following information:

   a. Quantitation Report
   b. Interim Report
   c. Chromatograms

Quantitation Report:The quantitation report is headed by the filename, Client ID and TLH sample number, sample ID and project number, sample size and matrix, CONCAL and ICAL information, spike file used for the calculations, and further shipment information. An internal alternate and surrogate standard recovery summary containing the following information is found at the end of the report:

Concentration
% recovery
Retention times and flags

Interim Report: The interim report is headed by the analogous sample information and filenames of the pertinent calibration data. It provides tabulated raw data (retention times, areas) along with ion ratios and recoveries.

Chromatograms: Mass Chromatograms corresponding to the ions monitored for each analyte and each standard and instrument performance monitoring compound (PFK), are included for each sample. Each trace is headed by information corresponding to the mass being monitored.

3. Calibration Data: The calibration data are presented for the daily calibration (CCAL) as well as the initial calibration (ICAL). The performance check solution (PCS) runs that precede any type of calibration procedure and conclude a 12-hour run period are also included.

The calibration data are used to establish the valid range for quantitation, and to verify analyte identification criteria. They are reported as:

a. Calibration Check
b. Chromatograms

Calibration Check: Calculated response factors, retention time data, as well as the percent difference are presented in the CONCAL summary.

The ICAL summary provides information on response factors over the calibration range, along with the variance in data as determined by the percent relative standard deviation.

Chromatograms: Mass Chromatograms and areas of integrated peaks corresponding to the standards present in the calibration solutions are included. This data can be used to reconstruct the calculated RF, %D, %RSD, RT, RRT, and ratio results.

RESULTS AND DISCUSSION

A summary of the results is presented below:

PAH ANALYSIS
(Values listed in ng)

Analyte	Method Blank Blank	Run 1	Run 2	Run 3	Run 4
Naphthalene	76930	18590	102320	80430	85690	46760
2-Methyl-Naphthalene	ND	978	8210	7340	8240	1750
2-Chloro-Naphthalene	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	301	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	462	334	ND
Phenanthrene	ND	ND	1800	1470	1540	ND
Anthracene	ND	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	490	252	190	ND
Pyrene	ND	ND	625	287	451	ND
Benz-a-Anthracene	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	304	132	ND	ND
Benzo-b-Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo-k-Fluoranthene	ND	ND	ND	ND	ND	ND
Benzo-e-Pyrene	ND	ND	ND	ND	ND	ND
Benzo-a-Pyrene	ND	ND	ND	ND	ND	ND
Perylene	ND	ND	ND	ND	ND	ND
Indeno-[123-cd]-Pyrene	ND	ND	ND	ND	ND	ND
Dibenz-[ah]-Anthracene	ND	ND	ND	ND	ND	ND
Benzo-[ghi]-Perylene	ND	ND	ND	ND	ND	ND

ND = not detected

Standard solution spiking.
The following standards were spiked at 50,000 ng:
d8-Naph, d10-2-Me-Naph, d7-2-Cl-Naph, d8-Acenaph, d10-Acenaph then, d10-Fluorene, d10-Phenan, d10-Fluoran, d10-Pyrene, d12-B-a-Anth, d12-Chrysene, d10-Anth, d14-Terphenyl.
The following standards were spiked at 100,000 ng:
d12-B-b-Fluoran, d12-B-k-Fluoran, d12-B-a-Pyrene, d12-Perylene, d12-I-123-cd-Py, d14-DiB-ah-Anth, d12-B-ghi-Pery, d12-B-e-Pyrene.

The method blank showed the presence of 77 μg Naphthalene. This is attributed to contaminants known to exist in the XAD-2 resin.

The sample labeled "Blank" shows the presence of 18.5 μg of Naphthalene and small amounts of 2-Methyl-Naphthalene.

Samples Run 1, Run 2, Run 3, and Run 4 were found to contain Naphthalene quantities ranging from 47 to 102 μg of Naphthalene, and other PAHs in smaller quantities.

The method blank and the samples show good recoveries that are within the QC advisory limit with the exception of the following: sample Run 1 shows recoveries for d8-Acenaphthylene and d12-Perylene that are below the QC advisory limit, and sample Run 3 shows recovery for d8-Acenaphthylene that is also below the QC advisory limit. Based on signal-to-noise ratios that far exceed the proposed 10:1 limit, these recoveries are considered acceptable. No quantities of the corresponding analytes were detected in the two samples.

CALCULATIONS

RRF	=	relative response factor
n	=	analyte
i	=	internal standard
s	=	surrogate standard
r	=	recovery standard
A	=	area for ion monitored
$\overline{RRF}$	=	mean RRF
% RSD	=	percent relative standard deviation
σ_{n-1}	=	standard deviation
% D	=	% difference between ICAL and CCAL
Q	=	Quantity
W	=	weigh of sample extracted, g
V	=	volume of sample extracted, L
R	=	recovery, %
RPD	=	relative percent difference, %
C_1, C_2	=	sample and duplicate sample concentrations
A (in DL equation)	=	for analyte: area of the noise in the quantitation ion for Fluorene
	=	for standard: area of the d10-Fluorene internal standard
DL	=	detection limit

$$RRF_n = \frac{A_n * Q_i}{A_i * Q_n}$$

$$RRF_i = \frac{A_i * Q_r}{A_r * Q_i}$$

$$RRF_s = \frac{A_s * Q_r}{A_r * Q_s}$$

$$\% \ RSD = \frac{\sigma_{n-1}}{\overline{RRF}} * 100$$

$$\% \ D = \frac{|\overline{RRF}_{ICAL} - RRF_{CCAL}|}{\overline{RRF}_{ICAL}} * 100$$

$$Q_n = \frac{A_n * Q_i}{A_i * (RRF_{CCAL})_n}$$

$$Q_i = \frac{A_i * Q_r}{A_r * (RRF_{CCAL})_i}$$

$$Q_s = \frac{A_s * Q_r}{A_r * (RRF_{CCAL})_s}$$

$$R_i(\%) = \frac{A_i * Q_r}{A_r * (RRF_{CCAL})_i * Q_i} * 100$$

$$R_s \ (\%) = \frac{A_s * Q_r}{A_r * (RRF_{CCAL})_s * Q_s} * 100$$

$$DL = \frac{2.5 * A_A * Q_i}{A_i * RRF_{CCAL}}$$

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....: E001531
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: TLI BLANK
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MMS
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-19-3
PROJECT NUMBER: 158
DATE RECEIVED.: / /
DATE COLLECTED: / /
SHIPMENT NO...: 61171542

NAME	AMT(ng)	NUMBER	DL	RT	FLAGS
Naph	76930			5:03	
2-Me-Naph	ND		237		---
2-Cl-Naph	ND		268		---
Acenaphthen	ND		376		---
Acenaph	ND		224		---
Fluorene	ND		323		---
Phenan	ND		322		---
Anth	ND		319		---
Fluoran	ND		95.9		---
Pyrene	ND		96.2		---
B-a-Anth	ND		200		---
Chrysene	ND		158		---
B-b-Fluoran	ND		249		---
B-k-Fluoran	ND		356		---
B-e-Pyrene	ND		321		---
B-a-Pyrene	ND		429		---
Perylene	ND		718		---
I-123-cd-Py	ND		596		---
DiB-ah-Anth	ND		711		---
B-ghi-Pery	ND		575		---

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d14-Terphenyl	56790	114	19:13	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d10-Anth	46170	92.3	14:56	---

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PAHH_RPT rev:1.01

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....:	E001531	CLIENT ID....:	PETROCHEM	TLI NUMBER....:	2-19-3
CONCAL.....:	E001525	SAMPLE ID....:	TLI BLANK		
ANALYST.....:	XL	ANALYSIS DATE:	10/19/90	PROJECT NUMBER:	158
SAMPLE SIZE..:	1.00	SAMPLE MATRIX:	MM5	DATE RECEIVED.:	/ /
ICAL DATE....:	10/19/90	SAMPLE ORIGIN:	CALIFORNI	DATE COLLECTED:	/ /
SPIKE FILE...:	SPPAH429			SHIPMENT NO...:	61171542

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RT	FLAGS
d8-Naph	46640	93.3	5:00	---
d10-2-Me-Naph	48430	96.9	7:03	---
d7-2-Cl-Naph	49800	99.6	8:39	---
d8-Acenaph	45270	90.5	9:58	---
d10-Acenaphthen	45580	91.2	10:31	---
d10-Fluorene	52560	105	12:03	---
d10-Phenan	50560	101	14:48	---
d10-Fluoran	49070	98.1	18:05	---
d10-Pyrene	46710	93.4	18:39	---
d12-B-a-Anth	43160	86.3	21:49	---
d12-Chrysene	44860	89.7	21:54	---
d12-B-b-Fluoran	95000	95.0	24:42	---
d12-B-k-Fluoran	84500	84.5	24:47	---
d12-B-a-Pyrene	80570	80.6	25:42	---
d12-Perylene	85090	85.1	25:58	---
d12-I-123-cd-Py	91150	91.2	30:02	---
d14-DiB-ah-Anth	88340	88.3	30:07	---
d12-B-ghi-Pery	82280	82.3	31:15	---

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Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

10/22/90

FILE NAME....: E001533
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: BLANK
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MM5
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-19-2
PROJECT NUMBER: 158
DATE RECEIVED.: 08/31/90
DATE COLLECTED: 07/30/90
SHIPMENT NO...: 61171542

NAME	AMT(ng)	NUMBER	DL	RT	FLAGS
Naph	18590			4:54	_B_
2-Me-Naph	978			7:02	---
2-Cl-Naph	ND		246		---
Acenaphthen	ND		347		---
Acenaph	ND		183		---
Fluorene	ND		308		---
Phenan	ND		302		---
Anth	ND		299		---
Fluoran	ND		84.8		---
Pyrene	ND		81.7		---
B-a-Anth	ND		167		---
Chrysene	ND		132		---
B-b-Fluoran	ND		219		---
B-k-Fluoran	ND		300		---
B-e-Pyrene	ND		248		---
B-a-Pyrene	ND		331		---
Perylene	ND		612		---
I-123-cd-Py	ND		511		---
DiB-ah-Anth	ND		619		---
B-ghi-Pery	ND		488		---

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d14-Terphenyl	63100	126	19:10	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d10-Anth	58820	118	14:53	---

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PAHH_RPT rev:1.01

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

10/22/90

FILE NAME....: E001533 CLIENT ID....: PETROCHEM TLI NUMBER....: 2-19-2
CONCAL.....: E001525 SAMPLE ID....: BLANK
ANALYST.....: XL ANALYSIS DATE: 10/19/90 PROJECT NUMBER: 158
SAMPLE SIZE..: 1.00 SAMPLE MATRIX: MM5 DATE RECEIVED.: 08/31/90
ICAL DATE....: 10/19/90 SAMPLE ORIGIN: CALIFORNI DATE COLLECTED: 07/30/90
SPIKE FILE...: SPPAH429 SHIPMENT NO...: 61171542

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RT	FLAGS
d8-Naph	46560	93.1	4:51	---
d10-2-Me-Naph	49420	98.8	6:56	---
d7-2-Cl-Naph	48890	97.8	8:33	---
d8-Acenaph	50290	101	9:54	---
d10-Acenaphthen	44740	89.5	10:26	---
d10-Fluorene	49780	99.6	11:59	---
d10-Phenan	48720	97.4	14:44	---
d10-Fluoran	50200	100	18:01	---
d10-Pyrene	49750	99.5	18:36	---
d12-B-a-Anth	46790	93.6	21:46	---
d12-Chrysene	48400	96.8	21:51	---
d12-B-b-Fluoran	97730	97.7	24:39	---
d12-B-k-Fluoran	90740	90.7	24:43	---
d12-B-a-Pyrene	94390	94.4	25:39	---
d12-Perylene	90270	90.3	25:54	---
d12-I-123-cd-Py	96190	96.2	29:59	---
d14-DiB-ah-Anth	91670	91.7	30:03	---
d12-B-ghi-Pery	87710	87.7	31:11	---

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B = BLANK CONTAMINATION

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

10/22/90

FILE NAME....: E001534
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: RUN 1
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MMS
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-17-1
PROJECT NUMBER: 158
DATE RECEIVED.: 08/31/90
DATE COLLECTED: 07/24/90
SHIPMENT NO...: 61171542

NAME	AMT(ng)	NUMBER	DL	RT	FLAGS
Naph	102320			4:56	_B_
2-Me-Naph	8210			7:05	---
2-Cl-Naph	ND		260		---
Acenaphthen	ND		374		---
Acenaph	ND		2080		---
Fluorene	ND		332		---
Phenan	1800			14:52	---
Anth	ND		311		---
Fluoran	490			18:08	---
Pyrene	625			18:43	---
B-a-Anth	ND		208		---
Chrysene	304			22:00	---
B-b-Fluoran	ND		257		---
B-k-Fluoran	ND		356		---
B-e-Pyrene	ND		493		---
B-a-Pyrene	ND		659		---
Perylene	ND		1620		---
I-123-cd-Py	ND		556		---
DiB-ah-Anth	ND		726		---
B-ghi-Pery	ND		525		---

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d14-Terphenyl	63160	126	19:14	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d10-Anth	47050	94.1	14:56	---

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PAHH_RPT rev:1.01

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....: E001534
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: RUN 1
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MM5
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-17-1
PROJECT NUMBER: 158
DATE RECEIVED.: 08/31/90
DATE COLLECTED: 07/24/90
SHIPMENT NO...: 61171542

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RT	FLAGS
d8-Naph	46860	93.7	4:53	---
d10-2-Me-Naph	51680	103	6:58	---
d7-2-Cl-Naph	52310	105	8:36	---
d8-Acenaph	4990	9.97	9:56	_V_
d10-Acenaphthen	46900	93.8	10:29	---
d10-Fluorene	52190	104	12:03	---
d10-Phenan	53020	106	14:48	---
d10-Fluoran	49450	98.9	18:05	---
d10-Pyrene	48960	97.9	18:39	---
d12-B-a-Anth	42490	85.0	21:49	---
d12-Chrysene	46410	92.8	21:55	---
d12-B-b-Fluoran	94280	94.3	24:43	---
d12-B-k-Fluoran	86550	86.5	24:48	---
d12-B-a-Pyrene	53670	53.7	25:43	---
d12-Perylene	38660	38.7	25:58	_V_
d12-I-123-cd-Py	99920	99.9	30:03	---
d14-DiB-ah-Anth	88430	88.4	30:07	---
d12-B-ghi-Pery	92160	92.2	31:16	---

¦_____ __/__/__¦ PAHH_RPT rev:1.01

B = BLANK CONTAMINATION
V = RECOVERY BELOW QC ADVISORY LIMIT; DATA VALID BASED ON SIGNAL-TO-NOISE RATIO

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....: E001535
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: RUN 2
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MM5
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-17-2
PROJECT NUMBER: 158
DATE RECEIVED.: 08/31/90
DATE COLLECTED: 07/24/90
SHIPMENT NO...: 61171542

NAME	AMT(ng)	NUMBER	DL	RT	FLAGS
Naph	80430			4:56	_B_
2-Me-Naph	7340			7:05	---
2-Cl-Naph	ND		246		---
Acenaphthen	301			10:36	---
Acenaph	ND		484		---
Fluorene	462			12:08	---
Phenan	1470			14:52	---
Anth	ND		318		---
Fluoran	252			18:08	---
Pyrene	287			18:42	---
B-a-Anth	ND		198		---
Chrysene	132			21:59	---
B-b-Fluoran	ND		253		---
B-k-Fluoran	ND		376		---
B-e-Pyrene	ND		428		---
B-a-Pyrene	ND		572		---
Perylene	ND		840		---
I-123-cd-Py	ND		617		---
DiB-ah-Anth	ND		770		---
B-ghi-Pery	ND		564		---

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d14-Terphenyl	61610	123	19:14	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d10-Anth	28430	56.9	14:57	---

|_____ __/__/__|

PAHH_RPT rev:1.01

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....: E001535
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: RUN 2
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MM5
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-17-2
PROJECT NUMBER: 158
DATE RECEIVED.: 08/31/90
DATE COLLECTED: 07/24/90
SHIPMENT NO...: 61171542

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RT	FLAGS
d8-Naph	48230	96.5	4:52	---
d10-2-Me-Naph	54100	108	6:58	---
d7-2-Cl-Naph	55940	112	8:36	---
d8-Acenaph	21700	43.4	9:56	---
d10-Acenaphthen	47300	94.6	10:30	---
d10-Fluorene	55420	111	12:03	---
d10-Phenan	52350	105	14:48	---
d10-Fluoran	47510	95.0	18:05	---
d10-Pyrene	45060	90.1	18:39	---
d12-B-a-Anth	45120	90.2	21:49	---
d12-Chrysene	46810	93.6	21:55	---
d12-B-b-Fluoran	96610	96.6	24:43	---
d12-B-k-Fluoran	82760	82.8	24:48	---
d12-B-a-Pyrene	62520	62.5	25:43	---
d12-Perylene	75200	75.2	25:58	---
d12-I-123-cd-Py	91180	91.2	30:03	---
d14-DiB-ah-Anth	84250	84.3	30:07	---
d12-B-ghi-Pery	86820	86.8	31:16	---

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PAHH_RPT rev:1.01

B = BLANK CONTAMINATION

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....:	E001536	CLIENT ID....:	PETROCHEM	TLI NUMBER....:	2-17-3
CONCAL.....:	E001525	SAMPLE ID....:	RUN 3		
ANALYST.....:	XL	ANALYSIS DATE:	10/19/90	PROJECT NUMBER:	158
SAMPLE SIZE..:	1.00	SAMPLE MATRIX:	MM5	DATE RECEIVED.:	08/31/90
ICAL DATE....:	10/19/90	SAMPLE ORIGIN:	CALIFORNI	DATE COLLECTED:	07/24/90
SPIKE FILE...:	SPPAH429			SHIPMENT NO...:	61171542

NAME	AMT(ng)	NUMBER	DL	RT	FLAGS
Naph	85690			4:56	_B_
2-Me-Naph	8240			7:05	---
2-Cl-Naph	ND		298		---
Acenaphthen	ND		444		---
Acenaph	ND		1190		---
Fluorene	334			12:08	---
Phenan	1540			14:52	---
Anth	ND		378		---
Fluoran	190			18:07	---
Pyrene	451			18:42	---
B-a-Anth	ND		246		---
Chrysene	ND		200		---
B-b-Fluoran	ND		360		---
B-k-Fluoran	ND		418		---
B-e-Pyrene	ND		522		---
B-a-Pyrene	ND		697		---
Perylene	ND		1110		---
I-123-cd-Py	ND		724		---
DiB-ah-Anth	ND		918		---
B-ghi-Pery	ND		704		---

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d14-Terphenyl	61800	124	19:14	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d10-Anth	51200	102	14:56	---

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PAHH_RPT rev:1.01

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....: E001536
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: RUN 3
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MM5
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-17-3
PROJECT NUMBER: 158
DATE RECEIVED.: 08/31/90
DATE COLLECTED: 07/24/90
SHIPMENT NO...: 61171542

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RT	FLAGS
d8-Naph	48130	96.3	4:53	---
d10-2-Me-Naph	47040	94.1	6:59	---
d7-2-Cl-Naph	54010	108	8:36	---
d8-Acenaph	10310	20.6	9:56	_V_
d10-Acenaphthen	46750	93.5	10:29	---
d10-Fluorene	50870	102	12:03	---
d10-Phenan	51590	103	14:48	---
d10-Fluoran	47790	95.6	18:05	---
d10-Pyrene	44950	89.9	18:39	---
d12-B-a-Anth	42420	84.8	21:49	---
d12-Chrysene	42900	85.8	21:55	---
d12-B-b-Fluoran	79600	79.6	24:42	---
d12-B-k-Fluoran	87030	87.0	24:47	---
d12-B-a-Pyrene	59980	60.0	25:42	---
d12-Perylene	66770	66.8	25:58	---
d12-I-123-cd-Py	90860	90.9	30:03	---
d14-DiB-ah-Anth	82690	82.7	30:07	---
d12-B-ghi-Pery	81360	81.4	31:15	---

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B = BLANK CONTAMINATION
V = RECOVERY BELOW QC ADVISORY LIMIT; DATA VALID BASED ON SIGNAL-TO-NOISE RATIO

