EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

LEASE #:		NAME/DESCRIP :	**CHESTNUT 21Q-321 BRADEN HEAD GAS**
PROJECT NO. :	**201606065**	ANALYSIS NO. :	**02**
COMPANY NAME :	**PDC ENERGY, LLC**	ANALYSIS DATE:	JUNE 14, 2016 13:46
OFFICE / BRANCH:	EVANS, CO	SAMPLE DATE :	JUNE 13, 2016 16:05
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	297.0 psig	CYLINDER NO. :	1366
LAB PRES:	psig	SAMPLED BY :	JOHN MOSER
SAMPLE TEMP. :	80.0 ºf	SAMPLING COMPANY:	EMPACT
AMBIENT TEMP.:	ºf	H2S BY STAIN TUBE:	- ppm
H2O BY STAIN TUBE:	- #/mmcf	CO2 BY STAIN TUBE:	- Mol %
FIELD COMMENTS:	NO PROBE		
LAB COMMENTS:			

COMPONENT	MOLE %	MASS %	GPM @ 14.730	GPM @ 14.650
HELIUM	0.01	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.01	0.02	---	---
NITROGEN	0.8800	1.2700	---	---
CARBON DIOXIDE	0.02	0.05	---	---
METHANE	83.00290	68.58190	---	---
ETHANE	10.7056	16.5797	2.8712	2.8556
PROPANE	3.8983	8.8535	1.0767	1.0709
I-BUTANE	0.4468	1.3375	0.1468	0.1460
N-BUTANE	0.7625	2.2826	0.2413	0.2400
I-PENTANE	0.1216	0.4518	0.0442	0.0440
N-PENTANE	0.1049	0.3898	0.0382	0.0380
HEXANES PLUS	0.0374	0.1832	0.0120	0.0120
TOTALS	100.00000	100.00000	4.4304	4.4065

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0001	0.0004
TOLUENE	0.0003	0.0014
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0002	0.0012
TOTAL BTEX	0.0006	0.0030

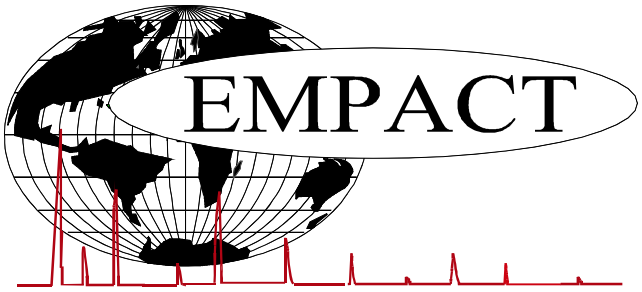
	BTU @	14.730	14.650
LOW	NET DRY REAL :	1070.1 /scf	1064.3 /scf
	NET WET REAL :	1051.5 /scf	1045.7 /scf
HIGH	GROSS DRY REAL :	1182.2 /scf	1175.8 /scf
	GROSS WET REAL :	1161.6 /scf	1155.2 /scf
	NET DRY REAL :	20924.7 /lb	20811.1 /lb
	GROSS DRY REAL :	23113.9 /lb	22988.4 /lb

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

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

RELATIVE DENSITY (AIR=1): 0.6698

COMPRESSIBILITY FACTOR : 0.99700



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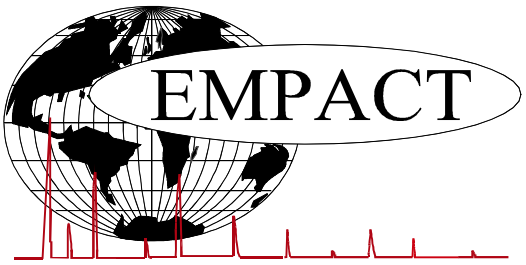
GLYCALC INFORMATION

PROJECT NO. :	201606065	ANALYSIS NO. :	02
COMPANY NAME :	PDC ENERGY, LLC	ANALYSIS DATE:	JUNE 14, 2016 13:46
ACCOUNT NO. :		SAMPLE DATE :	JUNE 13, 2016 16:05
PRODUCER :		CYLINDER NO. :	1366
LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	CHESTNUT 21Q-321 BRADEN HEAD GAS		
FIELD DATA		SAMPLE TEMP. :	80.0
SAMPLE PRES. :	297.0	AMBIENT TEMP.:	
COMMENTS :	NO PROBE SPOT		

Componet	Mole %	Wt %
Helium	0.01	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.02	0.05
Nitrogen	0.88	1.27
Methane	83.00290	68.58190
Ethane	10.7056	16.5797
Propane	3.8983	8.8535
Isobutane	0.4468	1.3375
n-Butane	0.7625	2.2826
Isopentane	0.1208	0.4489
n-Pentane	0.1049	0.3898
Cyclopentane	0.0008	0.0029
n-Hexane	0.0096	0.0426
Cyclohexane	0.0006	0.0026
Other Hexanes	0.0173	0.0767
Heptanes	0.0046	0.0235
Methycyclohexane	0.0007	0.0035
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0001	0.0004
Toluene	0.0003	0.0014
Ethylbenzene	0.0000	0.0000
Xylenes	0.0002	0.0012
C8+ Heavies	0.0040	0.0313
Subtotal	99.99000	99.98000
Oxygen/Argon	0.01	0.02
Total	100.00000	100.00000



