EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:		NAME/DESCRIP :	**BLUE MARLIN 44-19**
LEASE #:			**SALES GAS**
FIELD/AREA:			
PROJECT NO. :	**201905053**	ANALYSIS NO. :	**01**
COMPANY NAME :	**FREMONT PETROLEUM CORP**	ANALYSIS DATE:	MAY 13, 2019 09:13
OFFICE / BRANCH:	FLORENCE, CO	SAMPLE DATE :	MAY 7, 2019 14:50
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
*****FIELD DATA*****			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	2 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	1902
LAB PRES:	psig	SAMPLED BY :	GALE MCENDREE
SAMPLE TEMP. :	53 ºf	SAMPLING COMPANY:	EMPACT
AMBIENT TEMP.:	ºf	H2S BY STAIN TUBE:	**BDL** ppm
H2O BY STAIN TUBE:	- #/mmcf	CO2 BY STAIN TUBE:	- Mol %
FIELD COMMENTS:			
LAB COMMENTS:			

COMPONENT	MOLE %	MASS %	GPM @ 14.73	GPM @ 14.65
ALCOHOLS	0.0001	0.0003	0.0000	0.0000
HELIUM	0.04	0.01	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.07	0.10	---	---
NITROGEN	1.01	1.25	---	---
CARBON DIOXIDE	2.07	4.02	---	---
METHANE	79.24770	56.03690	---	---
ETHANE	5.9992	7.9511	1.6094	1.6007
PROPANE	5.0522	9.8196	1.3962	1.3886
I-BUTANE	0.8332	2.1345	0.2736	0.2721
N-BUTANE	2.1268	5.4486	0.6729	0.6693
I-PENTANE	0.9183	2.9131	0.3319	0.3301
N-PENTANE	0.6984	2.2210	0.2535	0.2521
HEXANES PLUS	1.9241	8.0949	0.8230	0.8190
TOTALS	100.00000	100.00000	5.3605	5.3319

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0169	0.0582
TOLUENE	0.0126	0.0512
ETHYLBENZENE	0.0024	0.0112
XYLENES	0.0067	0.0313
TOTAL BTEX	0.0386	0.1519

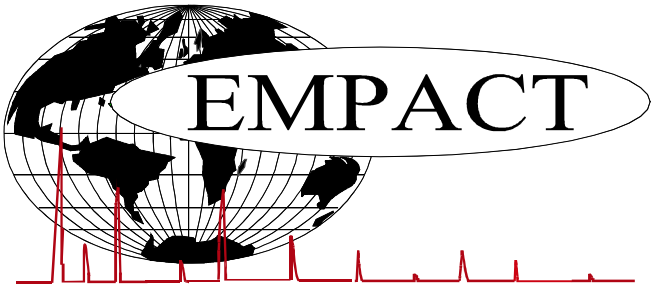
BTU @		14.73	14.65
LOW	NET DRY REAL :	1182.5 /scf	1176.1 /scf
	NET WET REAL :	1161.9 /scf	1155.5 /scf
HIGH	GROSS DRY REAL :	1301.6 /scf	1294.6 /scf
	GROSS WET REAL :	1279.0 /scf	1271.9 /scf
	NET DRY REAL :	19820.2 /lb	19712.6 /lb
	GROSS DRY REAL :	21815.0 /lb	21696.5 /lb
	RELATIVE DENSITY (AIR=1):		0.7826
	DENSITY		0.05978 lb/scf
	COMPRESSIBILITY FACTOR :		0.99645
	REGULAR WOBBE INDEX		1467.9

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*

Mod ASTM D6730,GPA 2261 & GPA 2286.

(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



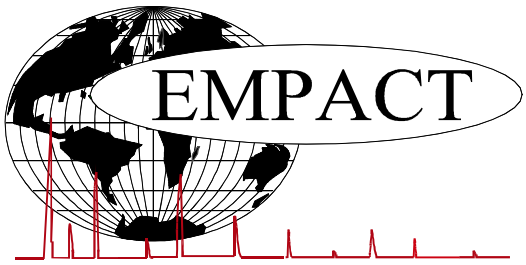
EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201905053	ANALYSIS NO. :	01
COMPANY NAME :	FREMONT PETROLEUM CORP	ANALYSIS DATE:	MAY 13, 2019 10:11
ACCOUNT NO. :		SAMPLE DATE :	MAY 7, 2019 14:50
PRODUCER :		CYLINDER NO. :	1902
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	BLUE MARLIN 44-19 SALES GAS		
FIELD DATA		SAMPLE TEMP. :	53
SAMPLE PRES. :	2	AMBIENT TEMP.:	
COMMENTS :	***SPOT, NO PROBE***		

