EMPACT ANALYTICAL SYSTEMS INC.
365 S. MAIN ST.
BRIGHTON, CO
80601

303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201409101	ANALYSIS NO. :	01
COMPANY NAME :	BONANZA CREEK	ANALYSIS DATE:	SEPTEMBER 25, 2014
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 16, 2014
PRODUCER :		CYLINDER NO. :	1488
LEASE NO. :		SAMPLED BY :	JOHN MOSER - EMPACT
NAME/DESCRIP :	BRADEN HEAD 10:00 HERBST 14-14		
FIELD DATA		SAMPLE TEMP. :	80
SAMPLE PRES. :	90	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 0.0 PPM (1-7PPM) 10:05		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
GLYCOLS	0.0002	0.0014		
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.43	0.58	---	---
CARBON DIOXIDE	0.06	0.13	---	---
METHANE	79.62830	61.43690	---	---
ETHANE	11.3247	16.3766	3.0219	3.0384
PROPANE	5.3435	11.3318	1.4685	1.4765
I-BUTANE	0.6316	1.7655	0.2061	0.2072
N-BUTANE	1.4407	4.0271	0.4531	0.4556
I-PENTANE	0.3385	1.1730	0.1220	0.1227
N-PENTANE	0.3579	1.2418	0.1290	0.1297
HEXANES PLUS	0.4246	1.9159	0.1660	0.1667
TOTALS	100.00000	100.00000	5.5666	5.5968

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0099	0.0372
TOLUENE	0.0118	0.0523
ETHYLBENZENE	0.0006	0.0031
XYLENES	0.0065	0.0331
TOTAL BTEX	0.0288	0.1257

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1138.8 **/scf**	1145.0 **/scf**
	NET WET REAL :	1118.9 **/scf**	1125.1 **/scf**
HIGH	GROSS DRY REAL :	1255.1 **/scf**	1261.9 **/scf**
	GROSS WET REAL :	1233.2 **/scf**	1240.0 **/scf**
	NET DRY REAL :	20801.0 **/lb**	20914.6 **/lb**
	GROSS DRY REAL :	22933.6 **/lb**	23058.9 **/lb**
	RELATIVE DENSITY (AIR=1):		0.7170
	COMPRESSIBILITY FACTOR :		0.99656

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

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993) ; ASTM D6730*

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GLYCALC INFORMATION

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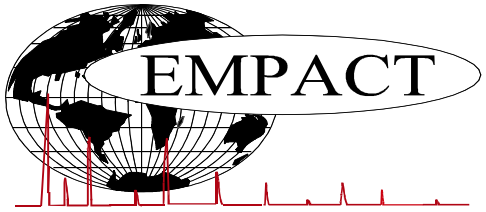
VAPOR PRES. :		GRAVITY :	
COMMENTS :	SPOT; NO PROBE; LENGTH OF H2S STAIN @ 0.0 PPM (1-7PPM) 10:05		

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.01	0.00
Carbon Dioxide	0.06	0.13
Nitrogen	0.43	0.58
Methane	79.62830	61.43690
Ethane	11.3247	16.3766
Propane	5.3435	11.3318
Isobutane	0.6316	1.7655
n-Butane	1.4407	4.0271
Isopentane	0.3223	1.1184
n-Pentane	0.3579	1.2418
Cyclopentane	0.0162	0.0546
n-Hexane	0.0868	0.3597
Cyclohexane	0.0245	0.0992
Other Hexanes	0.1413	0.5827
Heptanes	0.0667	0.3199
Methycyclohexane	0.0195	0.0921
2,2,4 Trimethylpentane	0.0001	0.0005
Benzene	0.0099	0.0372
Toluene	0.0118	0.0523
Ethylbenzene	0.0006	0.0031
Xylenes	0.0065	0.0331
C8+ Heavies	0.0569	0.3361
Subtotal	99.98980	99.97860
Oxygen/Argon	0.01	0.02
Glycols	0.0002	0.0014
Total	100.00000	100.00000