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....: E001532
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: RUN 4
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MM5
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-19-1
PROJECT NUMBER: 158
DATE RECEIVED.: 08/31/90
DATE COLLECTED: 07/23/90
SHIPMENT NO...: 61171542

NAME	AMT(ng)	NUMBER	DL	RT	FLAGS
Naph	46760			4:54	_B_
2-Me-Naph	1750			7:04	
2-Cl-Naph	ND		245		---
Acenaphthen	ND		323		---
Acenaph	ND		176		---
Fluorene	ND		324		---
Phenan	ND		320		---
Anth	ND		317		---
Fluoran	ND		92.6		---
Pyrene	ND		86.2		---
B-a-Anth	ND		168		---
Chrysene	ND		140		---
B-b-Fluoran	ND		237		---
B-k-Fluoran	ND		295		---
B-e-Pyrene	ND		264		---
B-a-Pyrene	ND		353		---
Perylene	ND		640		---
I-123-cd-Py	ND		519		---
DiB-ah-Anth	ND		630		---
B-ghi-Pery	ND		462		---

SURROGATE RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d14-Terphenyl	60600	121	19:13	---

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE A)

NAME	AMT (ng)	% REC.	RT	FLAGS
d10-Anth	51610	103	14:55	---

|_____ __/__/__|

PAHH_RPT rev:1.01

Triangle Laboratories of Houston, Inc.
PAHH ANALYSIS (a)

FILE NAME....: E001532
CONCAL.....: E001525
ANALYST.....: XL
SAMPLE SIZE..: 1.00
ICAL DATE....: 10/19/90
SPIKE FILE...: SPPAH429

CLIENT ID....: PETROCHEM
SAMPLE ID....: RUN 4
ANALYSIS DATE: 10/19/90
SAMPLE MATRIX: MM5
SAMPLE ORIGIN: CALIFORNI

TLI NUMBER....: 2-19-1
PROJECT NUMBER: 158
DATE RECEIVED.: 08/31/90
DATE COLLECTED: 07/23/90
SHIPMENT NO...: 61171542

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	AMT (ng)	% REC.	RT	FLAGS
d8-Naph	46120	92.2	4:51	---
d10-2-Me-Naph	47210	94.4	6:57	---
d7-2-Cl-Naph	48790	97.6	8:34	---
d8-Acenaph	51720	103	9:55	---
d10-Acenaphthen	47580	95.2	10:28	---
d10-Fluorene	46950	93.9	12:01	---
d10-Phenan	45620	91.2	14:47	---
d10-Fluoran	45610	91.2	18:04	---
d10-Pyrene	46780	93.6	18:39	---
d12-B-a-Anth	45980	92.0	21:48	---
d12-Chrysene	45520	91.0	21:54	---
d12-B-b-Fluoran	89570	89.6	24:42	---
d12-B-k-Fluoran	91570	91.6	24:47	---
d12-B-a-Pyrene	87880	87.9	25:42	---
d12-Perylene	85590	85.6	25:58	---
d12-I-123-cd-Py	93900	93.9	30:02	---
d14-DiB-ah-Anth	89430	89.4	30:07	---
d12-B-ghi-Pery	91900	91.9	31:15	---

|_____ __/__/__|

PAHH_RPT rev:1.01

B = BLANK CONTAMINATION

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE #2 | JOB NO. 232 | SAMPLED BY: JEM

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS	ANALYSIS REQUIRED
	PACIFIC ENERGY							
60	METHOD 429 P/N-3	7-26-90		✓			1	
63	FILTER-3				✓		1	
61	SL/CON-3			✓			1	
64	TRAP-3				✓		1	
62	IMP-3			✓				
	PACIFIC ENERGY							
65	METHOD 429 P/N-4	7-23-90		✓			1	
68	FILTER-4				✓		1	
66	SL/CON-4			✓			1	
69	TRAP-4				✓		1	
67	IMP-4			✓			1	

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

METHOD 429 : PAH

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE #2 JOB NO. 232 SAMPLED BY: JEM

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS	ANALYSIS REQUIRED
50	PACIFIC ENERGY METHOD 429 P/N-1	7-24-90		✓			1	Composite & analyze for PAH - method 429
53	FILTER-1			✓			1	
51	SL/CON-1				✓		1	Front half & back half
54	TRAP-1				✓		1	
52	IMP-1			✓			1	Back half separate what?
55	PACIFIC ENERGY METHOD 429 P/N-2	7-25-90		✓			1	" "
58	FILTER-2			✓			1	
56	SL/CON-2				✓		1	
59	TRAP-2				✓		1	
57	IMP-2			✓			1	

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
James E Markesum	8-3-90	Faith Blyth	8/3/90
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

CHAIN OF CUSTODY RECORD

:T: PACIFIC ENERGY
OXNARD ICE #2

JOB NO. 232

SAMPLED BY: JON

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS.	ANALYSIS REQUIRED
70	PACIFIC ENERGY. Method 429 MeOH BLANK	7-30		✓				HOLD
71	PACIFIC ENERGY Method 429 H_2O BLANK			✓				
72	PACIFIC ENERGY Method 429 $MeCl_2$ BLANK			✓				
73	PACIFIC ENERGY Method 429 TOLULENE BLANK			✓				
74	PACIFIC ENERGY Method 429 FILTER BLANK				✓			
75	PACIFIC ENERGY Method 429 TRAP BLANK				✓			

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DAT
James E Markson		[signature]	8/3/90
RELINQUISHED BY:	DATE	RECEIVED BY:	DAT
RELINQUISHED BY:	DATE	RECEIVED BY:	DAT
RELINQUISHED BY:	DATE	RECEIVED BY:	DAT

15822

TRIANGLE LABORATORIES, INC.

XAD PUF VOST

TRAPS PREPARATION WORK ORDER FORM

Shipped 5/26/90

PLEASE RETURN THIS FORM WITH THE SAMPLES AFTER THE SAMPLING SESSION

Reference No: ____
P.O. Number: 00266
Customer ID: Petrochem

Order Date: 5.22.90
Due Date: 5.29.90 TUES

Type & No. of Traps: 5 XAD ___ PUF ___ VOST ___ Filter

Sample History

XAD Resin Batch No.: T547 from Supelco
PUF ▶ Sandwiched with XAD resin: yes / no
PUF ▶ Screen Required: yes / no

Fortification: XAD: yes / no → USB-S + USB-C PUF: yes / no Spiking Date: 5/26/90 BR
Spiking Sln ID: (O) B14-85-4 1000 µL (D) S8-39-1B/A 100 µL
Nominal Conc.: (O) 50 ~~ng/µL~~ ng/ml (D) 0.1 ng/µL

Nature & Amount of Surrogates:

37C14-2,3,7,8-TCDD	10 ng
13C12-2,3,4,7,8-PeCDF	10 ng
13C12-1,2,3,4,7,8-HxCDF	10 ng
13C12-1,2,3,4,7,8-HxCDD	10 ng
13C12-1,2,3,4,7,8,9-HpCDF	10 ng
Other:	___ ng
	___ ng

JOINT PROJECT
YES / NO

OBSERVER: G. R.

Also spike w/ 50ug terphenyl-d^{14}

Analysis Requisition

Selections circled by JEM
Date: 8-3-90

MM5 Front Half (separate): yes / no
MM5 Back Half (separate): yes / no
MM5 Front & Back Halves Pooled: yes / no

VOST Tandem: yes / no
VOST Separate: yes / no
PUF & Filter Pooled: y/n

PCDD / PCDF

Mono- through Octachlorinated: yes / no
Tri- through Octachlorinated: yes / no
Tetra- through Octachlorinated: yes / no
Confirmation of 2,3,7,8-TCDF: yes / no
Toxicity Equivalency Factor: yes / no

ORGANICS

HSL: yes / no
PAH: yes / no
PAHH: yes / no
PCB: yes / no
PCBH: yes / no

Shipping Information

Others: Do Not Analyze
Reagent Dignics
Hold 70-75

Special Requirements: Chain-of-Custody Seal: yes / no
Chain-of-Custody Form: yes / no
Others: ____

Mail to the attention of: Tim Brennan by 5.29.90 (date)

Mailing Address: Petrochem Environmental Services
(street address) 3207 Antonio Avenue
Air Bill No.: Bakersfield, CA 93380

Ph: (805) 327-7300
Fax: ____

METHOD 430 DATA

COMPANY: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

METHOD 430
FIELD DATA @ 70'

RUN #:	1	2	3
TIME:	814	825	818
Vm (dry gas sampled)	2.25	2.25	2.25
Y (meter calib. factor)	0.969159	0.969159	0.969159
P bar (Barometric pressure)	30.25	30.25	30.25
P static (stack pressure, " H20)	2.1	2.1	2.1
Delta H (differential meter press, " H20)	0	0	0
Tm (meter temperature, R')	568	572	570
Vm(std),dscf	2.06	2.04	2.05
Vm(std),dscm	0.058332	0.057766	0.058049
Sample time	60	60	60

COMPANY: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Method 430
Formaldehyde Results

Test Run	#1	#2	#3	average
Time	814	825	818	
Formaldehyde ug/l	5900	750	50	
Sample vol, l	0.033	0.033	0.031	
Formaldehyde, ug	195	25	2	
Vm std DSCF	2.06	20.4	20.5	
Vm std DSCM	0.058	0.058	0.058	
Volume Flow, DSCFM 1/	5747	5747	5747	
Concentrations :				
ug/dscf	95	1	0	32
ug/dscm	3357	427	27	1270
ppm	2.49	0.03	0.00	0.84
Emissions :				
lb/hr	0.0657	0.0008	0.0001	0.0222

1/ See Method 436 and Method 423 field data

Method 430 Formal. FIELD DATA

Client: Pacific Energy Report #:
Location: OXNARD UNIT #2
Operator: JDN TEZ
Date: 7-27-90
Run No: 1
Pump No.: small GAST
Meter Box No.: Pumemaker Factor:
Meter ΔH @: —
Pitot Tube No.:

Post Test Leak Chk.

Leak Rate: <.001 cfm
Vacuum: 5 (in Hg)

Ambient Temp:
Barometric Pressure:
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13.20
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): 1/4"
Probe Liner Material: SS
Filter Number: —
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	~~Filter Holder~~ PROBE Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
	833	Ø			Ø	871.79	110	117	370	
	845	Ø			Ø	872.19	107	104		
	8:56	Ø			Ø	872.54	106	104		
	9:06	Ø			Ø	872.90	103	105	376	
	9:19	Ø			Ø	873.27	109	109		
	9:27	Ø			Ø	873.53	108	108		
	9:43					874.04				
Total							avg.	avg.		
Average							avg.			

Meth. 430 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN / JEM
Date: 7-27-90
Run No: 2
Pump No.: Small gast
Meter Box No.: pump mtr Factor:
Meter ΔH @:
Pitot Tube No.:

Post Test Leak Chk.

Leak Rate: 0.001 cfm
Vacuum: 5 (in Hg)

Ambient Temp: 70°
Barometric Pressure:
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13.0
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .25
Probe Liner Material: SS
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O)	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
	9:48	Ø	Ø	Ø	Ø	874.04	109	107	364	
	9:58	Ø	Ø	Ø	Ø	874.45	112	108		
	10:08	Ø	Ø	Ø	Ø	874.85	113	110	361	
	10:18	Ø	Ø	Ø	Ø	875.24	112	111		
	10:28	Ø	Ø	Ø	Ø	875.64	116	114	361	
	10:38	Ø	Ø	Ø	Ø	876.03	112	111		
	10:44					876.29				
Total							avg.	avg.		
Average							avg.			

Meth. 430 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN/JEM
Date: 7-27-90
Run No: 3
Pump No.: Small gast Meter Factor:

Post Test Leak Chk.

Leak Rate: <.001 cfm
Vacuum: 5 (in Hg)

Ambient Temp: 70°F
Barometric Pressure:
Static Pressure, (in Hg): 2.6
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .25
Probe Liner Material: SS
Filter Number:
Duct Diam. (in): 17.5

Coast-to-Coast Analytical Services

Coast-to-Coast
Analytical Services
141 Suburban Road, Suite C-4
San Luis Obispo, California 93401
(805) 543-2553

Lab Number: As Listed
Collected: 07/27/90
Received: 07/31/90
Tested: As Listed
Collected by: JDN

ATTN: Faythe Blythe
Petro Chem Environmental
3207 Antonino Avenue
Bakersfield, CA 93308

Sample Description:

Proj. #232, Pacific Energy, Oxnard
Ice #2, Impingates, Samples As Listed

REPORT

LAB NUMBER	SAMPLE DESCRIPTION	LEVEL FOUND FORMALDEHYDE (ug/L)	(ug)
METHOD----------		CARB 430	
DETECTION LIMIT(PQL)**-----		50.	2.
DATE/ANALYST----------		08/03/90/RM	
G-2797-1	Run 1, Imp. 1 & 2, Volume = 33 ml.	5900.	195.
G-2797-2	Run 2, Imp. 1 & 2, Volume = 33 ml.	750.	25.
G-2797-3	Run 3, Imp. 1 & 2, Volume = 31 ml.	<50.	<2.
G-2797-4	Run 4, Imp. 1 & 2, Volume = 28 ml.	150.	4.
G-2797-5	Field Blank, Imp. 1, Volume = 30 ml.	100.	3.
G-2797-6	Spike Volume = 30 ml.	1000.	31.
	SPIKED AT	1400.	42.
	PERCENT RECOVERY	73.	

**Practical Quantitation Limit

HPLC
08/06/90
G2797F.WR1/FORM1
MH/ml

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES
Mary Havlicek, Ph.D., President

RECEIVED AUG 20 1990

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE #2 JOB NO. 232 SAMPLED BY: JDN

SS 2797

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS	ANALYSIS REQUIRED
80	PACIFIC ENERGY method 430 RUN-1 IMP 1 of 2	7-27-90		✓	~~✓~~			COMPOSITE & ANALYZ FOR TOTAL FORMALDEHYDE BY HPLC
81	PACIFIC ENERGY method 430 RUN-1 2 of 2			✓	~~✓~~			
82	PACIFIC ENERGY method 430 RUN-2 1 of 2			✓	~~✓~~	-2		" "
83	PACIFIC ENERGY method 430 RUN-2 2 of 2			✓	~~✓~~			
84	Pacific Energy method 430 RUN-3 1 of 2			✓	~~✓~~	-3		" "
85	PACIFIC ENERGY method 430 RUN-3 2 of 2			✓	~~✓~~			
86	PACIFIC ENERGY method 430 RUN-4 1 of 2			✓	~~✓~~	-4		" "
87	PACIFIC ENERGY method 430 RUN-4 2 of 2			✓	~~✓~~			
88	PACIFIC ENERGY method 430 DNPH BLANK 1 of 2			✓	~~✓~~	-5		ANALYZE FOR µg/L FORMALDEHYDE BY HPL (X-TRA)
89	PACIFIC ENERGY method 430 DNPH BLANK 2 of 2			✓	~~✓~~	-7		DO NOT ANALYZE
90	PACIFIC ENERGY method 430 SPIKE 1 of 1				~~✓~~	-6		ANALYZE FOR TOTAL FORMALDEHYDE BY HPL

COMMENTS: * 89 = back-up blank if # 88 breaks

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
[signature]	7-30-90	[signature] Sealed intact	7-31-90
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

RECEIVED AUG 20 1990

METHOD 436 DATA

COMPANY: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

METHOD 436
FIELD DATA @ 70'

RUN #:	1	2	3
TIME:	1155	1657	1422
Vm (dry gas sampled)	46.9	46.52	45.9
Y (meter calib. factor)	0.991696	0.991696	0.991696
P bar (Barometric pressure)	30.25	30.25	30.25
P static (stack pressure, " H2O)	2.1	2.1	2.1
Delta H (differential meter press, " H2O)	1.06	1.06	1.04
Tm (meter temperature, R')	568	562	558
Vol H2O mls	150	150.6	136.8
Vm(std),dscf	43.99	44.1	43.82
Bws-H2O vapor	0.139	0.1392	0.1288
MF-moisture factor	0.861	0.8608	0.8712
% CO2	7.6	7.4	7.6
% O2	8.1	7.9	7.8
% N2	84.3	84.7	84.6
Md-MW stk gas,dry	29.54	29.5	29.53
Ms-MW stk gas,wet	27.94	27.9	28.04
Cp-pitot tube	0.84	0.84	0.84
Avg sq rt ^p	1.876	1.892	1.873
T stack, R'	1387	1397	1395
Stack area,ft2	1.67	1.67	1.67
Vs-fps	172.14	174.36	172.05
Qstd-dscfm	5767	5798	5799
Area noz,ft2	1.97E-04	1.97E-04	1.97E-04
Sample time	64	64	64
% Isokinetic	101.1	100.8	100.2

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

CARB Method 436: Run-1

Pollutant	mg/l	Sample Vol. (ml)	Vm std	DSCFM		gr/DSCF	lb/hr
Arsenic							
p/n	0.005	126	43.99	5767	*	2.21E-07	1.09E-05
Filter	0.001	1000	43.99	5767	*	3.50E-07	1.73E-05
Imp	0.005	486	43.99	5767	*	8.51E-07	4.21E-05
					Total	4.74E-07	2.34E-05
Beryllium							
p/n	0.002	126	43.99	5767	*	8.82E-08	4.37E-06
Filter	0.0004	1000	43.99	5767	*	1.40E-07	6.93E-06
Imp	0.002	486	43.99	5767	*	3.40E-07	1.68E-05
					Total	1.90E-07	9.38E-06
Cadmium							
p/n	0.14	126	43.99	5767		6.18E-06	3.06E-04
Filter	0.0001	1000	43.99	5767	*	3.50E-08	1.73E-06
Imp	0.036	486	43.99	5767		6.12E-06	3.03E-04
					Total	4.11E-06	2.03E-04
Chromium							
p/n	0.0028	126	43.99	5767		1.24E-07	6.11E-06
Filter	0.0013	1000	43.99	5767		4.55E-07	2.25E-05
Imp	0.0015	486	43.99	5767		2.55E-07	1.26E-05
					Total	2.78E-07	1.38E-05
Copper							
p/n	0.0026	126	43.99	5767		1.15E-07	5.67E-06
Filter	0.0002	1000	43.99	5767	*	7.00E-08	3.46E-06
Imp	0.0022	486	43.99	5767		3.74E-07	1.85E-05
					Total	1.86E-07	9.22E-06
Lead							
p/n	0.005	126	43.99	5767	*	2.21E-07	1.09E-05
Filter	0.001	1000	43.99	5767	*	3.50E-07	1.73E-05
Imp	0.005	486	43.99	5767	*	8.51E-07	4.21E-05
					Total	4.74E-07	2.34E-05

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

CARB Method 436; Run-1

Pollutant	mg/l	Sample Vol. (ml)	Vm std	DSCFM		gr/DSCF	lb/hr
Manganese							
p/n	0.01	126	43.99	5767	*	4.41E-07	2.18E-05
Filter	0.0053	1000	43.99	5767	*	1.86E-06	9.18E-05
Imp	0.01	486	43.99	5767	*	1.70E-06	8.42E-05
					Total	1.33E-06	6.59E-05
Mercury							
p/n	0.0005	126	43.99	5767	*	2.21E-08	1.09E-06
Filter	0.00008	1000	43.99	5767	*	2.80E-08	1.39E-06
ImpHNO3	0.0004	486	43.99	5767	*	6.81E-08	3.37E-06
ImpKMNO4	0.0004	527	43.99	5767	*	7.38E-08	3.65E-06
					Total	5.66E-08	2.80E-06
Nickel							
p/n	0.005	126	43.99	5767	*	2.21E-07	1.09E-05
Filter	0.0019	1000	43.99	5767		6.65E-07	3.29E-05
Imp	0.005	486	43.99	5767	*	8.51E-07	4.21E-05
					Total	5.79E-07	2.86E-05
Selenium							
p/n	0.005	126	43.99	5767	*	2.21E-07	1.09E-05
Filter	0.001	1000	43.99	5767	*	3.50E-07	1.73E-05
Imp	0.01	486	43.99	5767	*	1.70E-06	8.42E-05
					Total	7.57E-07	3.75E-05
Zinc							
p/n	0.13	126	43.99	5767		5.73E-06	2.84E-04
Filter	0.0061	1000	43.99	5767		2.14E-06	1.06E-04
Imp	0.02	486	43.99	5767	*	3.40E-06	1.68E-04
					Total	3.76E-06	1.86E-04

