



303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201404133	ANALYSIS NO. :	01
COMPANY NAME :	RANCHERS EXPLORATION	ANALYSIS DATE:	APRIL 29, 2014
ACCOUNT NO. :		SAMPLE DATE :	APRIL 25, 2014
PRODUCER :		CYLINDER NO. :	0907
LEASE NO. :		SAMPLED BY :	JOHN MOSER-EMPACT
NAME/DESCRIP :	WELL HEAD TUBING TO FLARE PIT @ 10:40 RIVER WEST #2		
FIELD DATA		SAMPLE TEMP. :	68
SAMPLE PRES. :	1075	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
HELIUM	0.04	0.01	---	---
HYDROGEN	0.04	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	1.27	1.84	---	---
CARBON DIOXIDE	1.14	2.59	---	---
HYDROGEN SULFIDE	0.00000	0.00000	---	---
TOTAL OTHER SULFURS	0.00000	0.00000	---	---
METHANE	84.32980	69.89510	---	---
ETHANE	8.0837	12.5584	2.1554	2.1671
PROPANE	3.6404	8.2937	0.9997	1.0052
I-BUTANE	0.3100	0.9309	0.1010	0.1015
N-BUTANE	0.7399	2.2219	0.2329	0.2342
I-PENTANE	0.1176	0.4373	0.0420	0.0422
N-PENTANE	0.1270	0.4734	0.0460	0.0462
HEXANES PLUS	0.1516	0.7293	0.0560	0.0561
TOTALS	100.00000	100.00000	3.6330	3.6525

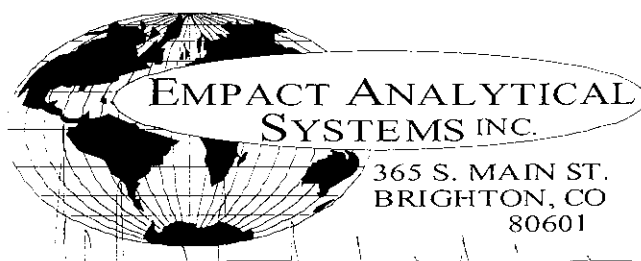
BTEX COMPONENTS	MOLE%	WT%	BTU @	14.650	14.730
BENZENE	0.0046	0.0185	LOW NET DRY REAL :	1028.8 /scf	1034.4 /scf
TOLUENE	0.0036	0.0171	NET WET REAL :	1010.8 /scf	1016.4 /scf
ETHYLBENZENE	0.0004	0.0022	HIGH GROSS DRY REAL :	1136.8 /scf	1143.0 /scf
XYLENES	0.0013	0.0071	GROSS WET REAL :	1116.9 /scf	1123.1 /scf
TOTAL BTEX	0.0099	0.0449	NET DRY REAL :	20184.2 /lb	20294.4 /lb
			GROSS DRY REAL :	22307.4 /lb	22429.2 /lb

RELATIVE DENSITY (AIR=1):	0.6674
COMPRESSIBILITY FACTOR :	0.99716

(CALC: GPA STD 2145 & TP-17 (4/14/696 & 60 F)

(*DETAILED HYDROCARBON ANALYSIS (NJ 1993) : ASTM D6730

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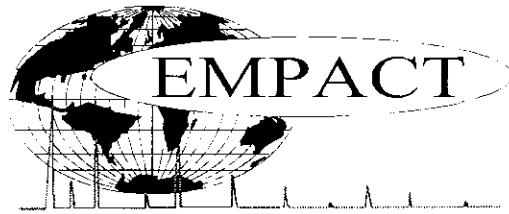
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GLYCALC INFORMATION

PROJECT NO. :	201404133	ANALYSIS NO. :	01
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FIELD DATA		SAMPLE TEMP. :	68
SAMPLE PRES. :	1075	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

Componet	Mole %	Wt %
Hydrogen Sulfide	0.00000	0.00000
Total Other Sulfurs	0.00000	0.00000
Helium	0.04	0.01
Hydrogen	0.04	0.00
Carbon Dioxide	1.14	2.59
Nitrogen	1.27	1.84
Methane	84.32980	69.89510
Ethane	8.0837	12.5584
Propane	3.6404	8.2937
Isobutane	0.3100	0.9309
n-Butane	0.7399	2.2219
Isopentane	0.1084	0.4040
n-Pentane	0.1270	0.4734
Cyclopentane	0.0092	0.0333
n-Hexane	0.0292	0.1300
Cyclohexane	0.0083	0.0361
Other Hexanes	0.0527	0.2328
Heptanes	0.0260	0.1336
Methycyclohexane	0.0079	0.0401
2,2,4 Trimethylpentane	0.0001	0.0006
Benzene	0.0046	0.0185
Toluene	0.0036	0.0171
Ethylbenzene	0.0004	0.0022
Xylenes	0.0013	0.0071
C8+ Heavies	0.0175	0.1112
<u>Subtotal</u>	<u>99.99000</u>	<u>99.98000</u>
Oxygen/Argon	0.01	0.02
Total	100.00000	100.00000