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201409101	ANALYSIS NO. :	01
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COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.00	0.00	---	---
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.43	0.58	---	---
Carbon Dioxide	---	0.06	0.13	---	---
Methane	P1	79.62830	61.43690	---	---
Ethane	P2	11.3247	16.3766	3.022	3.038
Propane	P3	5.3435	11.3318	1.469	1.477
i-Butane	I4	0.6316	1.7655	0.206	0.207
n-Butane	P4	1.4407	4.0271	0.453	0.456
2,2-Dimethylpropane	I5	0.0035	0.0122	0.001	0.001
i-Pentane	I5	0.3188	1.1062	0.116	0.117
n-Pentane	P5	0.3579	1.2418	0.129	0.130
2,2-Dimethylbutane	I6	0.0035	0.0145	0.001	0.001
Cyclopentane	N5	0.0162	0.0546	0.005	0.005
2,3-Dimethylbutane	I6	0.0090	0.0373	0.004	0.004
2-Methylpentane	I6	0.0653	0.2706	0.027	0.027
3-Methylpentane	I6	0.0337	0.1397	0.014	0.014
n-Hexane	P6	0.0868	0.3597	0.036	0.036
2,2-Dimethylpentane	I7	0.0002	0.0010	0.000	0.000
Methylcyclopentane	N6	0.0298	0.1206	0.011	0.011
2,4-Dimethylpentane	I7	0.0032	0.0154	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0002	0.0010	0.000	0.000
Benzene	A6	0.0099	0.0372	0.003	0.003
3,3-Dimethylpentane	I7	0.0003	0.0014	0.000	0.000
Cyclohexane	N6	0.0245	0.0992	0.008	0.008
2-Methylhexane	I7	0.0107	0.0516	0.005	0.005
2,3-Dimethylpentane	I7	0.0032	0.0154	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0036	0.0170	0.001	0.001
3-Methylhexane	I7	0.0109	0.0525	0.005	0.005
1c,3-Dimethylcyclopentane	N7	0.0031	0.0146	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0028	0.0132	0.001	0.001
3-Ethylpentane	I7	0.0003	0.0014	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0047	0.0222	0.002	0.002
2,2,4-Trimethylpentane	I8	0.0001	0.0005	0.000	0.000
n-Heptane	P7	0.0227	0.1094	0.010	0.010
1c,2-Dimethylcyclopentane	N7	0.0002	0.0010	0.000	0.000
Methylcyclohexane	N7	0.0195	0.0921	0.008	0.008
2,2-Dimethylhexane	I8	0.0014	0.0077	0.001	0.001
Ethylcyclopentane	N7	0.0006	0.0028	0.000	0.000
2,5-Dimethylhexane	I8	0.0004	0.0022	0.000	0.000

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2,2,3-Trimethylpentane	I8	0.0003	0.0016	0.000	0.000
2,4-Dimethylhexane	I8	0.0011	0.0061	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0009	0.0049	0.000	0.000
3,3-Dimethylhexane	I8	0.0003	0.0016	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0007	0.0038	0.000	0.000
2,3,4-Trimethylpentane	I8	0.0001	0.0005	0.000	0.000
Toluene	A7	0.0118	0.0523	0.004	0.004
2,3-Dimethylhexane	I8	0.0007	0.0038	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0005	0.000	0.000
2-Methylheptane	I8	0.0041	0.0225	0.002	0.002
4-Methylheptane	I8	0.0012	0.0066	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0002	0.0011	0.000	0.000
3,4-Dimethylhexane	I8	0.0002	0.0011	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0005	0.000	0.000
3-Methylheptane	I8	0.0020	0.0110	0.001	0.001
1c,2t,3-Trimethylcyclopentane	N8	0.0027	0.0146	0.001	0.001
3-Ethylhexane	I8	0.0005	0.0027	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0010	0.0054	0.001	0.001
3t-Ethylmethylcyclopentane	N8	0.0001	0.0005	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0001	0.0005	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0005	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0006	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0008	0.0043	0.000	0.000
1c,2c,3-Trimethylcyclopentane	N8	0.0005	0.0027	0.000	0.000
n-Octane	P8	0.0054	0.0297	0.003	0.003
1c,4-Dimethylcyclohexane	N8	0.0023	0.0124	0.001	0.001
i-Propylcyclopentane	I8	0.0001	0.0005	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0001	0.0006	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0006	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0002	0.0012	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0004	0.0022	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0015	0.0091	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0007	0.0043	0.000	0.000
Ethylcyclohexane	N8	0.0005	0.0027	0.000	0.000
n-Propylcyclopentane	N8	0.0006	0.0032	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0006	0.000	0.000
2,5-Dimethylheptane	I9	0.0001	0.0006	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0006	0.000	0.000
Ethylbenzene	I8	0.0006	0.0031	0.000	0.000
1c,2t,4t-Trimethylcyclohexane	N9	0.0001	0.0006	0.000	0.000
2,3-Dimethylheptane	I9	0.0008	0.0049	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0039	0.0199	0.002	0.002
1,4-Dimethylbenzene (p-Xylene)	A8	0.0011	0.0056	0.000	0.000
3,4-Dimethylheptane	I9	0.0002	0.0012	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0002	0.0012	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0006	0.000	0.000
4-Methyloctane	I9	0.0007	0.0043	0.000	0.000
2-Methyloctane	I9	0.0008	0.0049	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0002	0.0012	0.000	0.000
3-Ethylheptane	I9	0.0002	0.0012	0.000	0.000
3-Methyloctane	I9	0.0008	0.0049	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0006	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0015	0.0076	0.001	0.001
i-Butylcyclopentane	N9	0.0005	0.0030	0.000	0.000
n-Nonane	P9	0.0030	0.0185	0.002	0.002
1,1-Methylethylcyclohexane	N9	0.0007	0.0042	0.000	0.000
i-Propylbenzene	A9	0.0002	0.0011	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0012	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
2,4-Dimethyloctane	I10	0.0002	0.0013	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0005	0.0030	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0005	0.0029	0.000	0.000