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

CARB Method 436; Run-2

Pollutant	mg/l	Sample Vol. (ml)	Vm std	DSCFM		gr/DSCF	lb/hr
Arsenic							
p/n	0.005	128	44.1	5798	*	2.23E-07	1.11E-05
Filter	0.0013	1000	44.1	5798		4.54E-07	2.26E-05
Imp	0.005	530	44.1	5798	*	9.25E-07	4.60E-05
					Total	5.34E-07	2.66E-05
Beryllium							
p/n	0.002	128	44.1	5798	*	8.94E-08	4.45E-06
Filter	0.0005	1000	44.1	5798	*	1.75E-07	8.69E-06
Imp	0.002	530	44.1	5798	*	3.70E-07	1.84E-05
					Total	2.11E-07	1.05E-05
Cadmium							
p/n	0.15	128	44.1	5798		6.70E-06	3.34E-04
Filter	0.0001	1000	44.1	5798	*	3.49E-08	1.74E-06
Imp	0.038	530	44.1	5798		7.03E-06	3.50E-04
					Total	4.59E-06	2.28E-04
Chromium							
p/n	0.0037	128	44.1	5798		1.65E-07	8.23E-06
Filter	0.0011	1000	44.1	5798		3.84E-07	1.91E-05
Imp	0.005	530	44.1	5798		9.25E-07	4.60E-05
					Total	4.92E-07	2.45E-05
Copper							
p/n	0.0017	128	44.1	5798		7.60E-08	3.78E-06
Filter	0.0002	1000	44.1	5798	*	6.98E-08	3.47E-06
Imp	0.0012	530	44.1	5798		2.22E-07	1.10E-05
					Total	1.23E-07	6.10E-06
Lead							
p/n	0.005	128	44.1	5798	*	2.23E-07	1.11E-05
Filter	0.001	1000	44.1	5798	*	3.49E-07	1.74E-05
Imp	0.005	530	44.1	5798	*	9.25E-07	4.60E-05
					Total	4.99E-07	2.48E-05

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

CARB Method 436; Run-2

Pollutant	mg/l	Sample Vol. (ml)	Vm std	DSCFM		gr/DSCF	lb/hr
Manganese							
p/n	0.01	128	44.1	5798	*	4.47E-07	2.22E-05
Filter	0.002	1000	44.1	5798	*	6.98E-07	3.47E-05
Imp	0.01	530	44.1	5798	*	1.85E-06	9.21E-05
					Total	9.99E-07	4.97E-05
Mercury							
p/n	0.0005	128	44.1	5798	*	2.23E-08	1.11E-06
Filter	0.0008	1000	44.1	5798	*	2.79E-07	1.39E-05
ImpHNO3	0.0004	530	44.1	5798	*	7.40E-08	3.68E-06
ImpKMNO4	0.0004	578	44.1	5798	*	8.07E-08	4.02E-06
					Total	1.45E-07	7.20E-06
Nickel							
p/n	0.0005	128	44.1	5798	*	2.23E-08	1.11E-06
Filter	0.0017	1000	44.1	5798		5.94E-07	2.95E-05
Imp	0.005	530	44.1	5798	*	9.25E-07	4.60E-05
					Total	5.14E-07	2.56E-05
Selenium							
p/n	0.005	128	44.1	5798	*	2.23E-07	1.11E-05
Filter	0.001	1000	44.1	5798	*	3.49E-07	1.74E-05
Imp	0.005	530	44.1	5798	*	9.25E-07	4.60E-05
					Total	4.99E-07	2.48E-05
Zinc							
p/n	0.073	128	44.1	5798		3.26E-06	1.62E-04
Filter	0.007	1000	44.1	5798		2.44E-06	1.22E-04
Imp	0.02	530	44.1	5798		3.70E-06	1.84E-04
					Total	3.14E-06	1.56E-04

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

CARB Method 436; Run-3

Pollutant	mg/l	Sample Vol. (ml)	Vm std	DSCFM		gr/DSCF	lb/hr
Arsenic							
p/n	0.0052	100	43.82	5799		1.83E-07	9.09E-06
Filter	0.001	1000	43.82	5799	*	3.51E-07	1.75E-05
Imp	0.005	490	43.82	5799	*	8.61E-07	4.28E-05
					Total	4.65E-07	2.31E-05
Beryllium							
p/n	0.002	100	43.82	5799	*	7.03E-08	3.50E-06
Filter	0.0004	1000	43.82	5799	*	1.41E-07	6.99E-06
Imp	0.002	490	43.82	5799	*	3.44E-07	1.71E-05
					Total	1.85E-07	9.21E-06
Cadmium							
p/n	0.0009	100	43.82	5799		3.16E-08	1.57E-06
Filter	0.0001	1000	43.82	5799	*	3.51E-08	1.75E-06
Imp	0.001	490	43.82	5799	*	1.72E-07	8.57E-06
					Total	7.97E-08	3.96E-06
Chromium							
p/n	0.0091	100	43.82	5799		3.20E-07	1.59E-05
Filter	0.00087	1000	43.82	5799		3.06E-07	1.52E-05
Imp	0.0051	490	43.82	5799		8.78E-07	4.37E-05
					Total	5.01E-07	2.49E-05
Copper							
p/n	0.0031	100	43.82	5799		1.09E-07	5.42E-06
Filter	0.0002	1000	43.82	5799	*	7.03E-08	3.50E-06
Imp	0.042	490	43.82	5799		7.23E-06	3.60E-04
					Total	2.47E-06	1.23E-04
Lead							
p/n	0.005	100	43.82	5799	*	1.76E-07	8.74E-06
Filter	0.001	1000	43.82	5799	*	3.51E-07	1.75E-05
Imp	0.005	490	43.82	5799	*	8.61E-07	4.28E-05
					Total	4.63E-07	2.30E-05

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

CARB Method 436; Run-3

Pollutant	mg/l	Sample Vol. (ml)	Vm std	DSCFM		gr/DSCF	lb/hr
Manganese							
p/n	0.01	100	43.82	5799		3.51E-07	1.75E-05
Filter	0.002	1000	43.82	5799	*	7.03E-07	3.50E-05
Imp	0.01	490	43.82	5799	*	1.72E-06	8.57E-05
					Total	9.25E-07	4.60E-05
Mercury							
p/n	0.001	100	43.82	5799	*	3.51E-08	1.75E-06
Filter	0.00008	1000	43.82	5799	*	2.81E-08	1.40E-06
ImpHNO3	0.0004	490	43.82	5799	*	6.89E-08	3.43E-06
ImpKMNO4	0.0004	611	43.82	5799	*	8.59E-08	4.27E-06
					Total	6.10E-08	3.03E-06
Nickel							
p/n	0.0085	100	43.82	5799		2.99E-07	1.49E-05
Filter	0.0011	1000	43.82	5799		3.87E-07	1.92E-05
Imp	0.005	490	43.82	5799	*	8.61E-07	4.28E-05
					Total	5.15E-07	2.56E-05
Selenium							
p/n	0.005	100	43.82	5799	*	1.76E-07	8.74E-06
Filter	0.001	1000	43.82	5799	*	3.51E-07	1.75E-05
Imp	0.005	490	43.82	5799	*	8.61E-07	4.28E-05
					Total	4.63E-07	2.30E-05
Zinc							
p/n	0.13	100	43.82	5799		4.57E-06	2.27E-04
Filter	0.0041	1000	43.82	5799		1.44E-06	7.17E-05
Imp	0.051	490	43.82	5799		8.78E-06	4.37E-04
					Total	4.93E-06	2.45E-04

* Values reported are lower detection limit

COMPANY: PACIFIC ENERGY
REPORT #:
UNIT ID: SEWARD UNIT #2
DATE: 7-24-90

MULTI METALS

ON-SITE DATA

SITE: OUTLET

RUN #:	#1	#2	#3
TIME:	7-24-90 1155-1259	7-24-90 1657-1801	7-27-90 1422-1526
Vm Dry sampled gas volume, dcf	46.9	46.52	45.99
Y Meter calibration factor (met# 1002 ____ ____)	.991696	.991696	.991696
P bar Barometric pressure, in Hg	30.25	30.25	30.35
P static Stack static pressure, in H_2	2.1	2.1	2.1
Delta H Differential meter pressure, in H_2O	1.06	1.06	1.04
Tm Meter temperature, deg F	108	102	98

Contents	Run 1 final	Run 1 tare	Run 1 net	Run 2 final	Run 2 tare	Run 2 net	Run 3 final	Run 3 tare	Run 3 net
5% HNO_3	843.6	624.9	218.7	825.0	638.5	186.5	773.6	584.1	189.5
5% HNO_3	621.6	607.1	14.5	624.1	607.6	16.5	581.6	571.9	9.7
KO	465.6	465.0	0.60	467.9	464.6	3.3	472.6	472.1	0.50
$KMnO_4$	586.9	586.9	3.0	593.6	591.2	2.4	595.6	595.1	0.50
$KMnO_4$	601.2	600.4	0.80						
Silica	758.2	749.9	8.3	778.1	768.9	9.2	809.5	801.2	
Line Wash V lc, volume of H_2O, grams			-95.9 150.0			-67.3 150.6			-63.4 136.8

	#1	#2	#3
CO_2 % Dry Volume	7.6	7.4	7.6
O_2 % Dry Volume	8.1	7.9	7.8
N_2 % Dry Volume	84.3	84.7	84.6
Cp Pitot tube coefficient (Pit# ____ ____ ____)	.84	.84	.84
Delta P Avg Delta-P, in H_2O	3.52	3.58	3.51
Ts Stack temperature, in deg F	927	937	935
As Stack area, sq. ft	1.67	1.67	1.67
Ds Stack Diameter, inches	17.5	17.5	17.5
Dn Nozzle diameter, inches	0.19	0.19	0.19
Dur Sampling time, min	64	64	64
% Iso Mini Iso	100.10	99.92	100.45

****

		#1	#2	#3
Filter #	BLANK	QK178	QK179	QK180
Filter tare weights, grams		.77530	.75431	.75012
P/N .1N HNO_3	I	263.9	297.3	276.7
	F	135.7	158.3	133.6
Impingers .1N HNO_3 1,2	I	324.8	312.8	295.2
	F	264.1	224.5	199.4
Impingers 4,5 6N HCl $KMnO_4$ Impingers	I	544.3	533.6	424.4
	F	280.1	256.4	209.3

INITIALS**

CONTROL BOX#: 1
Hi Δ P _____ Lo Δ P _____ Ave Δ P (5% HNO_3 Impingers) Duct Temp. _____
Diameters before disturb _____ After _____
# of Points, total _____
Overall (inches) _____ Coupling _____

Multi-Metals FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JAN/JEM
Date: 7-24-90
Run No: 1
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.:

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 75°F
Barometric Pressure: 30.25
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13.0 MW_{wet} = 27.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O)	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	11:55	5.5	946	3.90	.770	1.15	192.80	110	109		
7	:59	5.5	946	3.90	.770	1.15	195.90	110	109		
6	12:03	5.5	946	3.85	.762	1.14	199.00	109	108		
5	:07	5.0	945	3.60	.742	1.08	202.03	113	109		
4	:11	5.0	937	3.15	.691	.95	205.00	109	105		
3	:15	5.0	939	3.15	.695	.96	207.76	113	108		
2	:19	5.5	888	3.25	.715	1.01	210.55	109	106		
1	:23	5.5	888	3.25	.715	1.01	213.41	109	106		
	:27						216.27				
Total								avg.	avg.		
Average.								avg.			

Multi-Metals FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN / JEM
Date: 7-24-90
Run No: 1 (cont'd)
Pump No.: Hi-Flo
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 30-1

Post Test Leak Chk.
Leak Rate: .002 cfm
Vacuum: 10.0 (in Hg)

Ambient Temp: 75°F
Barometric Pressure: 30.25
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13 MW_{wet} = 27.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: Quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) rate	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
1	12:27	5.5	874	3.30	.726	1.04	216.27	111	107		
2	:31	5.5	874	3.30	.726	1.04	219.17	111	107		
3	:35	5.0	935	3.15	.689	.95	222.10	107	104		
4	:39	5.5	940	3.45	.721	1.03	224.84	108	105		
5	:43	5.5	948	3.6	.736	1.07	227.72	109	106		
6	:47	6.0	950	3.80	.761	1.13	230.61	113	110		
7	:51	6.0	937	3.85	.762	1.14	233.65	107	104		
8	:55	6.0	937	3.85	.762	1.14	236.71	107	104		
	:59						239.70				
		$\bar{X}$=	927	3.52					108		
					$\overline{\Delta H}$= 1.06						
					$\overline{IS}$= 100.10			avg.	avg.		
Total					vel fps= 173.42			avg.			

Multi-Metals FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN/JEM
Date: 7-24-90
Run No: 2
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 3Q-1

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 80°F
Barometric Pressure: 30.25
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13.0 MW=27.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .180
Probe Liner Material: Quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O)		Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or L: Impinger (°F)
					Target	ΔH					
8	16:57	6.0	936	4.05	.768	1.18	289.90	96	96		
7	17:01	6.0	936	4.05	.768	1.18	293.00	96	96		
6	:05	5.5	938	3.90	.758	1.14	296.05	102	97		
5	:09	5.0	937	3.75	.743	1.10	299.07	102	96		
4	:13	4.5	935	3.30	.704	.99	302.09	107	101		
3	:17	4.5	938	3.30	.699	.99	304.93	104	97		
2	:21	4.5	940	3.25	.697	.97	307.70	107	100		
1	:25	4.5	940	3.25	.697	.97	310.51	107	100		
	:29						313.26				
Total								avg.	avg.		
Average								avg.			

Multi-Metals FIELD DATA

Client: Pac. Energy Report #:
Location: Dixon #2
Operator: JDN/JEM
Date: 7-24-90
Run No: 2 (cont'd)
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 3Q-1

Post Test Leak Chk.

Leak Rate: .006 cfm
Vacuum: 8.0 (in Hg)

Ambient Temp: 75°F
Barometric Pressure: 30.25
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13.0 MW_{wet} = 27
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or L Impinger (°F)
1	17:29	4.5	934	3.10	.679	.94	313.26	106	97		
2	:33	4.5	934	3.10	.679	.94	316.00	106	97		
3	:37	4.5	936	3.15	.686	.95	318.67	105	101		
4	:41	5.0	938	3.40	.712	1.01	321.37	105	100		
5	:45	5.5	934	3.70	.744	1.10	324.19	105	101		
6	:49	6.0	934	3.90	.764	1.15	327.08	106	100		
7	:53	6.0	934	4.0	.777	1.18	330.13	107	102		
8	:57	6.5	947	4.2	.791	1.22	333.24	108	103		
	18:01						336.42				
		$\bar{X}$=	937	3.58					102		
					ΔH = 1.06						
					ISO= 99.92						
Total					vel fps= 175.57			avg.	avg.		
Average								avg.			

Metals - 3 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN/JEM
Date: 7-27-90
Run No: 3 (cont'd)
Pump No.: Crest
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 30-1

Post Test Leak Chk.

Leak Rate: .006 cfm
Vacuum: 6.0 (in Hg)

Ambient Temp: 75°F
Barometric Pressure: 30.35
Static Pressure, (in Hg): 7.0
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: - quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
1	14:54	4.0	930	3.35	.705	1.00	1010.00	106	96		
2	:58	4.0	930	3.35	.705	1.00	1012.83	106	96		
3	15:02	4.0	934	3.25	.691	.97	1015.69	104	94		
4	:06	4.0	932	3.10	.676	.93	1018.43	104	94		
5	:10	5.0	943	3.60	.725	1.06	1021.14	103	94		
6	:14	5.0	932	3.70	.737	1.09	1024.04	102	94		
7	:18	5.0	936	3.85	.752	1.13	1027.10	105	94		
8	:22		946	4.0	.765	1.16	1030.11	104	96		
	:26						1033.19				
		$\bar{X}$=	935	3.51					98		
					$\overline{\Delta H}$ = 1.04						
Total					ISO = 100.45			avg.	avg.		
Average					vel fps = 173.40			avg.			

Metals - 3 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN/JEM
Date: 7-27-90
Run No: 3
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 30-1

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 75°F
Barometric Pressure: 30.35
Static Pressure, (in Hg): 3.0
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: Quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) r	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Las Impinger (°F)
8	2:22	5.0	930	3.9	.752	1.14	987.20	94	95		
7	:26	5.0	932	3.85	.749	1.13	990.18	93	99		
6	:30	5.0	940	3.70	.733	1.08	993.17	101	93		
5	:34	4.5	935	3.60	.725	1.06	996.12	101	93		
4	:38	4.0	932	3.15	.681	.95	999.05	104	94		
3	:42	4.0	932	3.20	.685	.96	1001.77	103	93		
2	:46	4.0	933	3.30	.696	.99	1004.50	101	95		
1	:50	4.0	933	3.30	.696	.99	1007.27	101	95		
	:54						1010.00				
Total								avg.	avg.		
Average								avg.			

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METALS

(Water - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #200 P/N-1
Lab ID: 054411-0001-SA Enseco ID: 162496
Matrix: AQUEOUS Sampled: 24 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	Method 206.2	29 AUG 90	05 SEP 90	
Beryllium	ND	mg/L	0.0020	Method 200.7	NA	30 AUG 90	
Cadmium	0.14	mg/L	0.025	Method 213.2	29 AUG 90	31 AUG 90	o
Chromium	0.0028	mg/L	0.0010	Method 218.2	29 AUG 90	05 SEP 90	
Copper	0.0026	mg/L	0.0010	Method 220.2	29 AUG 90	04 SEP 90	
Lead	ND	mg/L	0.0050	Method 239.2	29 AUG 90	06 SEP 90	
Manganese	ND	mg/L	0.010	Method 200.7	NA	30 AUG 90	
Mercury	ND	mg/L	0.00050	Method 245.1	30 AUG 90	31 AUG 90	r
Nickel	ND	mg/L	0.0050	Method 249.2	29 AUG 90	30 AUG 90	
Selenium	ND	mg/L	0.0050	Method 270.2	29 AUG 90	30 AUG 90	
Zinc	0.13	mg/L	0.020	Method 200.7	NA	30 AUG 90	

Note o : Reporting Limit raised due to high level of analyte present in sample.

Note r : Reporting limit changed due to sample volume limitations.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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METALS

(Soil/Solid - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #204 FILTER-1
Lab ID: 054411-0003-SA Enseco ID: 162507
Matrix: FILTER Sampled: 24 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/filte	0.0010	Method 7060	31 AUG 90	05 SEP 90
Beryllium	ND	mg/filte	0.00040	Method 6010	NA	04 SEP 90
Cadmium	ND	mg/filte	0.00010	Method 7131	31 AUG 90	04 SEP 90
Chromium	0.0013	mg/filte	0.00020	Method 7191	31 AUG 90	04 SEP 90
Copper	ND	mg/filte	0.00020	Method 7211	31 AUG 90	04 SEP 90
Lead	ND	mg/filte	0.0010	Method 7421	31 AUG 90	06 SEP 90
Mercury	ND	mg/filte	0.000080	Method 7471	29 AUG 90	30 AUG 90
Nickel	0.0019	mg/filte	0.0010	Method 7521	31 AUG 90	04 SEP 90
Selenium	ND	mg/filte	0.0010	Method 7740	31 AUG 90	05 SEP 90
Manganese	ND	mg/filte	0.0020	Method 6010	NA	04 SEP 90
Zinc	0.0061	mg/filte	0.0040	Method 6010	NA	04 SEP 90

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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METALS

(Water - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #205 P/N-2
Lab ID: 054411-0004-SA Enseco ID: 162508
Matrix: AQUEOUS Sampled: 24 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	Method 206.2	29 AUG 90	05 SEP 90	
Beryllium	ND	mg/L	0.0020	Method 200.7	NA	30 AUG 90	
Cadmium	0.15	mg/L	0.050	Method 213.2	29 AUG 90	31 AUG 90	o
Chromium	0.0037	mg/L	0.0010	Method 218.2	29 AUG 90	04 SEP 90	
Copper	0.0017	mg/L	0.0010	Method 220.2	29 AUG 90	04 SEP 90	
Lead	ND	mg/L	0.0050	Method 239.2	29 AUG 90	06 SEP 90	
Manganese	ND	mg/L	0.010	Method 200.7	NA	30 AUG 90	
Mercury	ND	mg/L	0.00050	Method 245.1	30 AUG 90	31 AUG 90	r
Nickel	ND	mg/L	0.0050	Method 249.2	29 AUG 90	30 AUG 90	
Selenium	ND	mg/L	0.0050	Method 270.2	29 AUG 90	30 AUG 90	
Zinc	0.073	mg/L	0.020	Method 200.7	NA	30 AUG 90	

Note o : Reporting Limit raised due to high level of analyte present in sample.