Componet	Mole %	Wt %
Helium	0.04	0.01
Hydrogen	0.01	0.00
Carbon Dioxide	2.07	4.02
Nitrogen	1.01	1.25
Methane	79.24770	56.03690
Ethane	5.9992	7.9511
Propane	5.0522	9.8196
Isobutane	0.8332	2.1345
n-Butane	2.1268	5.4486
Isopentane	0.8372	2.6624
n-Pentane	0.6984	2.2210
Cyclopentane	0.0811	0.2507
n-Hexane	0.2481	0.9424
Cyclohexane	0.0966	0.3584
Other Hexanes	0.6328	2.3845
Heptanes	0.4516	1.9788
Methylcyclohexane	0.1193	0.5163
2,2,4 Trimethylpentane	0.0020	0.0100
Benzene	0.0169	0.0582
Toluene	0.0126	0.0512
Ethylbenzene	0.0024	0.0112
Xylenes	0.0067	0.0313
C8+ Heavies	0.3351	1.7526
Subtotal	99.92990	99.89970
Oxygen/Argon	0.07	0.10
Alcohols	0.0001	0.0003
Total	100.00000	100.00000

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY:
LEASE #:
FIELD/AREA:

NAME/DESCRIP : **BLUE MARLIN 44-19**
SALES GAS

PROJECT NO. : **201905053**
COMPANY NAME : **FREMONT PETROLEUM CORP**
OFFICE / BRANCH: FLORENCE, CO
CUSTOMER REF:
PRODUCER :

ANALYSIS NO. : **01**
ANALYSIS DATE: MAY 13, 2019 09:13
SAMPLE DATE : MAY 7, 2019 14:50
TO:
EFFECTIVE DATE

*****FIELD DATA*****

SAMPLE CYCLE:
SAMPLE PRES. : 2 psig
FLOW PRES. : psig
LAB PRES: psig
SAMPLE TEMP. : 53 ºf
AMBIENT TEMP.: ºf
H2O BY STAIN TUBE: - #/mmcf
FIELD COMMENTS:
LAB COMMENTS:

SAMPLE TYPE: SPOT
PROBE : NO
CYLINDER NO. : 1902
SAMPLED BY : GALE MCENDREE
SAMPLING COMPANY: EMPACT
H2S BY STAIN TUBE: **BDL** ppm
CO2 BY STAIN TUBE: - Mol %

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.73**	GPM @ **14.65**
Helium	---	0.04	0.01	---	---
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.07	0.10	---	---
Nitrogen	---	1.01	1.25	---	---
Carbon Dioxide	---	2.07	4.02	---	---
Methane	P1	79.24770	56.03690	---	---
Ethane	P2	5.9992	7.9511	1.609	1.601
Propane	P3	5.0522	9.8196	1.396	1.389
i-Butane	I4	0.8332	2.1345	0.274	0.272
n-Butane	P4	2.1267	5.4483	0.673	0.669
2,2-Dimethylpropane	I5	0.0019	0.0060	0.001	0.001
i-Pentane	I5	0.8353	2.6564	0.307	0.305
Acetone	X3	0.0001	0.0003	0.000	0.000
UnknownC4s	U4	0.0001	0.0003	0.000	0.000
n-Pentane	P5	0.6981	2.2200	0.254	0.252
2,2-Dimethylbutane	I6	0.0034	0.0129	0.001	0.001
Cyclopentane	N5	0.0811	0.2507	0.024	0.024
2,3-Dimethylbutane	I6	0.0312	0.1185	0.013	0.013
2-Methylpentane	I6	0.2380	0.9040	0.100	0.099
3-Methylpentane	I6	0.1458	0.5538	0.059	0.059
UnknownC5s	U5	0.0003	0.0010	0.000	0.000
n-Hexane	P6	0.2481	0.9424	0.103	0.102
2,2-Dimethylpentane	I7	0.0002	0.0009	0.000	0.000
Methylcyclopentane	N6	0.2140	0.7938	0.076	0.076
2,4-Dimethylpentane	I7	0.0141	0.0623	0.007	0.007
2,2,3-Trimethylbutane	I7	0.0008	0.0035	0.000	0.000