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201404133	ANALYSIS NO. :	01
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FIELD DATA		SAMPLE TEMP. :	68
SAMPLE PRES. :	1075	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.04	0.01	---	---
Hydrogen	---	0.04	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	1.27	1.84	---	---
Carbon Dioxide	---	1.14	2.59	---	---
Hydrogen Sulfide (H2S)	---	0.00000	0.00000	---	---
Total Other Sulfurs	---	0.00000	0.00000	---	---
Methane	P1	84.32980	69.89510	---	---
Ethane	P2	8.0837	12.5584	2.155	2.167
Propane	P3	3.6404	8.2937	1.000	1.005
i-Butane	I4	0.3100	0.9309	0.101	0.102
n-Butane	P4	0.7399	2.2219	0.233	0.234
2,2-Dimethylpropane	I5	0.0007	0.0026	0.000	0.000
i-Pentane	I5	0.1077	0.4014	0.039	0.039
n-Pentane	P5	0.1270	0.4734	0.046	0.046
2,2-Dimethylbutane	I6	0.0004	0.0018	0.000	0.000
Cyclopentane	N5	0.0092	0.0333	0.003	0.003
2,3-Dimethylbutane	I6	0.0021	0.0093	0.001	0.001
2-Methylpentane	I6	0.0212	0.0944	0.009	0.009
3-Methylpentane	I6	0.0112	0.0499	0.005	0.005
n-Hexane	P6	0.0292	0.1300	0.012	0.012
Methylcyclopentane	N6	0.0178	0.0774	0.006	0.006
2,4-Dimethylpentane	I7	0.0007	0.0036	0.000	0.000
Benzene	A6	0.0046	0.0185	0.001	0.001
Cyclohexane	N6	0.0083	0.0361	0.003	0.003
2-Methylhexane	I7	0.0032	0.0166	0.001	0.001
2,3-Dimethylpentane	I7	0.0013	0.0067	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0013	0.0066	0.001	0.001
3-Methylhexane	I7	0.0036	0.0186	0.002	0.002
1c,3-Dimethylcyclopentane	N7	0.0021	0.0106	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0019	0.0097	0.001	0.001
3-Ethylpentane	I7	0.0001	0.0005	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0034	0.0173	0.002	0.002
2,2,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
n-Heptane	P7	0.0076	0.0394	0.003	0.003
1c,2-Dimethylcyclopentane	N7	0.0002	0.0010	0.000	0.000
Methylcyclohexane	N7	0.0079	0.0401	0.003	0.003
2,2-Dimethylhexane	I8	0.0007	0.0041	0.000	0.000

Ethylcyclopentane	N7	0.0006	0.0030	0.000	0.000
2,5-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
2,4-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0005	0.0029	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0005	0.0029	0.000	0.000
2,3,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0036	0.0171	0.001	0.001
2,3-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0013	0.0077	0.001	0.001
4-Methylheptane	I8	0.0004	0.0024	0.000	0.000
3-Methylheptane	I8	0.0006	0.0036	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0011	0.0063	0.001	0.001
3-Ethylhexane	I8	0.0002	0.0012	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0005	0.0029	0.000	0.000
1,1-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0003	0.0018	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0006	0.0035	0.000	0.000
n-Octane	P8	0.0019	0.0112	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0004	0.0023	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0007	0.0045	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0002	0.0013	0.000	0.000
2,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylcyclohexane	N8	0.0003	0.0018	0.000	0.000
n-Propylcyclopentane	N8	0.0001	0.0006	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0004	0.0022	0.000	0.000
1c,2t,4t-Trimethylcyclohexane	N9	0.0002	0.0013	0.000	0.000
2,3-Dimethylheptane	I9	0.0002	0.0013	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0006	0.0033	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0003	0.0016	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0002	0.0013	0.000	0.000
2-Methyloctane	I9	0.0002	0.0013	0.000	0.000
3-Methyloctane	I9	0.0002	0.0013	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0004	0.0022	0.000	0.000
i-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
n-Nonane	P9	0.0007	0.0046	0.000	0.000
1,1-Methylethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0006	0.000	0.000
n-Butylcyclopentane	N9	0.0002	0.0013	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0001	0.0006	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0007	0.000	0.000
1,3-Methylethylbenzene	A9	0.0001	0.0006	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
5-Methylnonane	I10	0.0001	0.0007	0.000	0.000
1,2-Methylethylbenzene	A9	0.0001	0.0006	0.000	0.000
t-Butylbenzene	A10	0.0002	0.0014	0.000	0.000
UnknownC9s	U9	0.0003	0.0020	0.000	0.000
n-Decane	P10	0.0003	0.0022	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
Sec-Butylcyclohexane	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0004	0.0029	0.000	0.000
n-Undecane	P11	0.0001	0.0008	0.000	0.000
n-Dodecane	P12	0.0001	0.0009	0.000	0.000

n-Tridecane	P13	0.0001	0.0009	0.000	0.000
n-Tetradecane	P14	0.0001	0.0010	0.000	0.000
UnknownC14s	U14	0.0002	0.0021	0.000	0.000
n-Pentadecane	P15	0.0001	0.0011	0.000	0.000
UnknownC15s	U15	0.0002	0.0022	0.000	0.000
TOTAL		100.00000	100.00000	3.6330	3.6525