Note r : Reporting limit changed due to sample volume limitations.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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METALS

(Water - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #203 HN03-1
Lab ID: 054411-0002-SA Enseco ID: 162498
Matrix: AQUEOUS Sampled: 24 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	Method 206.2	29 AUG 90	05 SEP 90	
Beryllium	ND	mg/L	0.0020	Method 200.7	NA	30 AUG 90	
Cadmium	0.036	mg/L	0.010	Method 213.2	29 AUG 90	04 SEP 90	o
Chromium	0.0015	mg/L	0.0010	Method 218.2	29 AUG 90	04 SEP 90	
Copper	0.0022	mg/L	0.0010	Method 220.2	29 AUG 90	04 SEP 90	
Lead	ND	mg/L	0.0050	Method 239.2	29 AUG 90	06 SEP 90	
Manganese	ND	mg/L	0.010	Method 200.7	NA	30 AUG 90	
Mercury	ND	mg/L	0.00040	Method 245.1	30 AUG 90	31 AUG 90	r
Nickel	ND	mg/L	0.0050	Method 249.2	29 AUG 90	30 AUG 90	
Selenium	ND	mg/L	0.010	Method 270.2	29 AUG 90	30 AUG 90	G
Zinc	ND	mg/L	0.020	Method 200.7	NA	30 AUG 90	

Note o : Reporting Limit raised due to high level of analyte present in sample.

Note r : Reporting limit changed due to sample volume limitations.

Note G : Reporting Limit raised due to matrix interference.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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METALS

(Water - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #208 HNO3-2
Lab ID: 054411-0005-SA Enseco ID: 162509
Matrix: AQUEOUS Sampled: 24 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	Method 206.2	29 AUG 90	05 SEP 90	
Beryllium	ND	mg/L	0.0020	Method 200.7	NA	30 AUG 90	
Cadmium	0.038	mg/L	0.010	Method 213.2	29 AUG 90	31 AUG 90	o
Chromium	0.0050	mg/L	0.0010	Method 218.2	29 AUG 90	04 SEP 90	
Copper	0.0012	mg/L	0.0010	Method 220.2	29 AUG 90	04 SEP 90	
Lead	ND	mg/L	0.0050	Method 239.2	29 AUG 90	06 SEP 90	
Manganese	ND	mg/L	0.010	Method 200.7	NA	30 AUG 90	
Mercury	ND	mg/L	0.00040	Method 245.1	30 AUG 90	31 AUG 90	r
Nickel	ND	mg/L	0.0050	Method 249.2	29 AUG 90	30 AUG 90	
Selenium	ND	mg/L	0.0050	Method 270.2	29 AUG 90	30 AUG 90	
Zinc	0.020	mg/L	0.020	Method 200.7	NA	30 AUG 90	

Note o : Reporting Limit raised due to high level of analyte present in sample.

Note r : Reporting limit changed due to sample volume limitations.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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METALS

(Soil/Solid - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #209 FILTER-2
Lab ID: 054411-0006-SA Enseco ID: 162510
Matrix: FILTER Sampled: 24 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	0.0013	mg/filte	0.0010	Method 7060	31 AUG 90	05 SEP 90
Beryllium	ND	mg/filte	0.00050	Method 6010	NA	04 SEP 90 i
Cadmium	ND	mg/filte	0.00010	Method 7131	31 AUG 90	04 SEP 90
Chromium	0.0011	mg/filte	0.00020	Method 7191	31 AUG 90	04 SEP 90
Copper	ND	mg/filte	0.00020	Method 7211	31 AUG 90	04 SEP 90
Lead	ND	mg/filte	0.0010	Method 7421	31 AUG 90	06 SEP 90
Mercury	ND	mg/filte	0.00080	Method 7471	29 AUG 90	30 AUG 90
Nickel	0.0017	mg/filte	0.0010	Method 7521	31 AUG 90	04 SEP 90
Selenium	ND	mg/filte	0.0010	Method 7740	31 AUG 90	05 SEP 90
Manganese	ND	mg/filte	0.0020	Method 6010	NA	04 SEP 90
Zinc	0.0070	mg/filte	0.0040	Method 6010	NA	04 SEP 90

Note i : Reporting limit changed due to high background in the sample.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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METALS

(Water - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #210 P/N-3
Lab ID: 054411-0007-SA Enseco ID: 162511
Matrix: AQUEOUS Sampled: 27 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	0.0052	mg/L	0.0050	Method 206.2	29 AUG 90	05 SEP 90
Beryllium	ND	mg/L	0.0020	Method 200.7	NA	30 AUG 90
Cadmium	0.00090	mg/L	0.00050	Method 213.2	29 AUG 90	05 SEP 90
Chromium	0.0091	mg/L	0.0010	Method 218.2	29 AUG 90	04 SEP 90
Copper	0.0031	mg/L	0.0010	Method 220.2	29 AUG 90	04 SEP 90
Lead	ND	mg/L	0.0050	Method 239.2	29 AUG 90	06 SEP 90
Manganese	0.010	mg/L	0.010	Method 200.7	NA	30 AUG 90
Mercury	ND	mg/L	0.0010	Method 245.1	30 AUG 90	31 AUG 90 r
Nickel	0.0085	mg/L	0.0050	Method 249.2	29 AUG 90	31 AUG 90
Selenium	ND	mg/L	0.0050	Method 270.2	29 AUG 90	30 AUG 90
Zinc	0.13	mg/L	0.020	Method 200.7	NA	30 AUG 90

Note r : Reporting limit changed due to sample volume limitations.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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METALS

(Soil/Solid - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #214 FILTER-3
Lab ID: 054411-0009-SA Enseco ID: 162513
Matrix: FILTER Sampled: 27 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/filte	0.0010	Method 7060	31 AUG 90	05 SEP 90
Beryllium	ND	mg/filte	0.00040	Method 6010	NA	04 SEP 90
Cadmium	ND	mg/filte	0.00010	Method 7131	31 AUG 90	04 SEP 90
Chromium	0.00087	mg/filte	0.00020	Method 7191	31 AUG 90	04 SEP 90
Copper	ND	mg/filte	0.00020	Method 7211	31 AUG 90	05 SEP 90
Lead	ND	mg/filte	0.0010	Method 7421	31 AUG 90	06 SEP 90
Mercury	ND	mg/filte	0.000080	Method 7471	29 AUG 90	30 AUG 90
Nickel	0.0011	mg/filte	0.0010	Method 7521	31 AUG 90	04 SEP 90
Selenium	ND	mg/filte	0.0010	Method 7740	31 AUG 90	05 SEP 90
Manganese	ND	mg/filte	0.0020	Method 6010	NA	04 SEP 90
Zinc	0.0041	mg/filte	0.0040	Method 6010	NA	04 SEP 90

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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Enseco
A CORNING Company

METALS

(Water - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #213 HNO3-3
Lab ID: 054411-0008-SA Enseco ID: 162512
Matrix: AQUEOUS Sampled: 27 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	Method 206.2	29 AUG 90	05 SEP 90	
Beryllium	ND	mg/L	0.0020	Method 200.7	NA	30 AUG 90	
Cadmium	ND	mg/L	0.0010	Method 213.2	29 AUG 90	31 AUG 90	G
Chromium	0.0051	mg/L	0.0010	Method 218.2	29 AUG 90	04 SEP 90	
Copper	0.042	mg/L	0.0010	Method 220.2	29 AUG 90	05 SEP 90	o
Lead	ND	mg/L	0.0050	Method 239.2	29 AUG 90	06 SEP 90	
Manganese	ND	mg/L	0.010	Method 200.7	NA	30 AUG 90	
Mercury	ND	mg/L	0.00040	Method 245.1	30 AUG 90	31 AUG 90	r
Nickel	ND	mg/L	0.0050	Method 249.2	29 AUG 90	31 AUG 90	
Selenium	ND	mg/L	0.0050	Method 270.2	29 AUG 90	30 AUG 90	
Zinc	0.051	mg/L	0.020	Method 200.7	NA	30 AUG 90	

Note G : Reporting Limit raised due to matrix interference.

Note o : Reporting Limit raised due to high level of analyte present in sample.

Note r : Reporting limit changed due to sample volume limitations.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

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Enseco
A CORNING Company

METALS

(Water - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #215 P/N-4
Lab ID: 054411-0010-SA Enseco ID: 162514
Matrix: FILTER Sampled: 27 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	Method 206.2	29 AUG 90	05 SEP 90	
Beryllium	ND	mg/L	0.0020	Method 200.7	NA	30 AUG 90	
Cadmium	ND	mg/L	0.0010	Method 213.2	29 AUG 90	31 AUG 90	G
Chromium	0.030	mg/L	0.0020	Method 218.2	29 AUG 90	04 SEP 90	o
Copper	0.0011	mg/L	0.0010	Method 220.2	29 AUG 90	05 SEP 90	
Lead	ND	mg/L	0.010	Method 239.2	29 AUG 90	06 SEP 90	G
Manganese	ND	mg/L	0.010	Method 200.7	NA	30 AUG 90	
Mercury	ND	mg/L	0.0010	Method 245.1	30 AUG 90	31 AUG 90	r
Nickel	ND	mg/L	0.0050	Method 249.2	29 AUG 90	31 AUG 90	
Selenium	ND	mg/L	0.010	Method 270.2	29 AUG 90	30 AUG 90	G
Zinc	0.12	mg/L	0.020	Method 200.7	NA	30 AUG 90	

Note G : Reporting Limit raised due to matrix interference.

Note o : Reporting Limit raised due to high level of analyte present in sample.

Note r : Reporting limit changed due to sample volume limitations.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A CORNING Company

METALS

(Soil/Solid - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #219 FILTER-4
Lab ID: 054411-0012-SA Enseco ID: 162516
Matrix: FILTER Sampled: 27 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/filte	0.0010	Method 7060	31 AUG 90	05 SEP 90
Beryllium	ND	mg/filte	0.00040	Method 6010	NA	04 SEP 90
Cadmium	ND	mg/filte	0.00010	Method 7131	31 AUG 90	04 SEP 90
Chromium	0.00070	mg/filte	0.00020	Method 7191	31 AUG 90	04 SEP 90
Copper	0.00028	mg/filte	0.00020	Method 7211	31 AUG 90	07 SEP 90
Lead	ND	mg/filte	0.0010	Method 7421	31 AUG 90	06 SEP 90
Mercury	ND	mg/filte	0.000080	Method 7471	29 AUG 90	30 AUG 90
Nickel	ND	mg/filte	0.0010	Method 7521	31 AUG 90	06 SEP 90
Selenium	ND	mg/filte	0.0010	Method 7740	31 AUG 90	05 SEP 90
Manganese	ND	mg/filte	0.0020	Method 6010	NA	04 SEP 90
Zinc	ND	mg/filte	0.0040	Method 6010	NA	04 SEP 90

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
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METALS

(Water - Total)

Client Name: Petro Chem Environmental Services Inc.
Client ID: #218 HN03-4
Lab ID: 054411-0011-SA Enseco ID: 162515
Matrix: AQUEOUS Sampled: 27 JUL 90 Received: 10 AUG 90
Authorized: 23 AUG 90 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	Method 206.2	29 AUG 90	05 SEP 90	
Beryllium	ND	mg/L	0.0020	Method 200.7	NA	30 AUG 90	
Cadmium	ND	mg/L	0.0010	Method 213.2	29 AUG 90	31 AUG 90	G
Chromium	0.016	mg/L	0.0010	Method 218.2	29 AUG 90	04 SEP 90	
Copper	0.0013	mg/L	0.0010	Method 220.2	29 AUG 90	05 SEP 90	
Lead	ND	mg/L	0.0050	Method 239.2	29 AUG 90	06 SEP 90	
Manganese	ND	mg/L	0.010	Method 200.7	NA	30 AUG 90	
Mercury	ND	mg/L	0.00040	Method 245.1	30 AUG 90	31 AUG 90	r
Nickel	ND	mg/L	0.0050	Method 249.2	29 AUG 90	31 AUG 90	
Selenium	ND	mg/L	0.0050	Method 270.2	29 AUG 90	30 AUG 90	
Zinc	0.049	mg/L	0.020	Method 200.7	NA	30 AUG 90	

Note G : Reporting Limit raised due to matrix interference.

Note r : Reporting limit changed due to sample volume limitations.

ND = Not detected
NA = Not applicable

Reported By: Grace Chang Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A CORNING Company

[X] 7440 Lincoln Way, Garden Grove, CA 92641, (714) 898-6370
[ ] 2810 Bunsen Ave., Unit A Ventura, CA 93003, (805) 650-0546
[ ] 2325 Skyway Dr., Unit K, Santa Maria, CA 93455, (805) 922-2776
[ ] 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
[ ] Mobile Labs, (800) ENSECO 8

CHAIN OF CUSTODY RECORD

Date 8/09/90 Page 1 of 1

Lab Number 022114

CLIENT ENSECO-CRL

ADDRESS 7440 LINCOLN WAY
GARDEN GROVE, CA 92641

PROJECT NAME
PETRO CHEM (233) PACIFIC ENERGY / SALINAS LANDFILL ICE

CONTRACT / PURCHASE ORDER / QUOTE #

PROJECT MANAGER
KEVIN DODDS

PHONE NUMBER
(714) 898-6370

SITE CONTACT

ANALYSES

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers	CARD 436-Hg COMPOSITE 2	CARD 436-As, Ba, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, Zn, Pb						Sample Condition/ REMARKS
#6 $KMnO_4$ IMP WASH #7 $KMnO_4$ IMP 4+5	8/02		022114-001	✓			2	X							
#8 HNO_3 (IMP 1+2)	↓		022114-002	✓			1		X						

SAMPLERS: (Signature)

Received by: (Signature) | Date | Time

Relinquished by: (Signature) Don Bunley

Received by: (Signature) | Date 8/09/90 | Time 5:30pm

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Relinquished by: (Signature) | Date | Time

Received for Laboratory by: Peter Baff

Date RECEIVED	Time	Date ACCEPTED	Time
8-10-90	0900	8-10-90	0900

Method of Shipment: P.O. #'s TO BE FAX'D

Special Instructions: * NOTE #8 (022114-002) ALSO REQUIRES "P" ANALYSIS

SAMPLE DISPOSITION:
1. Storage time requested:_____days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y N
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: White with report, Yellow to Enseco, Pink to Courier, Gold to Sample Control

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A CORNING Company

[X] 7440 Lincoln Way, Garden Grove, CA 92641, (714) 898 6370
[ ] 2810 Bunsen Ave., Unit A Ventura, CA 93003, (805) 650 0546
[ ] 2325 Skyway Dr., Unit K, Santa Maria, CA 93455, (805) 922-2776
[ ] 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
[ ] Mobile Labs, (800) ENSECO 8

CHAIN OF CUSTODY RECORD

Date 8/09/90 Page 1 of 2

Lab Number 022112

CLIENT: ENSECO - CRL

ADDRESS: 7440 LINCOLN WAY
GARDEN GROVE, CA 92641

PROJECT NAME: PETRO CHEM (232) PACIFIC ENERGY/

CONTRACT / PURCHASE ORDER / QUOTE #: OXNARD ILE #2

PROJECT MANAGER: KEVIN DUDDS

PHONE NUMBER: (714) 898-6370

SITE CONTACT:

ANALYSES: CARB 426-Zn, Ni, Cd As, Pb, Cr, Cu, Cd, Mn, Hg

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers		Sample Condition/ REMARKS
#200 P/N-1	7/24		022112-017	✓			1	X	
#203 HNO_3-1	↓		-018	✓			1	X	
#204 FILTER-1			-019			✓	1	X	
#205 P/N-2			-020	✓			1	X	
#208 HNO_3-2			-021	✓			1	X	
#209 FILTER-2	↓		-022			✓	1	X	
#210 P/N-3	7/27		-023	✓			1	X	
#213 HNO_3-3	↓		-024	✓			1	X	
#214 FILTER-3			-025			✓	1	X	
#215 P/N-4	↓		-026	✓			1	X	

SAMPLERS: (Signature)

Relinquished by: (Signature) Don Bailey

Relinquished by: (Signature)

Received by: (Signature) — Date — Time

Received by: (Signature) — Date 8/09/90 — Time 5:30 pm

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Received for Laboratory by: Peter Baff

Date	Time	Date RECEIVED	Time	Date ACCEPTED	Time
		8/10/90	0900	8-10-90	0900

Method of Shipment:

Special Instructions:

SAMPLE DISPOSITION:
1. Storage time requested: _____ days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y N
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

Enseco
A CORNING Company

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☐ 2810 Bunsen Ave., Unit A Ventura, CA 93003, (805) 650 0546
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☐ 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
☐ Mobile Labs, (800) ENSECO-8

CHAIN OF CUSTODY RECORD

Date 8/09/90 Page 2 of 2

Lab Number 022112

CLIENT ENSECO - CRL

ADDRESS

PROJECT NAME PETRO CHEM

CONTRACT / PURCHASE ORDER / QUOTE #

PROJECT MANAGER

PHONE NUMBER

SITE CONTACT

ANALYSES

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers	CARB 436 - As, Ba, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, Zn	COMPOSITE 2 FOR Hg						Sample Condition/ REMARKS
* 218 HNO3-4	7/27		022112-027	✓			1	K							
* 219 FILTER-4	↓		-028			✓	1	K							
* 502 HNO3-INLET	↓		-029	✓			1	X							
* 201 KMnO4-1 * 202 KMnO4-1	7/24		-030	✓			2		X						
* 206 KMnO4-2 * 207 KMnO4-2	↓		-031	✓			2		X						
* 211 -3 * 212 -3	7/27		-032	✓			2		X						
* 216 -4 * 217 -4	↓		-033	✓			2		X						
* 500 -INLET * 501 -INLET	↓		-034	✓			2		X						

SAMPLERS: (Signature)

Relinquished by: (Signature) Don Bailey

Relinquished by: (Signature)

Received by: (Signature) Date Time

Received by: (Signature) Date 8/09/90 Time 5:30pm

Date Time

Received for Laboratory by: Peter Caff

Date RECEIVED	Time	Date ACCEPTED	Time
8-10-90	0900	8-10-90	0900

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Method of Shipment:

Special Instructions:

SAMPLE DISPOSITION:
1. Storage time requested:_____days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y N
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: White with report. Yellow to [illegible]

Enseco
A CORNING Company

Mercury, Cold Vapor AA (Total)

Method 245.1

Client Name: Petro Chem Environmental Services Inc.
Matrix: AQUEOUS Received: 10 AUG 90
Units: mg/L Authorized: 23 AUG 90

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed	
054411-0014-SA	#201 KMN04-1 202 KMN	ND	0.00040	30 AUG 90	31 AUG 90	r
054411-0015-SA	#206 KMN04-2 207 KMN	ND	0.00040	30 AUG 90	31 AUG 90	r
054411-0016-SA	#211 KMN04-3 212 KMN	ND	0.00040	30 AUG 90	31 AUG 90	r
054411-0017-SA	#216 KMN04-4 217 KMN	ND	0.00040	30 AUG 90	31 AUG 90	r
054411-0018-SA	#500 KMN04-INLET 501	0.0016	0.00040	30 AUG 90	31 AUG 90	r
054411-0019-SA	#6 KMN04 IMP WASH #	ND	0.00040	30 AUG 90	31 AUG 90	r

Note r : Reporting limit changed due to sample volume limitations.