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Benzene	A6	0.0169	0.0582	0.005	0.005
3,3-Dimethylpentane	I7	0.0003	0.0013	0.000	0.000
Cyclohexane	N6	0.0966	0.3584	0.033	0.033
2-Methylhexane	I7	0.0521	0.2301	0.024	0.024
2,3-Dimethylpentane	I7	0.0300	0.1325	0.014	0.014
1,1-Dimethylcyclopentane	N7	0.0146	0.0632	0.006	0.006
3-Methylhexane	I7	0.0658	0.2906	0.030	0.030
1c,3-Dimethylcyclopentane	N7	0.0359	0.1554	0.017	0.017
1t,3-Dimethylcyclopentane	N7	0.0418	0.1809	0.019	0.019
3-Ethylpentane	I7	0.0067	0.0296	0.003	0.003
1t,2-Dimethylcyclopentane	N7	0.0666	0.2882	0.031	0.031
2,2,4-Trimethylpentane	I8	0.0020	0.0100	0.001	0.001
UnknownC6s	U6	0.0004	0.0015	0.000	0.000
n-Heptane	P7	0.1050	0.4637	0.048	0.048
1c,2-Dimethylcyclopentane	N7	0.0050	0.0216	0.002	0.002
Methylcyclohexane	N7	0.1193	0.5163	0.048	0.048
2,2-Dimethylhexane	I8	0.0170	0.0856	0.008	0.008
Ethylcyclopentane	N7	0.0127	0.0550	0.005	0.005
2,5-Dimethylhexane	I8	0.0039	0.0197	0.002	0.002
2,2,3-Trimethylpentane	I8	0.0005	0.0025	0.000	0.000
2,4-Dimethylhexane	I8	0.0069	0.0347	0.004	0.004
1c,2t,4-Trimethylcyclopentane	N8	0.0131	0.0648	0.006	0.006
3,3-Dimethylhexane	I8	0.0010	0.0050	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0198	0.0979	0.009	0.009
2,3,4-Trimethylpentane	I8	0.0029	0.0146	0.001	0.001
Toluene	A7	0.0126	0.0512	0.004	0.004
2,3-Dimethylhexane	I8	0.0059	0.0297	0.003	0.003
2-Methyl-3-ethylpentane	I8	0.0035	0.0176	0.002	0.002
1,1,2-Trimethylcyclopentane	N8	0.0004	0.0020	0.000	0.000
2-Methylheptane	I8	0.0263	0.1324	0.014	0.014
4-Methylheptane	I8	0.0069	0.0347	0.004	0.004
3-Methyl-3-ethylpentane	I8	0.0009	0.0045	0.000	0.000
3,4-Dimethylhexane	I8	0.0011	0.0055	0.001	0.001
1c,2c,4-Trimethylcyclopentane	N8	0.0002	0.0010	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0007	0.0035	0.000	0.000
3-Methylheptane	I8	0.0099	0.0499	0.005	0.005
1c,2t,3-Trimethylcyclopentane	N8	0.0211	0.1044	0.011	0.011
3-Ethylhexane	I8	0.0036	0.0181	0.002	0.002
1t,4-Dimethylcyclohexane	N8	0.0080	0.0396	0.004	0.004
1,1-Dimethylcyclohexane	N8	0.0021	0.0104	0.001	0.001
3t-Ethylmethylcyclopentane	N8	0.0041	0.0203	0.002	0.002
2t-Ethylmethylcyclopentane	N8	0.0032	0.0158	0.002	0.002
1,1-Methylethylcyclopentane	N8	0.0107	0.0529	0.005	0.005
2,2,4-Trimethylhexane	I9	0.0007	0.0040	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0115	0.0569	0.006	0.006
1t,3-Dimethylcyclohexane	N8	0.0017	0.0084	0.001	0.001
n-Octane	P8	0.0354	0.1783	0.018	0.018
i-Propylcyclopentane	I8	0.0007	0.0035	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0014	0.0079	0.001	0.001
2,2,3,4-Tetramethylpentane	I9	0.0005	0.0028	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0009	0.0051	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0026	0.0129	0.001	0.001
2,2-Dimethylheptane	I9	0.0001	0.0006	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0100	0.0556	0.005	0.005
2,2,3-Trimethylhexane	I9	0.0050	0.0283	0.003	0.003
2,4-Dimethylheptane	I9	0.0011	0.0062	0.001	0.001
4,4-Dimethylheptane	I9	0.0006	0.0034	0.000	0.000
Ethylcyclohexane	N8	0.0076	0.0376	0.003	0.003