3,6-Dimethyloctane	I10	0.0002	0.0013	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0002	0.0013	0.000	0.000
1,3-Methylethylbenzene	A9	0.0006	0.0035	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0011	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0008	0.0046	0.000	0.000
2,3-Dimethyloctane	I10	0.0002	0.0013	0.000	0.000
5-Methylnonane	I10	0.0004	0.0027	0.000	0.000
1,2-Methylethylbenzene	A9	0.0004	0.0023	0.000	0.000
2-Methylnonane	I10	0.0001	0.0007	0.000	0.000
3-Ethyloctane	I10	0.0001	0.0007	0.000	0.000
3-Methylnonane	I10	0.0003	0.0021	0.000	0.000
t-Butylbenzene	A10	0.0012	0.0077	0.001	0.001
i-Butylcyclohexane	N10	0.0002	0.0013	0.000	0.000
i-Butylbenzene	A10	0.0001	0.0006	0.000	0.000
sec-Butylbenzene	A10	0.0001	0.0006	0.000	0.000
UnknownC9s	U9	0.0012	0.0074	0.001	0.001
n-Decane	P10	0.0018	0.0123	0.001	0.001
1,2,3-Trimethylbenzene	A9	0.0003	0.0017	0.000	0.000
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	0.0003	0.0020	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0002	0.0013	0.000	0.000
1,3-Diethylbenzene	A10	0.0001	0.0006	0.000	0.000
1,3-Methyl-n-propylbenzene	A10	0.0001	0.0006	0.000	0.000
1,4-Diethylbenzene	A10	0.0002	0.0013	0.000	0.000
1,4-Methyl-n-propylbenzene	A10	0.0001	0.0006	0.000	0.000
n-Butylbenzene	A10	0.0001	0.0006	0.000	0.000
1,3-Dimethyl-5-ethylbenzene	A10	0.0001	0.0006	0.000	0.000
t-Decahydronaphthalene	A9	0.0001	0.0007	0.000	0.000
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0006	0.000	0.000
1,4-Dimethyl-2-ethylbenzene	A10	0.0001	0.0006	0.000	0.000
1,2-Dimethyl-4-ethylbenzene	A10	0.0001	0.0006	0.000	0.000
1,2-Dimethyl-3-ethylbenzene	A10	0.0001	0.0006	0.000	0.000
1,4-Methyl-t-butylbenzene	A11	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0018	0.0123	0.001	0.001
n-Undecane	P11	0.0007	0.0052	0.000	0.000
1,2-Ethyl-n-propylbenzene	A11	0.0001	0.0007	0.000	0.000
1,4-Di-i-propylbenzene	A11	0.0001	0.0008	0.000	0.000
Triethylene Glycol	GL6	0.0002	0.0014	0.000	0.000
UnknownC11s	U11	0.0008	0.0060	0.001	0.001
n-Dodecane	P12	0.0003	0.0024	0.000	0.000
1,2,4-Triethylbenzene	A12	0.0001	0.0008	0.000	0.000
UnknownC12s	U12	0.0001	0.0008	0.000	0.000
n-Tridecane	P13	0.0001	0.0009	0.000	0.000
UnknownC13s	U13	0.0001	0.0009	0.000	0.000
n-Tetradecane	P14	0.0001	0.0010	0.000	0.000
TOTAL		100.00000	100.00000	5.5666	5.5968

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0099	0.0372
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TOTAL BTEX	0.0288	0.1257

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	GROSS WET REAL :	1233.2 **/scf**	1240.0 **/scf**
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RELATIVE DENSITY (AIR=1): 0.7170

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

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993) ; ASTM D6730*

THIS DATA HAS BEEN ACQUIRED THROUGH APPLICATION OF CURRENT STATE-OF-THE-ART ANALYTICAL TECHNIQUES. THE USE OF THIS INFORMATION IS THE RESPONSIBLITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, ASSUMES NO RESPONSIBLITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.

EMPACT Analytical Systems, Inc 365 S. Main Street, Brighton, CO 80601 303-637-0150