ND = Not detected
NA = Not applicable

Reported By: Deena Gantt Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

METHOD 430: MULTIMETALS

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE #2 JOB NO. 232 SAMPLED BY: JEM

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS	ANALYSIS REQUIRED
200	PACIFIC ENERGY MULTI METALS P/N-1	7-24-90		✓			1	
204	FILTER-1				✓		1	
203	HNO_3-1			✓			1	
201	$KMnO_4$-1			✓			1	
202	$KMnO_4$-1			✓			1	
205	PACIFIC ENERGY MULTIMETALS P/N-2	7-24-90		✓			1	
209	FILTER-2				✓		1	
208	HNO_3-2			✓			1	
206	$KMnO_4$-1			✓			1	
207	$KMnO_4$-1			✓			1	

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
James E Parkerson			
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE #2 JOB NO. 232 SAMPLED BY: JEM

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS	ANALYSIS REQUIRED
210	PACIFIC ENERGY MULTI METALS P/N-3	7-27-90		✓			1	
214	FILTER-3				✓		1	
213	HNO_3-3			✓			1	
211	$KMnO_4$-3			✓			1	
213	$KMnO_4$-3			✓			1	
215	PACIFIC ENERGY MULTIMETALS PN/-4	7-27-90		✓			1	
219	FILTER-4				✓		1	
218	HNO_3-4			✓			1	
216	$KMnO_4$-4			✓			1	
217	$KMnO_4$-4			✓			1	

OMMENTS:

ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE

CHAIN OF CUSTODY RECORD

Method 436

PACIFIC ENERGY
OXNARD ICE #2

JOB NO. 232

SAMPLED BY: JDN

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS.	ANALYSIS REQUIRED
20	PACIFICENERGY MULTIMETALS 1N HNO_3 BLANK	7-27-90		—				
21	$KMnO_4$ BLANK			—				
22	HNO_3 / H_2O_2 BLANK			—				HOLD SAMPLES DO NOT ANALYZE
23	8N HCL BLANK			—				
24	H_2O BLANK			—				
25	FILTER BLANK				—			

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
James E Morrison	8-6-90	[illegible]	6/8/90
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE 2

JOB NO. 232

SAMPLED BY: JDN

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS.	ANALYSIS REQUIRED
500	PACIFIC ENERGY-INLET MULTIMETALS KMnO4	7-27-90		✓				
501	PACIFIC ENERGY-INLET MULTIMETALS KMnO4 1	7-27-90		✓				
502	PACIFIC ENERGY-INLET MULTIMETALS HNO3 INLET	7-27-90		✓				

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

METHOD 436 inlet
FIELD DATA @ 70'

	OUTLET
RUN #:	1
TIME:	1215
Vm (dry gas sampled)	76.26
Y (meter calib. factor)	1.019675
P bar (Barometric pressure)	30.35
P static (stack pressure, " H2O)	
Delta H (differential meter press, " H2O)	0.5
Tm (meter temperature, R')	541
Vol H2O mls	12.9
Vm(std),dscf	77.37
Bws-H2O vapor	0.0078
MF-moisture factor	0.9922

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

CARB Method 436

Pollutant	mg/l	Sample Vol. (ml)	Vm std	SCFM		gr/DSCF	lb/hr
Arsenic	0.024	350	49.1	630		2.63E-06	1.42E-05
Beryllium	0.002	350	49.1	630	*	2.20E-07	1.19E-06
Cadmium	0.0021	350	49.1	630		2.31E-07	1.25E-06
Chromium	0.011	350	49.1	630		1.21E-06	6.53E-06
Copper	0.002	350	49.1	630		2.20E-07	1.19E-06
Lead	0.005	350	49.1	630	*	5.49E-07	2.97E-06
Manganese	0.01	350	49.1	630	*	1.10E-06	5.93E-06
Mercury	0.0016	522	49.1	630		2.62E-07	1.42E-06
Nickel	0.13	350	49.1	630		1.43E-05	7.71E-05
Selenium	0.005	350	49.1	630	*	5.49E-07	2.97E-06
Zinc	0.085	350	49.1	630		9.33E-06	5.04E-05

* Values reported are lower detection limit

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Metal Emissions

mgs metal / Kg fuel: Method 436

Pollutant	mg/l	Sample Vol. (ml)	Total mgs		mgs/Kg Fuel
Arsenic	0.024	350	8.40E-03		4.45E-06
Beryllium	0.002	350	7.00E-04	*	3.71E-07
Cadmium	0.0021	350	7.35E-04		3.90E-07
Chromium	0.011	350	3.85E-03		2.04E-06
Copper	0.002	350	7.00E-04		3.71E-07
Lead	0.005	350	1.75E-03	*	9.27E-07
Manganese	0.01	350	3.50E-03	*	1.85E-06
Mercury	0.0016	522	8.35E-04		4.43E-07
Nickel	0.13	350	4.55E-02		2.41E-05
Selenium	0.005	350	1.75E-03	*	9.27E-07
Zinc	0.085	350	2.98E-02		1.58E-05

Test Duration	90	minutes
Fuel Rate=	630	scfm
Total fuel Consumption=	5670	scf
Total Kgs Fuel Consumed=	1886.92	Kgs
Fuel Specific Volume=	13.63	cu.ft./lb
U.S. to Metric Weigth Conversion=	0.45359	Kgs/lb

* Values reported are lower detection limit

PACIFIC ENERGY INLET METALS CALCULATIONS mg Metal/kg Fuel Consumed:

$$\frac{mg}{Liter} * \frac{\text{Sample Volume (mls)}}{\frac{1000\ ml}{1\ Liter}} = \text{Total mg Metal}$$

$$\text{Test Duration 90 minutes} * 630\ \frac{SCF}{minute} = 56{,}700\ \text{Total Fuel Consumed}$$

$$\frac{56{,}700cf}{13.63\ \frac{cu.ft}{lb}} = 4{,}159.94\ \text{lbs of Fuel Consumed}$$

$$4{,}159.94\ \text{lbs Fuel} * .45359\ \frac{Kgs}{lb} = 1886.91\ \text{Kgs Fuel Consumed}$$

FOR ARSENIC:

$$\frac{8.40 * 10^{-3}\ \text{Arsenic mgs}}{1886.91\ \text{Kgs Fuel}} = 4.45 * 10^{-6}\ \frac{\text{mg Arsenic}}{1\ \text{Kg Fuel}}$$

UNIT ID: OXNARDICE #2
DATE: 7-27-90

INLET

ON-SITE DATA

SITE:

RUN #: #1

TIME: 1215-1345

Vm	Dry sampled gas volume, dcf	76.26
Y	Meter calibration factor (met# 1004 ____ ____)	30.35
P bar	Barometric pressure, in Hg	—
P static	Stack static pressure, in H_2	.50
Delta H	Differential meter pressure, in H_2O	.81
Tm	Meter temperature, deg F	

Contents	Run 1 final	Run 1 tare	Run 1 net	Run 2 final	Run 2 tare	Run 2 net	Run 3 final	Run 3 tare
$CaSO_4$	612.5	609.1	3.4					
Dilution	529.5	588.3	-58.8					
K_2O	463.6	460.9	2.7					
[illegible]	605.9	565.2	40.7					
[illegible]	600.8	598.1	2.7					
Silica	822.8	800.6	22.2					
✓ Ic, volume of H_2O, grams			12.9					

		#1	#2
CO_2	% Dry Volume		
O_2	% Dry Volume		
N_2	% Dry Volume		
Cp	Pitot tube coefficient (Pit# ____ ____ ____)		
Delta P	Avg Delta-P, in H_2O		
Ts	Stack temperature, in deg F		
As	Stack area, sq. ft		
Ds	Stack Diameter, inches		
Dn	Nozzle diameter, inches		
Dur	Sampling time, min		
% Iso	Mini Iso		

****

Filter #

Filter tare weights, grams

$CaSO_4 + NO_3$ 1st 2nd

INITIALS**

Impingers I 124.5
F 106.3

Permanent 4th 5th imp I 424.6
F 61.9

CONTROL BOX#: ____

Hi Δ P ____ Lo Δ P ____ Ave Δ P ____ Duct Temp. ____

Diameters before disturb ____ After ____

# of Points, total ____

Overall (inches) ____ Coupling ____

CARB multimetals test FIELD DATA

Client: PACIFIC ENERGY Report #: _____
Location: OXNARD UNIT #2
Operator: JEM JDN
Date: 7.27.90
Run No: 1 INLET FUEL GAS
Pump No.: GMJF
Meter Box No.: 1004 Factor: _____
Meter ΔH @: 1.11
Pitot Tube No.: —

PRE Post Test Leak Chk.

Leak Rate: <.001 cfm
Vacuum: 10 (in Hg)

POST TEST LEAK RATE = <.001 @ 10 IN HG.

Ambient Temp: —
Barometric Pressure: 30.35
Static Pressure, (in Hg): —
Assumed Moisture %: —
Nozzle Ident. No.: —
Aver. Calib. Nozzle Diam.(in): —
Probe Liner Material: TEFLON
Filter Number: —
Duct Diam. (in): —

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Las Impinger (°F)
FUEL GAS	1215	4			.50	326.02	78	78		
INLET TO	1225	4			.50		84	77		
COMPRESSOR	1235	4			.50		84	78		
	1245	4			.50		84	78		
	1255	4			.50		83	78		
	1305	4			.50		82	78		
	1315	4			.50		82	78		
	1325	4			.50		82	78		
	1335	4			.50		83	79		
	1345	4			.50		82	79		
	1355	4			.50		83	79		
	1405	4			.50		83	79		
	15	4			.50		83	79		
	25				.50		83	79		
	35				.50		83	79		
Total	45				.50		avg. 83	avg. 79		
Average						402.23	avg.			

METHOD 426 DATA

COMPANY: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

METHOD 423
FIELD DATA @ 70'

RUN #:	1	2	3
TIME:	1441	1829	1515
Vm (dry gas sampled)	46.69	46.42	45.9
Y (meter calib. factor)	0.991696	0.991696	0.991696
P bar (Barometric pressure)	30.25	30.25	30.25
P static (stack pressure, " H2O)	2.1	2.1	2.1
Delta H (differential meter press, " H2O)	1.06	1.06	1.03
Tm (meter temperature, R')	563	558	561
Vol H2O mls	150.3	149.3	152.6
Vm(std),dscf	44.18	44.32	43.59
Bws-H2O vapor	0.1388	0.1376	0.1422
MF-moisture factor	0.8612	0.8624	0.8578
% CO2	7.4	7.5	7.5
% O2	8	8	7.9
% N2	84.6	84.5	84.6
Md-MW stk gas,dry	29.5	29.52	29.52
Ms-MW stk gas,wet	27.9	27.93	27.88
Cp-pitot tube	0.84	0.84	0.84
Avg sq rt ^p	1.889	1.892	1.863
T stack, R'	1399	1397	1395
Stack area,ft2	1.67	1.67	1.67
Vs-fps	174.21	174.26	171.62
Qstd-dscfm	5787	5805	5695
Area noz,ft2	1.97E-04	1.97E-04	1.97E-04
Sample time	64	64	64
% Isokinetic	101.2	101.2	101.4

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Arsenic

Test	Fraction	Vm std	DSCFM	Total ug		gr/DSCF	lb/hr
1	p/n	44.18	5787	0.88	*	3.07E-07	1.52E-05
	Filter	44.18	5787	0.62		2.16E-07	1.07E-05
	Imp	44.18	5787	1.30	*	4.53E-07	2.25E-05
				total		9.76E-07	4.85E-05
2	p/n	44.32	5805	0.73	*	2.54E-07	1.26E-05
	Filter	44.32	5805	0.62		2.15E-07	1.07E-05
	Imp	44.32	5805	3.00	*	1.04E-06	5.19E-05
				total		1.51E-06	7.53E-05
3	p/n	43.59	5695	0.65	*	2.30E-07	1.12E-05
	Filter	43.59	5695	0.38		1.34E-07	6.56E-06
	Imp	43.59	5695	3.00	*	1.06E-06	5.18E-05
				total		1.42E-06	6.96E-05
			Three Run Average			1.30E-06	6.44E-05

* Values Reported are lower detection limit

METHOD 423 ARSENIC

COMPANY: PACIFIC ENERGY
REPORT #:
UNIT ID: OXNARD ICE #2
DATE: 7-24-90

ON-SITE DATA

SITE: OUTLET

RUN #:	#1	#2	#3
TIME:	7-24-90 1441 - 1547	7-24-90 1229-1333	7-27-90 1215-1319

		#1	#2	#3
Vm	Dry sampled gas volume, dcf	96.69	90.42	95.9
Y	Meter calibration factor (met# 1002 → ____)	.9916965	.9916965	.9916965
P bar	Barometric pressure, in Hg	30.25	30.25	30.35
P static	Stack static pressure, in H_2	-2.1	2.1	2.1
Delta H	Differential meter pressure, in H_2O	1.06	1.06	1.03
Tm	Meter temperature, deg F	103	98	101

Contents	Run 1 final	Run 1 tare	Run 1 net	Run 2 final	Run 2 tare	Run 2 net	Run 3 final	Run 3 tare	Run 3 net
H_2O	807.8	608.4	199.4	763.9	586.3	177.6	762.3	581.5	180.8
H_2O	621.0	604.3	16.7	631.3	604.3	27.0	607.1	586.9	20.2
KO	467.6	465.7	1.90	467.2	460.7	6.5	466.7	464.2	2.5
Silica	732.5	721.4	11.1	809.1	793.3	15.8	813.9	803.7	10.2
Line Wash	.1N NaOH		-78.8			-77.6			-61.1
V lc, volume of H_2O, grams			150.3			149.3			152.6

		#1	#2	#3
CO_2	% Dry Volume	7.4	7.5	7.5
O_2	% Dry Volume	8.0	8.0	7.9
N_2	% Dry Volume	84.6	84.5	84.6
Cp	Pitot tube coefficient (Pit# ____ ____ ____)	.84	.84	.84
Delta P	Avg Delta-P, in H_2O	3.57	3.58	3.47
Ts	Stack temperature, in deg F	939	937	935
As	Stack area, sq. ft	1.67	1.67	1.67
Ds	Stack Diameter, inches	17.5	17.5	17.5
Dn	Nozzle diameter, inches	.190	.19	.19
Dur	Sampling time, min	64	64	64
% Iso	Mini Iso	99.42	100.35	100.35

****

Filter #	Blank	QT 182	QT 183	QT 184
Filter tare weights, grams		.76506	.77338	.75791
P/N .1N NaOH	201.7	200.00	218.5	215.5
F	150.6	50.4	93.2	129.9
I	150.6	286.2	295.7	212.6
Impingers .1N NaOH F	97.7	200.00	212.5	46.0

INITIALS**

CONTROL BOX#: _____
Hi Δ P _____ Lo Δ P _____ Ave Δ P _____ Duct Temp. _____
Diameters before disturb _____ After _____
# of Points, total _____
Overall (inches) _____ Coupling _____

ARSENIC [illegible]/423 FIELD DATA

Client: PACIFICENERGY Report #: _____ PRE ~~Post~~ Test Leak Chk.
Location: QUAND UNIT #2
Operator: JER JDN
Date: 7-24-90
Run No: 1
Pump No.: GAST
Meter Box No.: 1022 Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 3Q-1

Leak Rate: <0.001 cfm
Vacuum: 10 (in Hg)

4.0 MIN/POINT

Ambient Temp: _____
Barometric Pressure: 30.25
Static Pressure, (in Hg): +2.1
Assumed Moisture %: 13 MW_{wet}: 27.5
Nozzle Ident. No.: _____
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: QUARTZ
Filter Number: 182 QT
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) RATE	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or La Impinger (°F)
8	1441	3	939	4.0	.765	1.17	240.43	99	97	250	
7	45	3	944	3.9	.769	1.15	243.5	113	105	250	
6	49	3	945	3.9	.761	1.14	246.6	107	99		
5	53	3	949	3.85	.760	1.13	249.6	111	103	250	
4	57	3	930	3.3	.701	0.99	252.6	104	98		
3	1501	3	946	3.2	.698	0.97	255.4	114	107		
2	05	3	944	3.3	.706	0.99	258.2	110	106	250	
1	09	3	945	3.3	.698	0.98	261.0	104	99		
	1513	3					263.77			250	
								avg.	avg.		
Total											
Average								avg.			

ARSENIC [illegible] 423 FIELD DATA

Client: PACIFIC ENERGY Report #: _____
Location: OXNARD UNIT #2
Operator: JEW JDN
Date: 7-24-90
Run No: 1 CONT
Pump No.: GAST
Meter Box No.: 1002 Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 3Q-1

Post Test Leak Chk.

Leak Rate: 2.001 cfm
Vacuum: 10 (in Hg)

Ambient Temp: _____
Barometric Pressure: 30.25
Static Pressure, (in Hg): +2.1
Assumed Moisture %: 13 MW = 27.5
Nozzle Ident. No.: _____
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: QUARTZ
Filter Number: 182 QT
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) RATE	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	1515	3	947	4.2	.786	1.22	263.77	102	99	250	
7	19	3	934	4.0	.769	1.17	266.9	101	98		
6	23	3	934	3.9	.762	1.15	269.9	104	99	251	
5	27	3	934	3.7	.741	1.10	273.1	103	98		
4	31	3	938	3.4	.710	1.01	276.1	103	99	253	
3	35	3	934	3.1	.678	0.93	278.9	102	98		
2	39	3	934	3.1	.679	0.94	281.6	104	98	251	
1	43	3	934	3.1	.679	0.94	284.3	104	98	250	
	1547						287.12				
							46.69				
	64 MIN		939	3.57							
						ISO =	99.42		103		
						1.06					
Total								avg.	avg.		
Average								avg.			

Arsenic FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard Unit #2
Operator: JAN / JEM
Date: 7-24-90
Run No: 2
Pump No.: hi-flo
Meter Box No.: 1007 Factor:
Meter ΔH @: 900
Pitot Tube No.:

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 70°F
Barometric Pressure: 30.25
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13.0 MW = 27.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: Quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)		Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or La Impinger (°F)
1	18:29	4.0	934	3.10	.674	.93	337.40	97	97		
2	:33	4.0	934	3.10	.674	.93	340.11	97	97		
3	:37	4.0	936	3.10	.675	.93	342.82	100	96		
4	:41	4.5	937	3.40	.706	1.01	345.52	100	96		
5	:45	4.5	939	3.75	.741	1.10	348.35	100	95		
6	:49	5.0	937	3.95	.761	1.15	351.30	100	95		
7	:53	5.0	939	3.95	.760	1.15	354.34	100	95		
8	:57	5.0	948	4.10	.772	1.18	357.40	100	95		
	19:01						360.53				
Total								avg.	avg.		
Average								avg.			

Arsenic FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN/JEM
Date: 7-24-90
Run No: 2 (cont'd)
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 3Q-1

Post Test Leak Chk.

Leak Rate: .003 cfm
Vacuum: 7.0 (in Hg)

Ambient Temp: 70°F
Barometric Pressure: 30.25
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13 MW = 27.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: Quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O) Rate	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or La Impinger (°F)
8	1901	5.5	930	4.00	.767	1.17	360.53	100	95		
7	1905	5.5	930	4.00	.767	1.17	363.60	100	95		
6	1909	5.0	935	3.90	.763	1.15	366.72	106	99		
5	1913	5.0	937	3.75	.741	1.10	369.77	101	94		
4	1917	4.5	935	3.40	.709	1.01	372.70	103	97		
3	1921	4.0	938	3.35	.700	.99	375.51	101	94		
2	1925	4.0	940	3.25	.692	.97	378.30	103	96		
1	1929	4.0	940	3.25	.692	.97	381.09	103	96		
	1933						383.82				
		X̄=	937	3.58			46.48		98		
					ΔH̄ = 1.06						
					ISO = 100.35						
Total					velfps = 175.50			avg.	avg.		
Average								avg.			

Arsenic - 3 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #7
Operator: JDN/JEM
Date: 7-27-90
Run No: 3 (cont'd)
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 30-1

Post Test Leak Chk.