n-Propylcyclopentane	N8	0.0032	0.0158	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0005	0.0028	0.000	0.000
2,5-Dimethylheptane	I9	0.0013	0.0074	0.001	0.001
3,3-Dimethylheptane	I9	0.0014	0.0079	0.001	0.001
3,5-Dimethylheptane	I9	0.0009	0.0051	0.001	0.001
2,6-Dimethylheptane	I9	0.0009	0.0051	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0023	0.0128	0.001	0.001
Ethylbenzene	I8	0.0024	0.0112	0.001	0.001
1c,2t,4t-Trimethylcyclohexane	N9	0.0016	0.0089	0.001	0.001
2,3-Dimethylheptane	I9	0.0045	0.0254	0.002	0.002
1,3-Dimethylbenzene (m-Xylene)	A8	0.0015	0.0070	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0034	0.0159	0.001	0.001
3,4-Dimethylheptane (2)	I9	0.0014	0.0079	0.001	0.001
4-Ethylheptane	I9	0.0003	0.0017	0.000	0.000
4-Methyloctane	I9	0.0021	0.0119	0.001	0.001
2-Methyloctane	I9	0.0031	0.0175	0.002	0.002
1c,2t,3-Trimethylcyclohexane	N9	0.0006	0.0033	0.000	0.000
3-Ethylheptane	I9	0.0008	0.0045	0.000	0.000
3-Methyloctane	I9	0.0033	0.0186	0.002	0.002
1c,2t,4c-Trimethylcyclohexane	I9	0.0003	0.0017	0.000	0.000
1,1,2-Trimethylcyclohexane	N9	0.0005	0.0028	0.000	0.000
3,3-Diethylpentane	I9	0.0002	0.0011	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0018	0.0084	0.001	0.001
i-Butylcyclopentane	N9	0.0024	0.0134	0.001	0.001
n-Nonane	P9	0.0063	0.0356	0.004	0.004
1,1-Methylethylcyclohexane	N9	0.0016	0.0089	0.001	0.001
i-Propylbenzene	A9	0.0020	0.0106	0.001	0.001
i-Propylcyclohexane	N9	0.0006	0.0033	0.000	0.000
2,2-Dimethyloctane	I10	0.0003	0.0019	0.000	0.000
2,4-Dimethyloctane	I10	0.0003	0.0019	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
2,5-Dimethyloctane	I10	0.0002	0.0012	0.000	0.000
n-Butylcyclopentane	N9	0.0012	0.0067	0.001	0.001
3,3-Dimethyloctane	I10	0.0003	0.0019	0.000	0.000
n-Propylbenzene	A9	0.0006	0.0032	0.000	0.000
3,6-Dimethyloctane	I10	0.0003	0.0019	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0004	0.0025	0.000	0.000
1,3-Methylethylbenzene	A9	0.0003	0.0016	0.000	0.000
1,4-Methylethylbenzene	A9	0.0001	0.0005	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0001	0.0005	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
1,2-Methylethylbenzene	A9	0.0002	0.0011	0.000	0.000
3-Methylnonane	I10	0.0001	0.0006	0.000	0.000
t-Butylbenzene	A10	0.0004	0.0024	0.000	0.000
UnknownC9s	U9	0.0099	0.0560	0.006	0.006
n-Decane	P10	0.0001	0.0006	0.000	0.000
1,2,3-Trimethylbenzene	A9	0.0010	0.0053	0.001	0.001
1,3-Methyl-i-propylbenzene	A10	0.0001	0.0006	0.000	0.000
1,4-Methyl-i-propylbenzene	A10	0.0001	0.0006	0.000	0.000
Sec-Butylcyclohexane	A10	0.0005	0.0031	0.000	0.000
1,3-Diethylbenzene	A10	0.0001	0.0006	0.000	0.000
1,4-Methyl-n-propylbenzene	A10	0.0005	0.0029	0.000	0.000
n-Butylbenzene	A10	0.0015	0.0089	0.001	0.001
1,3-Dimethyl-5-ethylbenzene	A10	0.0012	0.0071	0.001	0.001
1,2-Diethylbenzene	A10	0.0014	0.0083	0.001	0.001
t-Decahydronaphthalene	A9	0.0008	0.0054	0.001	0.001
1,2-Methyl-n-propylbenzene	A10	0.0014	0.0083	0.001	0.001
1,2-Dimethyl-4-ethylbenzene	A10	0.0014	0.0083	0.001	0.001
1,3-Dimethyl-2-ethylbenzene	A10	0.0001	0.0006	0.000	0.000