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DHA COMPONENT LIST

PROJECT NO. :	201606065	ANALYSIS NO. :	02
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LEASE NO. :		SAMPLED BY :	JOHN MOSER
NAME/DESCRIP :	CHESTNUT 21Q-321 BRADEN HEAD GAS		
FIELD DATA		SAMPLE TEMP. :	80.0
SAMPLE PRES. :	297.0	AMBIENT TEMP.:	
COMMENTS :	NO PROBE SPOT		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.730	GPM @ 14.650
Helium	---	0.01	0.00	---	---
Oxygen/Argon	---	0.01	0.02	---	---
Nitrogen	---	0.88	1.27	---	---
Carbon Dioxide	---	0.02	0.05	---	---
Methane	P1	83.00290	68.58190	---	---
Ethane	P2	10.7056	16.5797	2.871	2.856
Propane	P3	3.8983	8.8535	1.077	1.071
i-Butane	I4	0.4468	1.3375	0.147	0.146
n-Butane	P4	0.7625	2.2826	0.241	0.240
2,2-Dimethylpropane	I5	0.0018	0.0067	0.001	0.001
i-Pentane	I5	0.1190	0.4422	0.043	0.043
n-Pentane	P5	0.1049	0.3898	0.038	0.038
2,2-Dimethylbutane	I6	0.0007	0.0031	0.000	0.000
Cyclopentane	N5	0.0008	0.0029	0.000	0.000
2,3-Dimethylbutane	I6	0.0014	0.0062	0.001	0.001
2-Methylpentane	I6	0.0100	0.0444	0.004	0.004
3-Methylpentane	I6	0.0041	0.0182	0.002	0.002
n-Hexane	P6	0.0096	0.0426	0.004	0.004
Methylcyclopentane	N6	0.0011	0.0048	0.000	0.000
2,4-Dimethylpentane	I7	0.0004	0.0021	0.000	0.000
Benzene	A6	0.0001	0.0004	0.000	0.000
Cyclohexane	N6	0.0006	0.0026	0.000	0.000
2-Methylhexane	I7	0.0010	0.0051	0.000	0.000
2,3-Dimethylpentane	I7	0.0002	0.0010	0.000	0.000
3-Methylhexane	I7	0.0008	0.0041	0.000	0.000
1c,3-Dimethylcyclopentane	N7	0.0002	0.0010	0.000	0.000
1t,3-Dimethylcyclopentane	N7	0.0001	0.0005	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0002	0.0010	0.000	0.000
n-Heptane	P7	0.0014	0.0072	0.001	0.001
Methylcyclohexane	N7	0.0007	0.0035	0.000	0.000
2,2-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0003	0.0014	0.000	0.000
2-Methylheptane	I8	0.0003	0.0017	0.000	0.000
4-Methylheptane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0001	0.0006	0.000	0.000

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1c,2t,3-Trimethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
3-Ethylhexane	I8	0.0001	0.0006	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0002	0.0011	0.000	0.000
UnknownC7s	U7	0.0003	0.0015	0.000	0.000
n-Octane	P8	0.0004	0.0024	0.000	0.000
1c,4-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0001	0.0006	0.000	0.000
1,4-Dimethylbenzene (p-Xylene)	A8	0.0001	0.0006	0.000	0.000
4-Methyloctane	I9	0.0001	0.0007	0.000	0.000
2-Methyloctane	I9	0.0001	0.0007	0.000	0.000
n-Nonane	P9	0.0002	0.0013	0.000	0.000
n-Decane	P10	0.0001	0.0007	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
1,3,5-Triethylbenzene	A12	0.0001	0.0008	0.000	0.000
n-Hexylbenzene	A12	0.0001	0.0008	0.000	0.000
n-Tridecane	P13	0.0001	0.0009	0.000	0.000
UnknownC13s	U13	0.0002	0.0019	0.000	0.000
n-Tetradecane	P14	0.0001	0.0010	0.000	0.000
UnknownC14s	U14	0.0004	0.0041	0.000	0.000
n-Pentadecane	P15	0.0001	0.0011	0.000	0.000
UnknownC15s	U15	0.0003	0.0033	0.000	0.000
n-Hexadecane	P16	0.0001	0.0012	0.000	0.000
UnknownC16s	U16	0.0001	0.0012	0.000	0.000
TOTAL		100.00000	100.00000	4.4304	4.4065

BTEX COMPONENTS	**MOLE%**	**WT%**
BENZENE	0.0001	0.0004
TOLUENE	0.0003	0.0014
ETHYLBENZENE	0.0000	0.0000
XYLENES	0.0002	0.0012
TOTAL BTEX	0.0006	0.0030

	BTU @	14.730	14.650
LOW	NET DRY REAL :	1070.1 **/scf**	1064.3 **/scf**
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	NET DRY REAL :	20924.7 **/lb**	20811.1 **/lb**
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	RELATIVE DENSITY (AIR=1):		0.6698
	COMPRESSIBILITY FACTOR :		0.99700

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