Leak Rate: <.001 cfm
Vacuum: 8.0 (in Hg)

Ambient Temp: 75°F
Barometric Pressure:
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13.0 MW_wet = 77.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: - quartz
Filter Number: QT 167
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
1	12:47	4.0	934	3.25	.694	.98	961.20	106	96		
2	:51	4.0	934	3.25	.694	.98	963.95	106	96		
3	:55	4.0	933	3.20	.690	.96	966.75	107	97		
4	:59	4.0	931	3.10	.681	.94	969.43	108	98		
5	13:03	5.0	930	3.55	.730	1.06	972.22	109	99		
6	:07	5.0	942	3.65	.734	1.09	975.04	107	97		
7	:11	5.0	937	3.75	.746	1.11	978.00	106	98		
8	:15	5.0	946	3.85	.755	1.13	980.95	108	99		
	:19						984.00				
		X̄ =	935	3.47					101		
					ΔH = 1.03						
Total					ΣΔ = 100.35			avg.	avg.		
Average					vel fps = 172.43			avg.			

Arsenic - 3 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN/JEM
Date: 7-27-90
Run No: 3
Pump No.: gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 32-1

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 75°F
Barometric Pressure: 30.35
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13.0 MW_{wet} = 27.5
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: quartz
Filter Number: QT 184
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O)	Δt	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	12:15	5.0	938	3.90	.751	1.14	938.10	95	96		
7	:19	5.0	939	3.8	.745	1.11	941.32	103	97		
6	:23	5.0	936	3.75	.746	1.11	944.29	107	97		
5	:27	4.5	934	3.65	.735	1.08	947.20	107	95		
4	:31	4.0	929	3.10	.680	.94	950.02	108	96		
3	:35	4.5	931	3.15	.683	.95	952.85	106	95		
2	:39	4.5	933	3.3	.699	.99	955.61	107	97		
1	:43	4.5	933	3.3	.699	.99	958.50	107	94		
	:47						961.20				
Total								avg.	avg.		
Average								avg.			

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-005
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #100 P/N-1

CARB IMPINGER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	0.88	ND	1.5	08/22/90	08/28/90	JB
Total Impinger Volume (ML)	ml	146	NA	NA	NA	08/29/90	08/29/90	JW

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-007
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: FILTER

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #102 FILTER-1

CARB FILTER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	0.62	0.15	ND	.15	08/22/90	08/28/90	JB

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-006
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #101 IMP-1

CARB IMPINGER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	1.3	ND	1.5	08/22/90	08/28/90	JB
Total Impinger Volume (ML)	ml	210	NA	NA	NA	08/29/90	08/29/90	JW

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-008
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #103 P/N-2

CARB IMPINGER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	0.73	ND	1.5	08/22/90	08/28/90	JB
Total Impinger Volume (ML)	ml	122	NA	NA	NA	08/29/90	08/29/90	JW

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-010
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: FILTER

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #105 FILTER-2

CARB FILTER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	0.62	0.15	ND	.15	08/22/90	08/28/90	JB

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-009
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #104 IMP-2

CARB IMPINGER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	3.0	ND	1.5	08/22/90	08/28/90	JB
Total Impinger Volume (ML)	ml	500	NA	NA	NA	08/29/90	08/29/90	JW

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-011
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #106 P/N-3

CARB IMPINGER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	0.65	ND	1.5	08/22/90	08/28/90	JB
Total Impinger Volume (ML)	ml	162	NA	NA	NA	08/29/90	08/29/90	JW

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-013
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: FILTER

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #108 FILTER-3

CARB FILTER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	0.38	0.15	ND	.15	08/22/90	08/28/90	JB

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-012
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #107 IMP-3

CARB IMPINGER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	3.0	ND	1.5	08/22/90	08/28/90	JB
Total Impinger Volume (ML)	ml	500	NA	NA	NA	08/29/90	08/29/90	JW

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-014
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #109 P/N-4

CARB IMPINGER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	0.80	ND	1.5	08/22/90	08/28/90	JB
Total Impinger Volume (ML)	ml	133	NA	NA	NA	08/29/90	08/29/90	JW

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-015
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #110 IMP-4

CARB IMPINGER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	1.3	ND	1.5	08/22/90	08/28/90	JB
Total Impinger Volume (ML)	ml	210	NA	NA	NA	08/29/90	08/29/90	JW

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-016
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: FILTER

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #111 FILTER-4

CARB FILTER Prepared by CARB PREP By WG

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Arsenic (CARB 423)	ug	ND	0.15	ND	.15	08/22/90	08/28/90	JB

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-007/014
Date Sampled: 24-JUL-1990
27-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: FILTER

Project: 232 PACIFIC ENERGY/OXNARD ICE #2

Matrix Spike/Matrix Spike Duplicate Report

Sample Number	Parameter (Method)	Units	Observed Concentration Sample	MS	MSD	Amt. Spiked	% Recovery MS	MSD	Avg.	% RPD
9022112-006	ARSENIC (CARB 423)	ug	.002	0.94	0.98	1.00	94	98	96	4

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-007/014
Date Sampled: 24-JUL-1990
27-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: FILTER

Project: 232 PACIFIC ENERGY/OXNARD ICE #2

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Avg. Spike Recov.	Acceptable Range	Rel. Pct. Diff.	Acceptable Range
L90247016	ARSENIC (CARB 423)	1.00	ug	94.	78-120	0.	20

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L90247016	28-AUG-1990	ARSENIC (CARB 423)	G-9022112-007
			G-9022112-010
			G-9022112-013
			G-9022112-016

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
9022112-006	28-AUG-1990	ARSENIC (CARB 423)	G-9022112-007
			G-9022112-010
			G-9022112-013
			G-9022112-016

METHOD 423; ARSENIC

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

PROJECT: Pacific Energy Oxnard Ice #2

JOB NO. 232

SAMPLED BY: JEM

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS	ANALYSIS REQUIRED
100	Pacific Energy METHOD 423 P/N-1	7-24-00		✓			1	✓
102	FILTER-1				✓		1	✓
101	IMP-1			✓			1	✓
103	P/N-2			✓			1	
105	FILTER-2				✓		1	
104	IMP-2			✓			1	
106	P/N-3			✓			1	
108	FILTER-3				✓		1	
107	IMP-3			✓			1	

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
James E Martinez			
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE #2

JOB NO. 232

SAMPLED BY: JEM

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS	ANALYSIS REQUIRED
109	PACIFIC ENERGY METHOD 423 P/N-4			✓			1	
111	FILTER-4				✓		1	
110	IMP-4			✓			1	
112	FILTER BLANK				✓		1	
113	H_2O BLANK			✓			1	
114	.1 NAOH BLANK			✓			1	

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

METHOD 425 DATA

COMPANY: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

METHOD 425
FIELD DATA @ 70'

RUN #:	1	2	3
TIME:	1200	1344	1510
Vm (dry gas sampled)	47.01	46.86	46.77
Y (meter calib. factor)	0.991696	0.991696	0.991696
P bar (Barometric pressure)	30.34	30.34	30.34
P static (stack pressure, " H2O)	2.1	2.1	2.1
Delta H (differential meter press, " H2O)	1.06	1.07	1.06
Tm (meter temperature, R')	567	567	565
Vol H2O mls	147.1	150.2	147.9
Vm(std),dscf	44.3	44.16	44.23
Bws-H2O vapor	0.1359	0.1387	0.1367
MF-moisture factor	0.8641	0.8613	0.8633
% CO2	7	7	7.1
% O2	8.4	8.2	8.2
% N2	84.6	84.8	84.7
Md-MW stk gas,dry	29.46	29.45	29.46
Ms-MW stk gas,wet	27.9	27.86	27.89
Cp-pitot tube	0.84	0.84	0.84
Avg sq rt ^p	1.884	1.887	1.887
T stack, R'	1395	1396	1399
Stack area,ft2	1.67	1.67	1.67
Vs-fps	173.24	173.7	173.8
Qstd-dscfm	5808	5801	5805
Area noz,ft2	1.97E-04	1.97E-04	1.97E-04
Sample time	64	64	64
% Isokinetic	101.1	100.9	101

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

Summary of Results for Total Chrome and Hexavalent Chrome

Test	Fraction	Vm std	DSCFM	Total ug		gr/DSCF	lb/hr
1	p/n	44.30	5808	2.4	*	8.34E-07	4.16E-05
	Filt/Imp	44.30	5808	5.3	*	1.84E-06	9.18E-05
	Total Chrome				*	2.68E-06	1.33E-04
1	p/n	44.30	5808	4.6	*	1.60E-06	7.97E-05
	Filt/Imp	44.30	5808	10.4	*	3.62E-06	1.80E-04
	Total Hexavalent Chrome				*	5.21E-06	2.60E-04
2	p/n	44.18	5787	2.3	*	8.02E-07	3.98E-05
	Filt/Imp	44.18	5787	4.9	*	1.71E-06	8.48E-05
	Total Chrome				*	2.51E-06	1.25E-04
2	p/n	44.18	5787	4.5	*	1.57E-06	7.79E-05
	Filt/Imp	44.18	5787	9	*	3.14E-06	1.56E-04
	Total Hexavalent Chrome				*	4.71E-06	2.34E-04
3	p/n	44.18	5787	2.3	*	8.02E-07	3.98E-05
	Filt/Imp	44.18	5787	5.0	*	1.74E-06	8.65E-05
	Total Chrome				*	2.54E-06	1.26E-04
3	p/n	44.18	5787	4.4	*	1.53E-06	7.62E-05
	Filt/Imp	44.18	5787	9.9	*	3.45E-06	1.71E-04
	Total Hexavalent Chrome				*	4.98E-06	2.47E-04
	Total Chrome; Average of three runs					2.58E-06	1.28E-04
	Hexavalent Chrome; Average of three runs					4.97E-06	2.47E-04

* Values Reported are lower detection limit

COMPANY: PACIFIC ENERGY
REPORT #:
UNIT ID: OXNARD UNIT #2
DATE: 7-25-90

ON-SITE DATA

SITE: OUTLET

RUN #:	#1	#2	#3
TIME:	1200-1307	1300-1451	1510-1612
Vm Dry sampled gas volume, dcf	47.01	46.86	46.77
Y Meter calibration factor (met# 1002 ___ ___)	.991696	.991696	.991696
P bar Barometric pressure, in Hg	30.34	30.34	30.34
P static Stack static pressure, in H_2	2.1	2.1	2.1
Delta H Differential meter pressure, in H_2O	1.06	1.07	1.06
Tm Meter temperature, deg F	107	107	105

Contents	Run 1 final	Run 1 tare	Run 1 net	Run 2 final	Run 2 tare	Run 2 net	Run 3 final	Run 3 tare	Run 3 net
H_2O	777.5	601.6	175.9	751.3	583.0	168.3	802.4	603.7	198.7
H_2O	623.0	602.9	20.1	599.0	577.1	21.9	618.7	601.7	12.0
[illegible]	467.6	464.4	3.2	466.1	460.7	5.4	466.4	463.6	2.80
[illegible]	788.9	778.1	10.8	797.2	783.0	14.2	798.1	788.4	9.70
Silica									-80.3
			-62.9			-59.6			147.9
Liq Wash			147.1			150.2			

V lc, volume of H_2O, grams

		#1	#2	#3
CO_2	% Dry Volume	7.0	7.0	7.1
O_2	% Dry Volume	8.4	8.2	8.2
N_2	% Dry Volume	84.6	84.8	84.7
Cp	Pitot tube coefficient (Pit# ___ ___ ___)	.84	.84	.84
Delta P	Avg Delta-P, in H_2O	3.55	3.56	3.56
Ts	Stack temperature, in deg F	935	936	939
As	Stack area, sq. ft	1.67	1.67	1.67
Ds	Stack Diameter, inches	17.5	17.5	17.5
Dn	Nozzle diameter, inches	.19	.19	.19
Dur	Sampling time, min	64	64	64
% Iso	Mini Iso	100.55	100.16	100.[illegible]

****

Filter #
Filter tare weights, grams

Blank I 430.2
F 117.6

		#1	#2	#3
IMP	I	436.3	418.4	417.9
	F	320.1	287.1	314.2
P/N	I	478.8	316.1	413.1
	F	306.9	147.0	230.5

I 362.2
F 241.4

INITIALS**

Duct Temp. ___

CONTROL BOX#: ___ Ave Δ P ___
Hi Δ P ___ Lo Δ P ___ After ___
Diameters before disturb ___
# of Points, total ___ Coupling ___
Overall (inches) ___

CHROM Method 425 FIELD DATA

Client: PACIFIC ENERGY Report #: _____
Location: OXNARD UNIT #2
Operator: JDN JDN
Date: 7-25-90
Run No: 1
Pump No.: GAST
Meter Box No.: 1002 Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 35-1

PRE ~~Post~~ Test Leak Chk.

Leak Rate: 2.001 cfm
Vacuum: 10 (in Hg)

Ambient Temp: _____
Barometric Pressure: 30.34
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13 MW=27.5
Nozzle Ident. No.: _____
Aver. Calib. Nozzle Diam.(in): .18
Probe Liner Material: QUARTZ
Filter Number: _____
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (In H₂O) RATE	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	1200	2	935	3.8	.751	1.12	517.4	102	102	255	
7	04	2	939	3.9	.767	1.15	520.4	111	103		
6	08	2	932	3.8	.757	1.13	523.5	109	102	251	
5	12	2	938	3.7	.748	1.10	526.5	112	103		
4	16	2	935	3.4	.716	1.02	529.5	110	102		
3	20	2	933	3.2	.700	0.98	532.4	115	106	253	
2	24	2	931	3.2	.697	0.97	535.2	109	105		
1	28	2	933	3.2	.697	0.97	537.99	104	105	250	
	1232						540.8				
Total								avg.	avg.		
Average								avg.			

CHROM [illegible] 425 FIELD DATA

Client: [illegible] Report #: _____
Location: [illegible] UNIT #2
Operator: [illegible]
Date: 7-25-90
Run No: 1 CONT
Pump No.: GAST
Meter Box No.: 1W1 Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 3Q-1

Post Test Leak Chk.

Leak Rate: .009 cfm
Vacuum: 9.0 (in Hg)

Ambient Temp: _____
Barometric Pressure: 30.34
Static Pressure, (in Hg): 2-1
Assumed Moisture %: 13 MW = 27.5
Nozzle Ident. No.: -
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: - QUARTZ
Filter Number: _____
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H2O	Pressure Differencial across Orifice Meter ΔH (in H2O) RATE	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	1235	2	939	4.0	.779	1.19	540.3	113	105	256	
7	39	2	935	4.1	.787	1.21		110	105		
6	43	2	938	3.9	.769	1.16	547.1	112	105	251	
5	47	2	936	3.7	.747	1.10		109	104		
4	51	2	937	3.4	.718	1.02	553.2	109	106	251	
3	55	2	935	3.2	.694	0.97		109	103		
2	59	2	936	3.2	.694	0.97	558.8	109	103	252	
1	1303	2	936	3.2	.694	0.97		109	103		
	07						564.41				
			935	3.55		Vm =	47.01		107		
						Sc iso =	100.55				
						fps =	174.5				
						ΔH =	1.06				
Total								avg.	avg.		
Average								avg.			

Chiron Method 425 FIELD DATA

Client: PACIFIC ENERGY Report #: _____
Location: OXNARD UNIT #2
Operator: JEM JON
Date: 7-25-90
Run No: 2
Pump No.: GAST
Meter Box No.: TWC Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 3Q-1

PRE ~~Post~~ Test Leak Chk.

Leak Rate: <.001 cfm
Vacuum: 10 (in Hg)

Ambient Temp: _____
Barometric Pressure: 30.34
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13 MW=27.5
Nozzle Ident. No.: _____
Aver. Calib. Nozzle Diam.(in): .18
Probe Liner Material: - QUARTZ
Filter Number: -
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) Raw	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	1344	2	943	3.9	.751	1.13	566.90	96	96	251	
7	48	2	937	3.9	.762	1.16		110	105		
6	52	2	933	3.7	.746	1.10	578.0	107	103		
5	56	2	938	3.6	.738	1.09		111	105	255	
4	1400	2	935	3.4	.716	1.02	578.9	108	104		
3	04	2	939	3.2	.695	0.97		113	106		
2	08	2	930	3.3	.707	1.00	584.6	105	105	257	
1	12	2	930	3.3	.707	1.00		107	105		
	1416						590.31				
Total								avg.	avg.		
Average								avg.			

Chrom mod 425 FIELD DATA

Client: [illegible] Report #: _____
Location: _____
Operator: JCM JDN
Date: 7-25-90
Run No: 2 Cont
Pump No.: Cont
Meter Box No.: 1012 Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 30-1

Post Test Leak Chk.

Leak Rate: 6.001 cfm
Vacuum: 10 (in Hg)

Ambient Temp: _____
Barometric Pressure: 30.34
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13 mwt 27.5
Nozzle Ident. No.: _____
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: - Quartz
Filter Number: _____
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) RATE	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8 14	1419	2	941	4.1	.792	1.21	590.31	115	108	254	
7 11	23	2	942	4.0	.774	1.18		108	103		
6 22	27	2	943	3.8	.763	1.13	596.6	115	109		
5 26	31	2	935	3.7	.745	1.10		107	102		
4 30	35	2	941	3.4	.720	1.02	602.6	114	107		
3 34	39	2	933	3.3	.704	0.99		108	101		
2 31	43	2	928	3.2	.697	0.97	608.3	111	104		
1 42	47	2	927	3.2	.697	0.97		112	105		
46	1451						613.76				
	64 min		936	3.56		Vm =	46.86		107		
						Sp/Sd =	100.16				
						ΔH =	1.07				
Total						fps =	174.72	avg.	avg.		
Average								avg.			

Chrom Method 425 FIELD DATA

Client: Ralph Energy Report #: _____
Location: Oxnard Unit #2
Operator: TEW TDN
Date: 7-25-90
Run No: 3
Pump No.: GAST
Meter Box No.: 1002 Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 3Q-1

PRE ~~Post~~ Test Leak Chk.

Leak Rate: 6.001 cfm
Vacuum: 10 (in Hg)

Ambient Temp: —
Barometric Pressure: 30.34
Static Pressure, (in Hg): _____
Assumed Moisture %: 13 MW_w = 27.5
Nozzle Ident. No.: —
Aver. Calib. Nozzle Diam.(in): .17
Probe Liner Material: - Quartz
Filter Number: —
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) Rate	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	1510	5	936	3.8	.750	1.12	616.0	102	100	252	
7	14	5	940	3.9	.765	1.15		109	104		
6	18	5	935	3.85	.758	1.14	622.1	106	100		
5	22	5	938	3.8	.756	1.13		108	102		
4	26	5	933	3.3	.701	0.99	628.2	106	100		
3	30	5	940	3.2	.696	0.97		109	107		
2	34	5	935	3.1	.680	0.94	633.8	104	102		
1	38	5	935	3.1	.680	0.94		104	102		
	1542						639.13				
Total								avg.	avg.		
Average								avg.			

CHROM [illegible] 425 FIELD DATA

Client: PACIFIC ENERGY Report #: _____
Location: OXNARD UNIT #2
Operator: JEM JDN
Date: 7-25-90
Run No: 3 CONT
Pump No.: GAST
Meter Box No.: 1002 Factor: _____
Meter ΔH @: .90
Pitot Tube No.: 3Q-1

Post Test Leak Chk.

Leak Rate: _____ cfm
Vacuum: _____ (in Hg)

Ambient Temp: –
Barometric Pressure: 30.34
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13 MW: 27.5
Nozzle Ident. No.: –
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: - QUARTZ
Filter Number: –
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H2O	Pressure Differencial across Orifice Meter ΔH (in H2O) Rate	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	1545	5	942	4.0	.772	1.17	639.13	107	102		
7	49	5	940	4.1	.779	1.20		106	98		
6	53	5	943	4.0	.778	1.18	645.3	110	103		
5	57	5	943	3.8	.748	1.12		104	98		
4	1601	5	945	3.4	.709	1.01	651.5	106	100		
3	05	5	942	3.3	.697	0.98		103	98		
2	09	5	937	3.2	.701	0.97	657.1	116	107		
1	13	5	932	3.2	.701	0.97		116	107		
	1617						662.77				
			939	3.56		Vm =	46.77		105		
						Vso =	100.44				
						Vps =	174.91				
						ΔH =	1.06				
Total								avg.	avg.		
Average								avg.			