1,4-Methyl-t-butylbenzene	A11	0.0025	0.0163	0.002	0.002
UnknownC10s	U10	0.0022	0.0138	0.001	0.001
n-Undecane	P11	0.0003	0.0021	0.000	0.000
1,4-Ethyl-i-propylbenzene	A11	0.0011	0.0072	0.001	0.001
1,2,4,5-Tetramethylbenzene	A11	0.0016	0.0095	0.001	0.001
1,2,3,5-Tetramethylbenzene	A11	0.0006	0.0036	0.000	0.000
1,2-Methyl-t-butylbenzene	A11	0.0001	0.0007	0.000	0.000
4-Methylindan	A11	0.0001	0.0006	0.000	0.000
2-Methylindan	A11	0.0006	0.0035	0.000	0.000
1,3-Methyl-n-butylbenzene	A11	0.0001	0.0007	0.000	0.000
1,3-Di-i-propylbenzene	A11	0.0004	0.0029	0.000	0.000
sec-Pentylbenzene	A11	0.0001	0.0007	0.000	0.000
1,4-Di-i-propylbenzene	A11	0.0010	0.0071	0.001	0.001
UnknownC11s	U11	0.0022	0.0152	0.001	0.001
n-Dodecane	P12	0.0001	0.0007	0.000	0.000
UnknownC12s	U12	0.0012	0.0083	0.001	0.001
UnknownC13s	U13	0.0001	0.0008	0.000	0.000
TOTAL		100.00000	100.00000	5.3605	5.3319

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0169	0.0582
TOLUENE	0.0126	0.0512
ETHYLBENZENE	0.0024	0.0112
XYLENES	0.0067	0.0313
TOTAL BTEX	0.0386	0.1519

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.
(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)

	BTU @	14.73	14.65
LOW	NET DRY REAL :	1182.5 /scf	1176.1 /scf
	NET WET REAL :	1161.9 /scf	1155.5 /scf
HIGH	GROSS DRY REAL :	1301.6 /scf	1294.6 /scf
	GROSS WET REAL :	1279.0 /scf	1271.9 /scf
	NET DRY REAL :	19820.2 /lb	19712.6 /lb
	GROSS DRY REAL :	21815.0 /lb	21696.5 /lb
	RELATIVE DENSITY (AIR=1):		0.7826
	DENSITY		0.05978 lb/scf
	COMPRESSIBILITY FACTOR :		0.99645
	REGULAR WOBBE INDEX		1467.9

C6+ Fraction of DHA Gas Analysis @60°F, 14.696 psia

Net Dry Ideal BTU	4810.7 /scf	Relative Density - SG (Air=1)	3.2951	***C6+factors***
Gross Dry Ideal BTU	5183.8 /scf	**Z** Compressiblity Factor	0.99228	0.99153
Net Dry Ideal BTU	19525.4 /lb	Density Factor	251.513 lbm/1000 ft3	
Gross Dry Ideal BTU	21040.3 /lb	Molar Mass or MW	95.449 g/mol	
		Volume Liquid Ideal gas	0.819 scf/gal	22.9

This hexanes plus fraction may be applied in place of published C6+ factors. The Z & GPM need additional calc for C6+ factors.
#DIV/0 or 0 (zero) will appear in this section when there is no hexanes plus in the sample to calculate C6+ factors.

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