

## Texas Commission on Environmental Quality

Laboratory and Quality Assurance Section

P.O. Box 13087

Austin, Texas 78711

(512) 239-1716

### Laboratory Analysis Results

**ACL Number: 100206**

ACL Lead: Karen Bachtel

Region: T04

Date Received: 2/5/2010

Project(s): Barnett Shale

Facility(ies) Sampled	City	County	Facility Type
Aruba Petroleum, 6H & 7H Wright Lease	Decatur	Wise	

#### Laboratory Procedure(s) Performed:

Analysis: AMOR006

Determination of VOC Canisters by GC/MS Using Modified Method TO-15

Procedure:

Prior to analysis, subatmospheric samples are pressurized to twice the collected volume using a sample dilution system. For analysis, a known volume of a sample is directed from the canister into a multitrapp cryogenic concentrator. Internal standards are added to the sample stream prior to the trap. The concentrated sample is thermally desorbed and carried onto a GC column for separation. The analytical strategy involves using a GC with dual columns that are coupled to a mass selective detector (MSD) and a flame ionization detector (FID). Mass spectra for individual peaks in the total ion chromatogram are then used for target compound identification and quantitation. The fragmentation pattern is compared with stored spectra taken under similar conditions in order to identify the compound. For any given compound, the intensity of the quantitation fragment is compared with the system response to the fragment for known amounts of the compound. This establishes the compound concentration in the sample. For non-target compound peaks which are at least one-half the height of the internal standard, a library search is performed in an attempt to identify the compound solely upon fracture patterns. These tentatively identified compounds (TIC's) are reported as a sample specific footnote. Accurate quantitation of TICs is not possible. The FID is used for the quantitation of ethane, ethylene, acetylene, propylene and propane and identification is based on matching retention times of standards containing known analytes.

#### Sample(s) Received

Field ID Number: 00247

Laboratory Sample Number: 100206-0001

Sampled by: Annette Graves

Sampling Site: 75 feet West of frac tank.

Date & Time Sampled: 02/03/10 21:38:00 Valid Sample: Yes

Comments:

Canister #00247 was used as a grab sample. East wind 1 mph. 44° F. 91% Relative Humidity with light rain.

#### Sample(s) Screening

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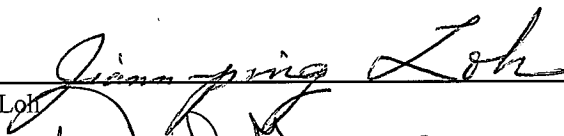
**Laboratory Analysis Results****ACL Number: 100206****Sample(s) Screening**

As a routine procedure, the data from this (these) sample(s) have been screened and at least one target compound was detected at or above the Appropriate Comparison Value and/or a TIC was identified. Therefore, the sample data have been forwarded to TCEQ's Toxicology Division for further review. Please note that this analytical technique is not capable of measuring all compounds which might have adverse health effects. For questions on the analytical procedures please contact the laboratory manager at (512)-239-5853.

For an update on the health effects evaluation of these data, please contact the Toxicology Division at (512) 239-1795.

Analyst: \_\_\_\_\_

J.P. Loh



Date: \_\_\_\_\_

2/12/10

Reviewed By: \_\_\_\_\_

Karen Bachtel

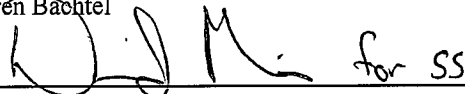
 for KB

Date: \_\_\_\_\_

2/12/10

Section Manager: \_\_\_\_\_

Steve Stubbs

 for SS

Date: \_\_\_\_\_

2/12/10

# Laboratory Analysis Results

ACL Number: 100206

Analysis Code: AMOR006

Note: Results are reported in units of parts per billion by volume (ppbv)