Enseco
A CORNING Company

Enseco - CRL
7440 Lincoln Way • Garden Grove, CA 92641
(714) 898-6370 • (213) 598-0458 • (800) LAB-1-CRL
FAX: (714) 891-5917

August 31, 1990

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
BAKERSFIELD, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9021915-001/008
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Project: (232) PACIFIC ENERGY SYSTEMS
OXNARD ICE #2

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: G-9021915-001/008 shown above.

The samples were received by CRL in a chilled state, intact and with the chain-of-custody record attached.

Note that ND() means not detected at the reporting limit expressed within the parentheses. The detection limit is the reporting limit raised to reflect the dilution factor of the sample.

C. Rhodigan
Reviewed

Terrel Kimble
Approved

The Report Cover Letter is an integral part of this report.
This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this laboratory's name for advertising or publicity purposes without authorization is prohibited.

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Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9021915-001/004
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Date Analyzed: 23-AUG-1990
10-AUG-1990
Sample Type: LIQUID

Project: (232) PACIFIC ENERGY SYSTEMS - OXNARD ICE #2

Sample ID	Chromium, Total ug CARB 425	Chromium, Hexavalent ug CARB 425	Total Impinger Volume ml ML
(300) P/N-1	ND(2.4)	ND(4.6)	231
(303) P/N-2	ND(2.3)	ND(4.5)	226
(306) P/N-3	ND(2.3)	ND(4.4)	221
(309) P/N-4	ND(1.8)	ND(3.6)	179
Blank	ND(2.4)	ND(0.02)	NA

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Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9021915-005/008
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Date Analyzed: 23-AUG-1990
10-AUG-1990
Sample Type: FILTER

Project: (232) PACIFIC ENERGY SYSTEMS - OXNARD ICE #2

Sample ID	Chromium, Total ug CARB 425	Chromium, Hexavalent ug CARB 425	Total Impinger Volume ml ML
(301 & 302) IMP-1 & FILTER-1 COMPOSITE	ND(5.3)	ND(10.4)	521
(304 & 305) IMP-2 & FILTER-2 COMPOSITE	ND(4.9)	ND(9.0)	488
(307 & 308) IMP-3 & FILTER-3 COMPOSITE	ND(5.0)	ND(9.9)	497
(310 & 311) IMP-4 & FILTER-4 COMPOSITE	ND(3.4)	ND(6.7)	335
Blank	ND(5.3)	ND(00.2)	NA

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9021915-001/004
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: (232) PACIFIC ENERGY SYSTEMS - OXNARD ICE #2

Matrix Spike/Matrix Spike Duplicate Report

Sample Number	Parameter (Method)	Units	Observed Concentration Sample	MS	MSD	Amt. Spiked	% Recovery MS	MSD	Avg.	% RPD
9021915-001	CHROMIUM, HEXAVALENT (CARB 425)	ug	ND	.041	.042	.04	103	105	104	2

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
9021915-001	10-AUG-1990	CHROMIUM, HEXAVALENT (CARB 425)	G-9021915-001
			G-9021915-002
			G-9021915-003
			G-9021915-004

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9021915-001/004
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: (232) PACIFIC ENERGY SYSTEMS - OXNARD ICE #2

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Avg. Spike Recov.	Acceptable Range	Rel. Pct. Diff.	Acceptable Range
L90222019	CHROMIUM, HEXAVALENT (CARB 425)	.040	ug	104.	67-129	2.	17
L90214001	CHROMIUM, TOTAL (CARB 425)	1.0	ug	91.	67-129	0.	17

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L90214001	23-AUG-1990	CHROMIUM, TOTAL (CARB 425)	G-9021915-001
			G-9021915-002
			G-9021915-003
			G-9021915-004
L90222019	10-AUG-1990	CHROMIUM, HEXAVALENT (CARB 425)	G-9021915-001
			G-9021915-002
			G-9021915-003
			G-9021915-004

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9021915-005/008
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: FILTER

Project: (232) PACIFIC ENERGY SYSTEMS - OXNARD ICE #2

Matrix Spike/Matrix Spike Duplicate Report

Sample Number	Parameter (Method)	Units	Observed Concentration Sample	MS	MSD	Amt. Spiked	% Recovery MS	MSD	Avg.	% RPD
9021915-001	CHROMIUM, HEXAVALENT (CARB 425)	ug	ND	.041	.042	.04	103	105	104	2

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
9021915-001	10-AUG-1990	CHROMIUM, HEXAVALENT (CARB 425)	G-9021915-005
			G-9021915-006
			G-9021915-007
			G-9021915-008

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9021915-005/008
Date Sampled: 24-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: FILTER

Project: (232) PACIFIC ENERGY SYSTEMS - OXNARD ICE #2

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Avg. Spike Recov.	Acceptable Range	Rel. Pct. Diff.	Acceptable Range
L90222019	CHROMIUM, HEXAVALENT (CARB 425)	.040	ug	104.	67-129	2.	17
L90214001	CHROMIUM, TOTAL (CARB 425)	1.0	ug	91.	67-129	0.	17

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L90214001	23-AUG-1990	CHROMIUM, TOTAL (CARB 425)	G-9021915-005 G-9021915-006 G-9021915-007 G-9021915-008
L90222019	10-AUG-1990	CHROMIUM, HEXAVALENT (CARB 425)	G-9021915-005 G-9021915-006 G-9021915-007 G-9021915-008

METHOD 425: CHROM + VI

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE #2 JOB NO. 232 SAMPLED BY: JEM

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS.	ANALYSIS REQUIRED
300	PACIFIC ENERGY METHOD 425 P/N-1	7-24-90		✓			1	
302	FILTER-1				✓		1	
301	IMP-1			✓			1	
303	P/N-2			✓			1	
305	FILTER-2				✓		1	
304	IMP-2			✓			1	
306	P/N-3			✓			1	
308	FILTER-3				✓		1	
307	IMP-3			✓			1	

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
James E Marchesini			
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

PROJECT: PACIFIC ENERGY OXNARD ICE #2

JOB NO. 232

SAMPLED BY: JEM

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS.	ANALYSIS REQUIRED
309	PACIFIC ENERGY METHOD 425 P/N-4	7-24-90		✓			1	
311	FILTER-4				✓		1	
310	IMP-4			✓			1	

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

CHAIN OF CUSTODY RECORD

ECT: JOB NO. SAMPLED BY:

SAMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS.	ANALYSIS REQUIRED
312	PACIFIC ENERGY Method 425 H_2O BLANK	7-20-90		—				HOLD DO NOT ANALYZE
313	↓ Filter BLANK	↓			—			

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
James A Matheson	8-6-90	[signature]	8/6/90
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

METHOD 421 DATA

COMPANY: PACIFIC ENERGY
DATE: 7-24 thru 7-27-90
UNIT: OXNARD LANDFILL ICE #2
REPORT #:62-232

METHOD 421
FIELD DATA @ 70'

RUN #:	1	2	3
TIME:	1153	1349	1530
Vm (dry gas sampled)	45.26	45.86	45.61
Y (meter calib. factor)	0.991696	0.991696	0.991696
P bar (Barometric pressure)	30.4	30.4	30.4
P static (stack pressure, " H2O)	2.1	2.1	2.1
Delta H (differential meter press, " H2O)	1.05	1.04	1.03
Tm (meter temperature, R')	562	559	559
Vol H2O mls	147.6	148.2	143.8
Vm(std),dscf	43.12	43.92	43.68
Bws-H2O vapor	0.1395	0.1378	0.1349
MF-moisture factor	0.8605	0.8622	0.8651
% CO2	7.1	7.1	7.1
% O2	8.3	8.3	8.3
% N2	84.6	84.6	84.6
Md-MW stk gas,dry	29.47	29.47	29.47
Ms-MW stk gas,wet	27.87	27.89	27.92
Cp-pitot tube	0.84	0.84	0.84
Avg sq rt ^p	1.873	1.876	1.863
T stack, R'	1397	1399	1396
Stack area,ft2	1.67	1.67	1.67
Vs-fps	172.28	172.61	171.14
Qstd-dscfm	5755	5769	5752
Area noz,ft2	1.97E-04	1.97E-04	1.97E-04
Sample time	64	64	64
% Isokinetic	99.3	100.9	100.6

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #: 62-232

Summary of Results for Hydrochloric Acid

Pollutant	Test	Vm std	DSCFM	Total ug	gr/DSCF	lb/hr
Hydro-	1	43.12	5755	4860	1.74E-03	8.57E-02
chloric Acid	2	43.92	5769	4820	1.69E-03	8.37E-02
	3	43.68	5752	4950	1.75E-03	8.61E-02
				average	1.72E-03	8.52E-02
Blank 1/		43.57	5759	8510	3.01E-03	1.49E-01

1/ High Sample Blank Recorded For Run #4

* Values Reported are lower detection limit

HKL [illegible] TC1

COMPANY: PACIFIC ENERGY
REPORT #:
UNIT ID: OXNARD UNIT #2
DATE: 7-26-90

ON-SITE DATA

SITE: OUTLET

RUN #:	#1	#2	#3
TIME:	1157-1306	1349-1453	1530-1634
Vm Dry sampled gas volume, dcf	45.26	45.86	95.61
Y Meter calibration factor (met# 1002 → ____)	.991696	.991696	.991696
P bar Barometric pressure, in Hg	30.40	30.40	30.40
P static Stack static pressure, in H_2	2.1	2.1	2.1
Delta H Differential meter pressure, in H_2O	1.05	1.04	1.03
Tm Meter temperature, deg F	102	99	99

Contents	Run 1 final	Run 1 tare	Run 1 net	Run 2 final	Run 2 tare	Run 2 net	Run 3 final	Run 3 tare	Run 3 net
Sodium Bi Carb	792.5	601.4	191.1	762.1	571.3	190.8	784.5	598.8	185.7
Sodium Bi Sodium Carb	609.1	595.2	13.9	582.1	569.9	12.2	614.6	595.6	19.0
KO	466.9	464.1	2.8	461.8	460.4	1.4	470.9	467.2	3.7
Silica	788.2	778.2	10.0	778.3	769.5	8.8	800.8	788.5	12.3
Liquid			-70.2			-65.0			-76.9
V lc, volume of H_2O, grams			147.6			148.2			143.8

	#1	#2	#3
CO_2 % Dry Volume	7.1	7.1	7.1
O_2 % Dry Volume	8.3	8.3	8.3
N_2 % Dry Volume	84.6	84.6	84.5
Cp Pitot tube coefficient (Pit# ____ ____ ____)	.84	.84	.84
Delta P Avg Delta-P, in H_2O	3.51	3.52	3.47
Ts Stack temperature, in deg F	937	939	936
As Stack area, sq. ft	1.67	1.67	1.67
Ds Stack Diameter, inches	17.5	17.5	17.5
Dn Nozzle diameter, inches	.190	.190	.190
Dur Sampling time, min	64	64	64
% Iso Mini Iso	98.31	100.09	100.09

****

Filter #		QT173	QT174	QT175
Filter tare weights, grams	BLANK	.82255	.81859	.83014

P/N

IMPINGERS		#1	#2	#3
I		341.2	366.0	294.4	348.[illegible]
F		226.3	225.1	134.6	[illegible]
I		317.7	207.2	134.6	461.7
F		272.4	129.9	25.0	304.9

INITIALS**

CONTROL BOX#: _____
Hi Δ P _____ Lo Δ P _____ Ave Δ P _____ Duct Temp. _____
Diameters before disturb _____ After _____
# of Points, total _____
Overall (inches) _____ Coupling _____

[illegible] - 1 FIELD DATA

Client: [illegible] Report #: _____
Location: Oxnard #2
Operator: JDN
Date: 7-26-90
Run No: 1 (cont'd)
Pump No.: Gast
Meter Box No.: 1002 Factor: _____
Meter ΔH @: .70
Pitot Tube No.: 3.2-1

Post Test Leak Chk.

Leak Rate: <.001 cfm
Vacuum: 6.0 (in Hg)

Ambient Temp: 75°F
Barometric Pressure: 30.40
Static Pressure, (in Hg): 2.1
Assumed Moisture %: 13
Nozzle Ident. No.: _____
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: Quartz
Filter Number: _____
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) Γ	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	12:34	4.5	936	4.0	.766	1.17	817.96	103	96		
7	12:38	4.5	936	4.0	.766	1.17	821.07	103	96		
6	12:42	4.0	941	3.8	.752	1.12	824.14	110	99		
5	:46	3.5	935	3.6	.731	1.07	827.15	108	96		
4	:50	3.0	926	3.1	.681	.94	830.07	109	97		
3	:54	3.5	930	3.3	.702	.99	832.95	108	98		
2	:50	3.0	931	3.1	.676	.94	835.78	106	94		
1	13:02	3.0	931	3.1	.676	.94	838.46	106	94		
	:06						841.16				
		$\bar{X}$=	937	3.51					102		
					Vm = 45.26						
					ΔH = 1.05						
					T50 = 98.31						
					vel fps = 173.61						
Total								avg.	avg.		
Average								avg.			

HCL-1 FIELD DATA

Client: Pac. Power Report #:
Location: Oxnard #2
Operator: JDN
Date: 7-26-90
Run No: 7
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 32-2

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 70°F
Barometric Pressure: 30.40
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O) r	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	11:53	4.5	939	3.95	.757	1.15	795.90	96	97		
7	11:57	4.5	942	3.85	.751	1.13	798.20	105	95		
6	12:01	4.0	946	3.70	.739	1.09	801.00	108	98		
5	12:05	3.5	943	3.6	.727	1.06	804.00	106	96		
4	12:09	3.0	943	3.2	.688	.96	806.93	109	97		
3	:13	3.0	940	3.15	.682	.95	809.61	107	96		
2	:17	3.5	939	3.35	.705	1.00	812.30	108	98		
1	:21	3.5	939	3.35	.705	1.00	815.12	108	98		
	:25						817.96				
Total								avg.	avg.		
Average								avg.			

HCL - 2 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: JDN / JEM
Date: [illegible]
Run No: [illegible]
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .90
Pitot Tube No.: 30-1

Post Test Leak Chk.

Leak Rate: .002 cfm
Vacuum: 6.0 (in Hg)

Ambient Temp: 79.1°F
Barometric Pressure: 30.4
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: - quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O) Γ	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
1	14:21	2.0	930	3.30	.698	.99	865.40	104	96		
2	:25	2.0	930	3.30	.698	.99	868.23	104	96		
3	:29	2.0	933	3.15	.683	.95	870.99	106	96		
4	:33	2.0	940	3.25	.693	.97	873.70	107	98		
5	:37	2.5	940	3.60	.726	1.06	876.45	104	95		
6	:41	2.5	948	3.75	.742	1.10	879.38	107	97		
7	:45	2.5	947	3.85	.748	1.12	882.40	104	94		
8	:49	3.0	946	4.00	.768	1.17	885.43	108	98		
	:53						888.46				
Total								avg.	avg.		
Average								avg.			

HCL-2 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: [illegible]
Date: [illegible]
Run No: 7 E
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .90
Pitot Tube No.: 30-1

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 78° F
Barometric Pressure: 30.40
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: - 9 vacty
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	13:49	2.0	950	3.95	.750	1.14	842.60	93	94		
7	13:53	2.0	948	3.95	.746	1.12	845.61	100	95		
6	:57	2.0	946	3.65	.725	1.07	848.56	99	93		
5	14:01	2.0	948	3.55	.718	1.04	851.46	103	95		
4	:05	1.5	933	3.15	.680	.95	854.30	105	93		
3	:09	2.0	930	3.25	.693	.98	857.00	105	95		
2	:13	2.0	932	3.4	.706	1.01	859.73	103	93		
1	:17	2.0	932	3.4	.706	1.01	862.55	103	95		
	:21						865.40				
			939	3.52	ΔH = 1.09			99.			
					ISO = 100.09						
					Vefps = 173.89		45.86				
Total								avg.	avg.		
Average								avg.			

HCL-3 FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard #2
Operator: [illegible]
Date: 7-26-90
Run No:
Pump No.:
Meter Box No.: 1.02 Factor:
Meter ΔH @: [illegible]
Pitot Tube No.: [illegible]

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 75°F
Barometric Pressure: [illegible]
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: [illegible]
Filter Number:
Duct Diam. (in): 17.6

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	15:30	5.0	923	3.85	.749	1.13	890.50	97	92		
7	15:34	5.0	923	3.85	.749	1.13	893.50	97	92		
6	:38	5.0	937	3.75	.742	1.10	896.47	105	95		
5	:42	4.5	938	3.60	.779	1.07	899.45	107	96		
4	:46	4.0	937	3.10	.674	.93	902.41	105	93		
3	:50	4.0	935	3.15	.682	.95	905.10	107	95		
2	:54	4.0	930	3.35	.707	1.00	907.81	106	92		
1	:58	4.0	930	3.35	.707	1.00	910.61	106	92		
	16:02						913.45				
Total								avg.	avg.		
								avg.			

-18d-

HCL-3 FIELD DATA

Client: [illegible] Report #:
Location: Oxnard #7
Operator: [illegible]
Date: [illegible]
Run No: 3 (cont'd)
Pump No.:
Meter Box No.: .1007 Factor:
Meter ΔH @: .900
Pitot Tube No.: 2A-1

Post Test Leak Chk.
Leak Rate: .008 cfm
Vacuum: 7.0 (in Hg)

Ambient Temp: 70°c
Barometric Pressure: 30.40
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 13
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: quartz
Filter Number:
Duct Diam. (in): 17.5

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
1	16:02	4.0	930	3.25	.693	.98	913.45	106	94		
2	:06	4.0	930	3.25	.693	.98	916.23	106	94		
3	:10	4.0	937	3.15	.680	.95	919.00	105	95		
4	:14	4.0	939	3.15	.680	.94	921.70	107	93		
5	:18	4.5	942	3.60	.726	1.06	924.41	106	94		
6	:22	4.5	948	3.65	.727	1.07	927.26	104	92		
7	:26	5.0	946	3.75	.740	1.10	930.18	106	94		
8	:30	5.0	950	3.85	.750	1.12	933.14	107	95		
	:34						936.11				
		X̄=	936	3.47					99		
					ΔH̄ = 1.03						
Total					ΣΔ = 100.09			avg.	avg.		
					[illegible] 172.51			avg.			

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-001
Date Sampled: 26-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #20 P/N-1, #21 IMP-1 COMPOSITE

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Hydrochloric Acid, as Cl (CARB 421)	ug	4860	62	ND	25.0	08/31/90	08/31/90	RJ
Total Impinger Volume	mL	617	NA	NA	NA	08/31/90	08/31/90	WG

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-002
Date Sampled: 26-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #23 P/N-2, #24 IMP-2 COMPOSITE

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Hydrochloric Acid, as Cl (CARB 421)	ug	4,820	62	ND	25.0	09/04/90	09/04/90	RJ
Total Impinger Volume	mL	617	NA	NA	NA	09/04/90	09/04/90	WG

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A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-003
Date Sampled: 26-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #26 P/N-3, #27 IMP-3 COMPOSITE

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Hydrochloric Acid, as Cl (CARB 421)	ug	4950	68	ND	25.0	08/31/90	08/31/90	RJ
Total Impinger Volume	mL	680	NA	NA	NA	08/31/90	08/31/90	WG

Enseco
A CORNING Company

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93388
ATTN: MR. TIM BRENNAN

Analysis No.: G-9022112-004
Date Sampled: 26-JUL-1990
Date Sample Rec'd: 7-AUG-1990
Sample Type: LIQUID

Project: 232 PACIFIC ENERGY/OXNARD ICE #2
Sample ID: #29 P/N-4, #30 IMP-4 COMPOSITE

Parameter	Units	Sample Result	Sample RL	Blank Result	Blank RL	Date Prepared	Date Analyzed	By
Hydrochloric Acid, as Cl (CARB 421)	ug	8,510	530	ND	25.0	09/04/90	09/04/90	RJ
Total Impinger Volume	mL	265	NA	NA	NA	09/04/90	09/04/90	WG

METHOD 421: HCL

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

ROJECT: PACIFIC ENERGY OXNARD TICE #2 JOB NO. 232 SAMPLED BY: JEM

AMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS.	ANALYSIS REQUIRED
20	PACIFIC ENERGY METHOD 421 P/N-1	7-26-90		✓			1	Analyze for HCl or analyze for total chloride by ion chromatography w/ conductivity detector ??
22	FILTER-1				✓		1	
21	IMP-1			✓			1	
23	P/N-2			✓			1	
25	FILTER-2				✓		1	
24	IMP-2			✓			1	
26	P/N-3			✓			1	
28	FILTER-3				✓		1	
27	IMP-3			✓			1	

OMMENTS:

ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
James E Marchesini			
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

ROJECT: PACIFIC ENERGY OXNARD ICE #2 JOB NO. 232 SAMPLED BY: JEM

AMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS.	ANALYSIS REQUIRED
29	PACIFIC ENERGY METHOD 421 P/N-4	7-26-90		✓			1	
31	FILTER-4				✓		1	
30	IMP-4			✓			1	

OMMENTS:

ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE
ELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93388
(805) 327-7300
FAX (805) 327-3459

CHAIN OF CUSTODY RECORD

ROJECT: Pacific Energy
Oxnard Ice #2

JOB NO. 232

SAMPLED BY: JEM.

