

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: 100732

ACL Lead: Karen Bachtel

Region: T04

Date Received: 7/28/2010

Project(s): Barnett Shale

Facility(ies) Sampled	City	County	Facility Type
Aruba Petroleum, 6H Wright Lease.	Decatur	Wise	Natural Gas

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: 20391

Laboratory Sample Number: 100732-0001

Sampled by: Damon Armstrong

Sampling Site: Approx. 50 feet from facility.

Date & Time Sampled: 07/25/10 23:39:00 Valid Sample: Yes

Comments:

Canister 20391 was used to collect a 30 minutes down wind sample using critical orifice FO-17.

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)-239-4894. For an update on the health effects evaluation of these data, please contact the Toxicology Division at (512) 239-1795.

Analyst: Jaydeep Patel
Jaydeep Patel

Date: 08/03/10

Reviewed By: Karen Bachtel
Karen Bachtel

Date: 8/3/2010

Technical Specialist: David Manis
David Manis

Date: 8/3/10

Laboratory Analysis Results

ACL Number: 100732

Analysis Code: AMOR006

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

Lab ID		100732-0001					
Field ID		20391					
Canister ID		20391					
Analysis Date		07/29/10					
Compound	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
ethane	0.50	120000	420	D1,T			
ethylene	0.50	110	420	J,D1,T			
acetylene	0.50	ND	420	D1,T			
propane	0.50	45000	420	D1,T			
propylene	0.50	ND	420	D1,T			
dichlorodifluoromethane	0.20	1.3	170	J,D1			
methyl chloride	0.20	12	170	J,D1			
isobutane	0.23	6800	190	D1			
vinyl chloride	0.17	ND	140	D1			
1-butene	0.20	27	170	J,D1			
1,3-butadiene	0.27	ND	230	D1			
n-butane	0.20	13000	170	D1			
t-2-butene	0.18	ND	150	D1			
bromomethane	0.27	ND	230	D1			
c-2-butene	0.27	ND	230	D1			
3-methyl-1-butene	0.23	ND	190	D1			
isopentane	0.27	3700	230	D1			
trichlorofluoromethane	0.29	8.4	240	J,D1			
1-pentene	0.27	ND	230	D1			
n-pentane	0.27	3600	230	D1			
isoprene	0.27	ND	230	D1			
t-2-pentene	0.27	ND	230	D1			
1,1-dichloroethylene	0.18	ND	150	D1			
c-2-pentene	0.25	ND	210	D1			
methylene chloride	0.14	ND	120	D1			
2-methyl-2-butene	0.23	ND	190	D1			
2,2-dimethylbutane	0.21	82	180	J,D1			
cyclopentene	0.20	ND	170	D1			
4-methyl-1-pentene	0.22	ND	190	D1			
1,1-dichloroethane	0.19	ND	160	D1			
cyclopentane	0.27	100	230	J,D1			
2,3-dimethylbutane	0.28	100	240	J,D1			
2-methylpentane	0.27	1100	230	D1			
3-methylpentane	0.23	730	190	D1			
2-methyl-1-pentene + 1-hexene	0.20	ND	170	D1			
n-hexane	0.20	1700	170	D1			
chloroform	0.21	ND	180	D1			
t-2-hexene	0.27	ND	230	D1			
c-2-hexene	0.27	ND	230	D1			
1,2-dichloroethane	0.27	ND	230	D1			
methylcyclopentane	0.27	410	230	L,D1			
2,4-dimethylpentane	0.27	57	230	J,D1			
1,1,1-trichloroethane	0.26	ND	220	D1			
benzene	0.27	120	230	J,D1			
carbon tetrachloride	0.27	ND	230	D1			
cyclohexane	0.24	460	200	L,D1			
2-methylhexane	0.27	500	230	L,D1			
2,3-dimethylpentane	0.26	64	220	J,D1			

Laboratory Analysis Results

ACL Number: 100732

Analysis Code: AMOR006

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

Lab ID	100732-0001						
Compound	LOD	Concentration	SDL	Flags**	Concentration	SDL	Flags**
3-methylhexane	0.20	420	170	L,D1			
1,2-dichloropropane	0.17	ND	140	D1			
trichloroethylene	0.29	ND	240	D1			
2,2,4-trimethylpentane	0.24	ND	200	D1			
2-chloropentane	0.27	ND	230	D1			
n-heptane	0.25	900	210	D1			
c-1,3-dichloropropylene	0.20	ND	170	D1			
methylcyclohexane	0.26	720	220	D1			
t-1,3-dichloropropylene	0.20	ND	170	D1			
1,1,2-trichloroethane	0.21	ND	180	D1			
2,3,4-trimethylpentane	0.24	ND	200	D1			
toluene	0.27	290	230	L,D1			
2-methylheptane	0.20	260	170	L,D1			
3-methylheptane	0.23	230	190	L,D1			
1,2-dibromoethane	0.20	ND	170	D1			
n-octane	0.19	520	160	L,D1			
tetrachloroethylene	0.24	ND	200	D1			
chlorobenzene	0.27	ND	230	D1			
ethylbenzene	0.27	21	230	J,D1			
m & p-xylene	0.27	200	230	J,D1			
styrene	0.27	ND	230	D1			
1,1,2,2-tetrachloroethane	0.20	ND	170	D1			
o-xylene	0.27	32	230	J,D1			
n-nonane	0.22	120	190	J,D1			
isopropylbenzene	0.24	ND	200	D1			
n-propylbenzene	0.27	ND	230	D1			
m-ethyltoluene	0.11	ND	93	D1			
p-ethyltoluene	0.16	3.5	130	J,D1			
1,3,5-trimethylbenzene	0.25	8.0	210	J,D1			
o-ethyltoluene	0.13	ND	110	D1			
1,2,4-trimethylbenzene	0.27	54	230	J,D1			
n-decane	0.27	ND	230	D1			
1,2,3-trimethylbenzene	0.27	ND	230	D1			
m-diethylbenzene	0.27	ND	230	D1			
p-diethylbenzene	0.27	ND	230	D1,A1			
n-undecane	0.27	ND	230	D1			

Laboratory Analysis Results

ACL Number: 100735

Analysis Code: AMOR006

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

LOD - Limit of Detection.

ND - not detected

NQ - concentration can not be quantified.

SDL - Sample Detection Limit (LOD 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.

T - Data was not confirmed by a confirmational analysis. Data is tentatively identified.

* SDL is equal to LOD

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

TCEQ laboratory customer support may be reached at kbachtel@tceq.state.tx.us

The TCEQ is an equal opportunity/affirmative action employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation or veteran status. In compliance with the Americans With Disabilities Act, this document may be requested in alternate formats by contacting the TCEQ at (512) 239-0010, (Fax 512-239-0055), or 1-800-RELAY-TX (TDD), or by writing P.O. Box 13087, Austin, Texas 78711-3087.

Laboratory Analysis Results

ACL Number: 100735

Analysis Code: AMOR006

Quality Control Notes:

quality control notes for sample 100735-0001.

D1-sample concentration was calculated using a dilution factor of 4.06

TCEQ laboratory customer support may be reached at kbachtel@tceq.state.tx.us

The TCEQ is an equal opportunity/affirmative action employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation or veteran status. In compliance with the Americans With Disabilities Act, this document may be requested in alternate formats by contacting the TCEQ at (512) 239-0010, (Fax 512-239-0055), or 1-800-RELAY-TX (TDD), or by writing P.O. Box 13087, Austin, Texas 78711-3087.