Lab ID			100206-0001					
Field ID			00247					
Canister ID			00247					
Analysis Date			02/11/10					
Compound	ESL	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
ethane	10000	0.50	97000 #	830	D1			
ethylene	1200	0.50	ND	830	D1			
acetylene	25000	0.50	ND	830	D1			
propane	10000	0.50	37000 #	830	D1			
propylene	5000	0.50	ND	830	D1			
dichlorodifluoromethane	10000	0.20	ND	330	D1			
methyl chloride	500	0.20	ND	330	D1			
isobutane	2000	0.23	7100 #	380	D1			
vinyl chloride	26000	0.17	6.3	280	J,D1			
1-butene	360	0.20	ND	330	D1			
1,3-butadiene	230	0.27	ND	450	D1			
n-butane	8000	0.20	10000 #	330	D1			
t-2-butene	2100	0.18	ND	300	D1			
bromomethane	30	0.27	ND	450	D1			
c-2-butene	2100	0.27	ND	450	D1			
3-methyl-1-butene	250	0.23	ND	380	D1			
isopentane	1200	0.27	3300 #	450	D1			
trichlorofluoromethane	5000	0.29	22	480	J,D1			
1-pentene	100	0.27	ND	450	D1			
n-pentane	1200	0.27	3000 #	450	D1			
isoprene	5.0	0.27	94 #	450	J,D1			
t-2-pentene	2600	0.27	16	450	J,D1			
1,1-dichloroethylene	180	0.18	15	300	J,D1			
c-2-pentene	2600	0.25	8.5	410	J,D1			
methylene chloride	75	0.14	10	230	J,D1			
2-methyl-2-butene	250	0.23	13	380	J,D1			
2,2-dimethylbutane	1000	0.21	84	350	J,D1			
cyclopentene	2900	0.20	5.8	330	J,D1			
4-methyl-1-pentene	20	0.22	ND	360	D1			
1,1-dichloroethane	1000	0.19	ND	310	D1			
cyclopentane	1200	0.27	86	450	J,D1			
2,3-dimethylbutane	990	0.28	110	460	J,D1			
2-methylpentane	83	0.27	960 #	450	L,D1			
3-methylpentane	1000	0.23	500	380	L,D1			
2-methyl-1-pentene + 1-hexene	20	0.20	ND	330	D1			
n-hexane	1500	0.20	1300	330	D1			
chloroform	20	0.21	ND	350	D1			
t-2-hexene	500	0.27	ND	450	D1			
c-2-hexene	500	0.27	ND	450	D1			
1,2-dichloroethane	40	0.27	12	450	J,D1			
methylcyclopentane	750	0.27	290	450	J,D1			
2,4-dimethylpentane	850	0.27	49	450	J,D1			
1,1,1-trichloroethane	2000	0.26	ND	430	D1			
benzene	180	0.27	120	450	J,D1			
carbon tetrachloride	20	0.27	ND	450	D1			
cyclohexane	420	0.24	430 #	400	L,D1			
2-methylhexane	750	0.27	420	450	J,D1			
2,3-dimethylpentane	850	0.26	71	430	J,D1			

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Lab ID	100206-0001							
Compound	ESL	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
3-methylhexane	750	0.20	420	330	L,D1			
1,2-dichloropropane	100	0.17	ND	280	D1			
trichloroethylene	100	0.29	6.3	480	J,D1			
2,2,4-trimethylpentane	750	0.24	ND	400	D1			
2-chloropentane	190	0.27	ND	450	D1			
n-heptane	670	0.25	610	410	L,D1			
c-1,3-dichloropropylene	10	0.20	ND	330	D1			
methylcyclohexane	150	0.26	490 #	430	L,D1			
t-1,3-dichloropropylene	10	0.20	ND	330	D1			
1,1,2-trichloroethane	100	0.21	ND	350	D1			
2,3,4-trimethylpentane	750	0.24	ND	400	D1			
toluene	170	0.27	290 #	450	J,D1			
2-methylheptane	750	0.20	130	330	J,D1			
3-methylheptane	750	0.23	120	380	J,D1			
1,2-dibromoethane	0.50	0.20	ND	330	D1			
n-octane	750	0.19	230	310	J,D1			
tetrachloroethylene	770	0.24	ND	400	D1			
chlorobenzene	100	0.27	ND	450	D1			
ethylbenzene	460	0.27	27	450	J,D1			
m & p-xylene	80	0.27	210 #	450	J,D1			
styrene	25	0.27	ND	450	D1			
1,1,2,2-tetrachloroethane	10	0.20	ND	330	D1			
o-xylene	380	0.27	42	450	J,D1			
n-nonane	2000	0.22	120	360	J,D1			
isopropylbenzene	100	0.24	11	400	J,D1			
n-propylbenzene	3.8	0.27	3.4	450	J,D1			
m-ethyltoluene	18	0.11	8.3	180	J,D1			
p-ethyltoluene	8.3	0.16	6.6	260	J,D1			
1,3,5-trimethylbenzene	250	0.25	5.6	410	J,D1			
o-ethyltoluene	250	0.13	8.5	220	J,D1			
1,2,4-trimethylbenzene	250	0.27	13	450	J,D1			
n-decane	620	0.27	20	450	J,D1			
1,2,3-trimethylbenzene	250	0.27	5.9	450	J,D1			
m-diethylbenzene	70	0.27	ND	450	D1			
p-diethylbenzene	0.39	0.27	ND	450	D1			
n-undecane	550	0.27	ND	450	D1			

# Laboratory Analysis Results

ACL Number: 100206

Analysis Code: AMOR006

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Note: Results are reported in units of parts per billion by volume ( ppbv)

ESL - Effects Screening Level. ( Short-term Health and Odor Based in units of ppbv)

LOD - Limit of Detection.

ND - not detected

NQ - concentration can not be quantified.

SDL - Sample Detection Limit (MDL adjusted for dilutions).

INV - Invalid.

J - Reported concentration is below SDL.

L - Reported concentration is at or above the SDL and is below the lower limit of quantitation.

E - Reported concentration exceeds the upper limit of instrument calibration.

M - Result modified from previous result.

\* SDL is equal to LOD

\*\* Quality control flags explanations are listed on the last page of this report.

# Compound concentration is equal to or greater than the Effects Screening Level.

TCEQ laboratory customer support may be reached at [kbachtel@tceq.state.tx.us](mailto:kbachtel@tceq.state.tx.us)

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### Quality Control Notes:

quality control notes for sample 100206-0001.

D1 - sample was diluted 3311.00 times to determine the compound concentrations.

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