BTEX COMPONENTS	MOLE%	WT%	BTU @	14.650	14.730
BENZENE	0.0046	0.0185	LOW NET DRY REAL :	1028.8 /scf	1034.4 /scf
TOLUENE	0.0036	0.0171	NET WET REAL :	1010.8 /scf	1016.4 /scf
ETHYLBENZENE	0.0004	0.0022	HIGH GROSS DRY REAL :	1136.8 /scf	1143.0 /scf
XYLENES	0.0013	0.0071	GROSS WET REAL :	1116.9 /scf	1123.1 /scf
TOTAL BTEX	0.0099	0.0449	NET DRY REAL :	20184.2 /lb	20294.4 /lb
			GROSS DRY REAL :	22307.4 /lb	22429.2 /lb

RELATIVE DENSITY (AIR=1): 0.6674
 COMPRESSIBILITY FACTOR : 0.99716

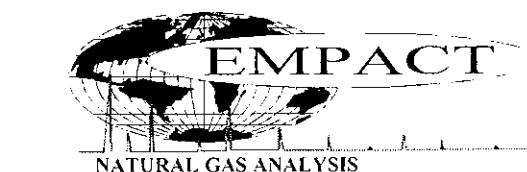
(CALC: GPA STD 2145 & TP-17 @ 14.696 & 60 F)

*[DETAILED HYDROCARBON ANALYSIS (NJ 1993) : ASTM D6730

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PROJECT NO: 201404133
 COMPANY NAME: RANCHERS EXPLORATION
 NAME/DESCRIP: WELL HEAD TUBING TO FLARE PIT @ 10:45
 RIVER WEST #2
 COMMENTS: SPOT; 1L TEDLAR BAG

SAMPLE NO: 01
 ANALYSIS DATE: APRIL 28, 2014
 SAMPLE DATE: APRIL 25, 2014
 SAMPLED BY: JOHN MOSER-EMPACT

TEST PROCEDURE / METHOD: SULFUR BY GAS CHROMATOGRAPH SCD350 *

COMPONENT	SULFUR	
	ppm mole (ul/L)	ppm wt (ug/g)
Hydrogen Sulfide (H ₂ S)	BDL	
Carbonyl Sulfide (COS)/ Sulfur Dioxide (SO ₂)	BDL	
Methanethiol (MeSH)	BDL	
Ethanethiol (EtSH)	BDL	
Dimethylsulfide (DMS)	BDL	
Carbon Disulfide (CS ₂)	BDL	
i-Propanethiol (i-PrSH)	BDL	
t-Butanethiol (t-BuSH)	BDL	
n-Propanethiol (n-PrSH)	BDL	
Methylethylsulfide (MES)	BDL	
s-Butanethiol (s-BuSH)	BDL	
i-Butanethiol (i-BuSH)	BDL	
Thiophene (TP)	BDL	
Diethylsulfide (DES)	BDL	
n-Butanethiol (n-BuSH)	BDL	
Dimethyldisulfide (DMDS)	BDL	
Unidentified Sulfurs - Light Ends	BDL	
Methylthiophenes (MTP)	BDL	
2-Ethylthiophene (2-ETP)	BDL	
Methylethyldisulfide (MEDS)	BDL	
Dimethylthiophenes (DMTP)	BDL	
Diethyldisulfide (DEDS)	BDL	
Benzothiophene (BzTP)	BDL	
Unidentified Sulfurs - Mid Range	BDL	
Methylbenzothiophenes (MBzTP)	BDL	
Dimethylbenzothiophenes (DMBzTP)	BDL	
Trimethylbenzothiophenes (TMBzTP)	BDL	
Dibenzothiophenes (DBzTP)	BDL	
Methyldibenzothiophenes (MDBzTP)	BDL	
Unidentified Sulfurs - Heavy Ends	BDL	
TOTAL SULFUR	0.0	0.0
TOTAL GRAINS OF SULFUR	0.0000 / 100 scf	
GRAINS OF H₂S	0.0000 / 100 scf	
TOTAL POUNDS OF SULFUR	0.0000 / 1000 scf	
POUNDS OF H₂S	0.0000 / 1000 scf	

* ASTM D5504

** DETECTION LIMIT DETERMINED TO BE 0.1 ppm (ul/L) Sulfur - BDL (BELOW DETECTION LIMIT)

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