AMPLE NO.	SAMPLE DESCRIPTION	DATE	TIME	SAMPLE TYPE liq.	filter	gas	NO. CONTRS	ANALYSIS REQUIRED
32	Pacific Energy $Na_2CO_3/NaHCO_3$ Method 421 Blank	7-26-90		✓			1	
33	Filter Blank				✓		1	

MMENTS:

LINQUISHED BY:	DATE	RECEIVED BY:	DATE
LINQUISHED BY:	DATE	RECEIVED BY:	DATE
LINQUISHED BY:	DATE	RECEIVED BY:	DATE
LINQUISHED BY:	DATE	RECEIVED BY:	DATE

METHOD 13-B DATA

COMPANY: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #:62-232

METHOD 13B
FIELD DATA @ 70'

RUN #:	1	2	3
TIME:	1006	1211	1409
Vm (dry gas sampled)	47.57	47.84	48.08
Y (meter calib. factor)	0.991696	0.991696	0.991696
P bar (Barometric pressure)	30.24	30.24	30.24
P static (stack pressure, " H2O)	2	2	2
Delta H (differential meter press, " H2O)	0.98	0.98	1
Tm (meter temperature, R')	561	564	561
Vol H2O mls	150.3	156.8	160.6
Vm(std),dscf	45.15	45.17	45.64
Bws-H2O vapor	0.1362	0.1412	0.1428
MF-moisture factor	0.8638	0.8588	0.8572
% CO2	6.8	6.9	6.9
% O2	8.1	8.3	8.3
% N2	85.1	84.8	84.8
Md-MW stk gas,dry	29.41	29.44	29.44
Ms-MW stk gas,wet	27.86	27.82	27.81
Cp-pitot tube	0.84	0.84	0.84
Avg sq rt ^p	1.865	1.868	1.879
T stack, R'	1394	1398	1386
Stack area,ft2	1.67	1.67	1.67
Vs-fps	171.86	172.51	172.81
Qstd-dscfm	5744	5716	5764
Area noz,ft2	1.97E-04	1.97E-04	1.97E-04
Sample time	64	64	64
% Isokinetic	104.2	104.7	104.9

CLIENT: PACIFIC ENERGY
UNIT: OXNARD LANDFILL ICE #2
DATE: 7-24 thru 7-27-90
REPORT #: 62-232

Summary of Results for Hydrogen Fluoride

Pollutant	Test	Vm std	DSCFM	Total mg	gr/DSCF	lb/hr
Hydrogen fluoride	1	45.15	5744	1.6	5.46E-04	2.69E-02
	2	45.17	5716	1.4	4.77E-04	2.34E-02
	3	45.64	5764	1.4	4.72E-04	2.34E-02
				average	4.98E-04	2.46E-02

* Values Reported are lower detection limit

FLORIDES Method 13B

COMPANY: PACIFIC ENERGY
REPORT #:
UNIT ID: OXNARD LANDFILL - ICE # 2
DATE: 7-23-90

ON-SITE DATA

SITE: OUTLET

RUN #:	#1	#2	#3
TIME:	1006-1126	1211-1322	1409-1519
Vm Dry sampled gas volume, dcf	47.57	42.84	48.08
Y Meter calibration factor (met# 1002 → ____)			
P bar Barometric pressure, in Hg	30.24	30.24	30.24
P static Stack static pressure, in H_2	+2.0	+2.0	+2.0
Delta H Differential meter pressure, in H_2O	.98	.98	1.00
Tm Meter temperature, deg F	101	104	101

Contents	Run 1 final	Run 1 tare	Run 1 net	Run 2 final	Run 2 tare	Run 2 net	Run 3 final	Run 3 tare	Run 3 net
H_2O	764.7	614.0	150.7	812.3	618.0	194.3	797.0	615.6	181.4
H_2O	629.9	592.6	37.3	617.7	594.2	23.5	615.3	589.6	25.7
KO	502.7	491.0	11.7	467.5	465.1	2.40	496.1	490.0	6.10
Silica	797.7	778.5	19.2	762.6	751.4	11.2	786.9	773.7	16.2
Lin Wash			-68.6			-74.6			-68.8
V lc, volume of H_2O, grams			150.3			156.8			160.6

	#1	#2	#3
CO_2 % Dry Volume	6.8	6.9	6.9
O_2 % Dry Volume	8.1	8.3	8.3
N_2 % Dry Volume	85.1	84.8	84.8
Cp Pitot tube coefficient (Pit# ____ ____ ____)	.84	.84	.84
Delta P Avg Delta-P, in H_2O	3.48	3.49	3.53
Ts Stack temperature, in deg F	934	938	926
As Stack area, sq. ft	1.67	1.67	1.67
Ds Stack Diameter, inches	17.5	17.5	17.5
Dn Nozzle diameter, inches	.190	.190	.190
Dur Sampling time, min	64	64	64
% Iso Mini Iso			

****

	#1	#2	#3
Filter #	—	—	—
Filter tare weights, grams	—	—	—

RINSE VOLUME

	#1	#2	#3
INIT	565.0	536.4	520.7
FINAL	225.0	247.6	146.1
VOL. ml.			

INITIALS**

CONTROL BOX#: ____
Hi Δ P ____ Lo Δ P ____ Ave Δ P ____ Duct Temp. ____
Diameters before disturb 7 After 3
# of Points, total 16
Overall (inches) 24 Coupling 6.5

BLANK INIT 472.6
FINAL 93.1

Punch FIELD DATA

Client: Pac Energy Report #:
Location: Oxnard JCT #2
Operator: JENITEM
Date: 7-23-90
Run No: 2 (Point 1)
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 30-1

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 79°
Barometric Pressure: 30.24
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 10.0 MW wet: 27.4
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: quartz
Filter Number:
Duct Diam. (in):

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H₂O	Pressure Differencial across Orifice Meter ΔH (in H₂O)	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or Last Impinger (°F)
8	12:11	2.5	949	4.0	.794	1.10	963.40	101	102		
7	12:15	2.5	947	3.85	.779	1.06	966.58	102	100		
6	:19	2.5	945	3.80	.775	1.05	969.67	105	98		
5	:23	2.5	929	3.60	.761	1.01	972.78	108	99		
4	:27	2.5	936	3.10	.705	.88	975.83	106	98		
3	:31	2.5	934	3.15	.715	.90	978.63	111	102		
2	:35	2.5	930	3.15	.717	.90	981.49	112	103		
1	:39	2.5	930	3.15	.717	.90	984.36	112	103		
	:43						987.24				
Total								avg.	avg.		
Average								avg.			

Flooc.le FIELD DATA

Client: Pac Energy Report #:
Location: Oxnard ICF #2
Operator: JDN/JEM
Date: 7-23-90
Run No: 2 (Part 2)
Pump No.: Gast
Meter Box No.: .002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 30-1

Post Test Leak Chk.

Leak Rate: .002 cfm
Vacuum: 6.0 (in Hg)

Ambient Temp: 70°F
Barometric Pressure: 30.24
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 10.0 MW_{wet} = 27.4
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .180
Probe Liner Material: Quartz
Filter Number:
Duct Diam. (in):

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) Gate	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or L Impinger (°F)
8	12:50	3.5	946	3.80	.776	1.05	987.24	105	100		
7	:54	3.5	946	3.80	.776	1.05	990.31	105	100		
6	:58	3.5	946	3.75	.774	1.04	993.40	109	100		
5	13:02	3.5	943	3.65	.764	1.02	996.52	109	100		
4	:06	3.0	943	3.20	.717	.91	999.53	110	102		
3	:10	3.0	931	3.30	.729	.94	1002.40	107	101		
2	:14	3.0	930	3.35	.734	.95	1005.31	106	101		
1	:18	3.0	930	3.35	.734	.95	1008.25	106	101		
	:22						1011.24				
	$\bar{x}$=		938	3.49			47.84		104		
					$\bar{\Delta H}$= .98						
					ISO= 100.13						
					$\sqrt{P_s/P_{bs}}$= 173.64						
Total								avg.	avg.		
Average								avg.			

[illegible] FIELD DATA

Client: [illegible] Report #: _____
Location: Oxnard [illegible] #2
Operator: JFM/JDN
Date: 7 [illegible] 90
Run No: 1 (port 2)
Pump No.: East
Meter Box No.: 1002 Factor: _____
Meter ΔH @: .900
Pitot Tube No.: 3Q-1

Post Test Leak Chk.

Leak Rate: 0.00 cfm
Vacuum: 5.0 (in Hg)

Ambient Temp: 65°F
Barometric Pressure: 30.24
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 10.0 MW[illegible]
Nozzle Ident. No.: _____
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: Quartz
Filter Number: _____
Duct Diam. (in): _____

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O)		Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	Gas Sample Temp. at dry Gas Meter outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or La[illegible] Impinger (°F)
					Γ[illegible]	ΔH					
8	10:54	2.0	928	4.00	.796	1.11	938.40	100	98		
7	:58	2.0	930	3.85	.781	1.07	941.58	100	98		
6	11:01	2.0	952	3.75	.771	1.04	944.70	108	100		
5	:06	2.0	937	3.65	.763	1.02	947.80	107	98		
4	:10	2.0	934	3.05	.699	.87	950.82	108	98		
3	:14	2.0	930	3.05	.701	.87	953.63	109	98		
2	:18	2.0	928	3.10	.707	.89	956.41	110	98		
1	:22	2.0	928	3.15	.713	.90	959.23	110	98		
	:26						962.07				
$\bar{X}$=			934	3.48					101		
					$\overline{\Delta H}$= 0.98						
					ISO= 100.10						
					vel fps = 172.92						
Total								avg.	avg.		
Average								avg.			

FLORIDE 13B FIELD DATA

Client: PACIFICORP Report #:
Location: ICE #2
Operator: JPN JPN
Date: 6-23-90
Run No: 1
Pump No.: GAST
Meter Box No.: 1002 Factor:
Meter ΔH @: .90
Pitot Tube No.: 3Q-1

PRE ~~Post~~ Test Leak Chk.

Leak Rate: 0.001 cfm
Vacuum: 12 (in Hg)

Ambient Temp:
Barometric Pressure: 30.24
Static Pressure, (in Hg): +2.0
Assumed Moisture %: 1090 MW wet = 27.
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .19
Probe Liner Material: QUARTZ
Filter Number:
Duct Diam. (in):

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F 932	Velocity Head (ΔPs) (in)H2O 3.45	Pressure Differencial across Orifice Meter ΔH (in H2O) Pot C	ΔH	Gas Sample Volume (ft³)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature (°F)	Temperature of Gas Leaving Condenser or L Impinger (°F)
8	10:06	2.0	935	3.75	.766	1.04	914.50	97	97		
7	10:10	2.0	930	3.85	.778	1.07	917.60	97	97		
6	:14	2.0	944	3.70	.762	1.02	920.70	105	93		
5	:18	2.0	932	3.70	.768	1.03	923.73	108	94		
4	:22	2.0	935	3.45	.742	.97	926.78	109	95		
3	:26	2.0	934	3.20	.714	.91	929.75	108	95		
2	:30	2.0	933	3.15	.710	.90	932.61	109	96		
1	:34	2.0	928	3.35	.734	.95	935.45	110	96		
	:38						938.40				
Total								avg.	avg.		
Average								avg.			

Fluoride FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard ICE #2
Operator: JDN/JFM
Date: 7-23-90
Run No: 3 (port 1)
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 3A-1

Post Test Leak Chk.

Leak Rate: cfm
Vacuum: (in Hg)

Ambient Temp: 70°F
Barometric Pressure: 30.24
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 10.0 MW_{wet} = 27.
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: quartz
Filter Number:
Duct Diam. (in):

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O) ΔH	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or La Impinger (°F)
8	14:09	2.5	940	4.1	.801	1.12	12.40	98	97		
7	:13	2.5	940	4.1	.801	1.12	15.61	98	97		
6	:17	2.5	935	3.9	.789	1.08	18.82	107	98		
5	:21	2.5	938	3.7	.767	1.03	21.99	106	97		
4	:25	2.5	935	3.1	.706	.88	25.03	109	99		
3	:29	2.5	888	3.1	.715	.91	27.85	106	98		
2	:33	2.5	872	2.8	.684	.94	30.68	105	99		
1	:37	2.5	872	2.8	.684	.84	33.42	105	99		
	:41						36.20				
Total								avg.	avg.		
Average								avg.			

Fluoride FIELD DATA

Client: Pac. Energy Report #:
Location: Oxnard ICE #2
Operator: JDN / JEM
Date: 7-23-90
Run No: 3 (port 2)
Pump No.: Gast
Meter Box No.: 1002 Factor:
Meter ΔH @: .900
Pitot Tube No.: 3Q-1

Post Test Leak Chk.
Leak Rate: < .001 cfm
Vacuum: 6.0 (in Hg)

Ambient Temp: 70°F
Barometric Pressure: 30.24
Static Pressure, (in Hg): 2.0
Assumed Moisture %: 10.0 MW_{BM} = 27
Nozzle Ident. No.:
Aver. Calib. Nozzle Diam.(in): .190
Probe Liner Material: Quartz
Filter Number:
Duct Diam. (in):

Traverse Point number	Time: (e) min	Vacuum in Hg	Stack Temper. (Ts) °F	Velocity Head (ΔPs) (in)H_2O	Pressure Differencial across Orifice Meter ΔH (in H_2O)	ΔH	Gas Sample Volume (ft^3)	Gas Sample Temp. at dry Gas Meter inlet (°F)	outlet (°F)	Filter Holder Temperature: (°F)	Temperature of Gas Leaving Condenser or La Impinger (°F)
8	14:47	2.5	942	3.95	.791	1.09	36.20	103	100		
7	:51	2.5	942	3.95	.791	1.09	39.36	103	100		
6	:55	2.5	941	3.90	.786	1.08	42.50	104	98		
5	:59	2.5	942	3.75	.770	1.04	45.64	104	98		
4	15:03	2.5	939	3.20	.715	.91	48.71	107	100		
3	:07	2.5	929	3.40	.737	.96	51.58	105	97		
2	:11	2.5	932	3.45	.743	.97	54.53	105	99		
1	:15	2.5	932	3.45	.743	.97	57.52	105	99		
	:19						60.48				
	$\bar{X}$=		926	3.53					101		
					ΔH = 1.00						
					ISO = 100.18						
					velfps = 173.71						
Total								avg.	avg.		
Average								avg.			

ZALCO LABORATORIES, INC.
Analytical & Consulting Services

Petro-Chem Environmental Service
3207 Antonino Avenue
Bakersfield, CA 93308

Laboratory No: 24593
Date Received: 8-3-90
Date Reported: 8-9-90

Job #90-232

Attention: Jim Marchesini

Sample: Water/Filter

Sample Description: Pacific Energy - Oxnard Ice #2
24593-1,2 Method 13 B H_2O Run 1 at 1030 Hrs
24593-3,4 Method 13 B H_2O Run 2 at 1230 Hrs
24593-5,6 Method 13 B H_2O Run 3 at 1430 Hrs
24593-7,8 Method 13 B H_2O Blank at 1600 Hrs
24593-9 Method 13 B H_2O Blank
Sampled by Jim Marchesini on 7-23-90

	Fluoride, F mg	Fluoride, F mg/l
24593-1,2	1.6	
24593-3,5	1.4	
24593-5,6	1.4	
24593-7,8	0.28	
24593-9	0.11	0.35

Richard L. Penner
Laboratory Director

RLP/jr

RECEIVED [illegible]

4309 Armour Avenue Bakersfield, California 93308
(805) 395-0539 FAX (805) 395-3069

EQUIPMENT CALIBRATIONS

PETRO-CHEM ENVIRONMENTAL
DRY GAS METER CALIBRATION

DATE:7-7-90
OPERATOR:DSG
METER ID PUMPMETER

AMBIENT TEMP.	85
BAROMETRIC Pbar	29.94
TEST METER ID#:	S5M104564
TEST METER Mcf:	1.031

	APROXIMATE CFM		.02	.04	.1
STD	TEST METER VOLUME CF	INT.	0.00	0.00	0.00
		FINAL	5.004	5.084	5.087
		TOTAL	5.004	5.08	5.09
FIELD	GAS METER VOLUME CF	INT.	840.30	845.90	851.60
		FINAL	845.60	851.20	856.90
		TOTAL	5.30	5.30	5.30
STD	TEST METER TEMP F'		85	87	87
FIELD	GAS METER TEMP F'				
	IN		85	87	87
	OUT		82	86	86
	AVERAGE		83.5	86.5	86.5
STD	TEST METER PRES.(in H2O)		0.00	0.00	0.00
FIELD	GAS METER PRES.(in H2O)		0	0	0
FIELD	GAS METER Mcf		.9707405	.9880779	.9886609

FIELD AVERAGE Mcf: .9824931

PETRO-CHEM ENVIRONMENTAL
DRY GAS METER CALIBRATION

DATE:8-3-90
OPERATOR:DSG
METER ID 1004

AMBIENT TEMP.	90.25
BAROMETRIC Pbar	29.97
TEST METER ID#:	S5M104564
TEST METER Mcf:	1.031

	APROXIMATE CFM		1	.75	.5	.3
STD	TEST METER VOLUME CF	INT.	0.00	0.00	0.00	0.00
		FINAL	10.46	7.318	13.884	10.067
		TOTAL	10.46	7.32	13.88	10.07
FIELD	GAS METER VOLUME CF	INT.	630.80	680.40	643.50	658.90
		FINAL	641.30	687.92	657.90	669.50
		TOTAL	10.50	7.52	14.40	10.60
STD	TEST METER TEMP F'		87	92.5	88	90
FIELD	GAS METER TEMP F'					
	IN		107	111	105	104
	OUT		91.5	97	93	94.5
	AVERAGE		99.25	104	99	99.25
STD	TEST METER PRES.(in H20)		-1.30	-0.60	-0.30	-0.15
FIELD	GAS METER PRES.(in H20)		1.21	.7	.32	.09
FIELD	GAS METER Mcf		1.046965	1.023113	1.013214	.9954061

FIELD AVERAGE Mcf: 1.019675

PETRO-CHEM ENVIRONMENTAL
DRY GAS METER CALIBRATION

DATE:7-3-90
OPERATOR:BDM
METER ID 1002

AMBIENT TEMP.	84.75
BAROMETRIC Pbar	29.33
TEST METER ID#:	S5M104564
TEST METER Mcf:	1.031

APROXIMATE CFM		1	.75	.5	.3
STD TEST METER VOLUME CF	INT.	0.00	0.00	0.00	0.00
	FINAL	12.566	7.104	10.038	10.012
	TOTAL	12.566	7.10	10.04	10.01
FIELD GAS METER VOLUME CF	INT.	577.20	631.20	592.10	606.30
	FINAL	589.70	638.68	602.77	617.20
	TOTAL	12.50	7.48	10.67	10.90
STD TEST METER TEMP F'		79.5	87.5	82	86
FIELD GAS METER TEMP F'					
IN		87.5	102	89	94
OUT		81	94	84	88
AVERAGE		84.25	98	86.5	91
STD TEST METER PRES.(in H2O)		-1.30	-0.60	-0.30	-0.15
FIELD GAS METER PRES.(in H2O)		2.225	1.18	.49	.19
FIELD GAS METER Mcf		1.039768	.9950091	.9767852	.9552238

FIELD AVERAGE Mcf: .9916965

RUN TIME: 10.0 MIN.
RATE .750 CFM