EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-103-10261** NAME/DESCRIP : **E-M EMERALD C-1 HZ CASING GAS**
LEASE #:
FIELD/AREA:

PROJECT NO. : **202403078** ANALYSIS NO. : **01**
COMPANY NAME : **EAGLE OPERATING** ANALYSIS DATE: MARCH 28, 2024 09:45
OFFICE / BRANCH: MINOT, ND SAMPLE DATE : MARCH 18, 2024 9:45
CUSTOMER REF: TO:
PRODUCER : EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE: SPOT
SAMPLE PRES. : 1.5 psig PROBE : NO
FLOW PRES. : psig CYLINDER NO. : 2080
LAB PRES: psig SAMPLED BY : GALE MCENDREE
SAMPLE TEMP. : 48 ºf SAMPLING COMPANY: EMPACT
AMBIENT TEMP.: ºf H2S BY STAIN TUBE: _ ppm mol
H2O BY STAIN TUBE: - #/mmcf CO2 BY STAIN TUBE: - Mol %
FIELD COMMENTS:
LAB COMMENTS:

COMPONENT	MOLE %	MASS %	GPM @ 14.73	GPM @ 14.65
ALCOHOLS	0.0110	0.0161	0.0020	0.0020
HELIUM	0.53	0.07	---	---
HYDROGEN	0.01	0.00	---	---
OXYGEN/ARGON	0.15	0.16	---	---
NITROGEN	9.66	9.08	---	---
CARBON DIOXIDE	0.55	0.81	---	---
METHANE	59.3772	31.9462	---	---
ETHANE	5.3339	5.3789	1.4335	1.4257
PROPANE	7.4709	11.0483	2.0682	2.0570
I-BUTANE	1.8865	3.6772	0.6206	0.6172
N-BUTANE	4.6378	9.0402	1.4688	1.4608
I-PENTANE	2.4955	6.0258	0.9047	0.8997
N-PENTANE	2.1028	5.0881	0.7656	0.7615
HEXANES PLUS	5.7844	17.6592	2.3863	2.3732
TOTALS	100.00000	100.00000	9.6497	9.5971

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0736	0.1928
TOLUENE	0.0489	0.1511
ETHYLBENZENE	0.0020	0.0071
XYLENES	0.0051	0.0181
TOTAL BTEX	0.1296	0.3691

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.

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

CALCULATED VALUES**

	BTU @	14.73	14.65
LHV	NET DRY REAL :	1441.7 /scf	1433.9 /scf
	NET WET REAL :	1416.6 /scf	1408.8 /scf
HHV	GROSS DRY REAL :	1576.1 /scf	1567.5 /scf
	GROSS WET REAL :	1548.7 /scf	1540.1 /scf

NET HEATING VALUE (60 °F ideal reaction):	18259.3 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	19962.1 Btu/lbm
RELATIVE DENSITY (AIR=1):	1.0289
DENSITY	0.07857 lbm/scf
COMPRESSIBILITY FACTOR :	0.9950
REGULAR WOBBE INDEX	1542.4

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202403078	ANALYSIS NO. :	01
COMPANY NAME :	EAGLE OPERATING	ANALYSIS DATE:	MARCH 28, 2024 09:45
ACCOUNT NO. :		SAMPLE DATE :	MARCH 18, 2024 9:45
PRODUCER :		CYLINDER NO. :	2080
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	E-M EMERALD C-1 HZ CASING GAS		
FIELD DATA		SAMPLE TEMP. :	48
SAMPLE PRES. :	1.5	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.53	0.07
Hydrogen	0.01	0.00
Carbon Dioxide	0.55	0.81
Nitrogen	9.66	9.08
Methane	59.3772	31.9462
Ethane	5.3339	5.3789
Propane	7.4709	11.0483
Isobutane	1.8865	3.6772
n-Butane	4.6378	9.0402
Isopentane	2.3104	5.5904
n-Pentane	2.1028	5.0881
Cyclopentane	0.1851	0.4354
n-Hexane	0.9819	2.8377
Cyclohexane	0.4801	1.3551
Other Hexanes	2.2328	6.4089
Heptanes	1.2445	4.1602
Methylcyclohexane	0.4005	1.3188
2,2,4 Trimethylpentane	0.0010	0.0038
Benzene	0.0736	0.1928
Toluene	0.0489	0.1511
Ethylbenzene	0.0020	0.0071
Xylenes	0.0051	0.0181
C8+ Heavies	0.3140	1.2056
Subtotal	99.83900	99.82390
Oxygen/Argon	0.15	0.16
Alcohols	0.0110	0.0161
Total	100.00000	100.00000

Calculated Values BTU @ **14.73**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	1441.7	4652.2	5741.6	11164.5	**Btu/scf**
	Net Wet Real:	1416.6	4571.3	5641.8	10970.4	**Btu/scf**
HHV	Gross Dry Real:	1576.1	5010.5	6186.3	11996.1	**Btu/scf**
	Gross Wet Real:	1548.7	4923.4	6078.7	11787.5	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1542.4	2793.4	3095.7	4323.2	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		18259.3	19392.4	19996.8	21102.0	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		19962.1	20884.9	21545.5	22676.5	**Btu/lbm**
Molar Mass (MW):		29.81799	91.028	114.354	221.966	**g/mol**
Relative Density (AIR=1):		1.0289	3.1437	3.9483	7.6640	**SG**
Density:		0.07857	0.23989	0.30134	0.58492	**lbm/scf**
Compressiblity Factor:		0.9950	0.9908	0.9966	1.0000	**Z**
Liquid Volume real gas @:	**14.73**	20.8892	2.3745	0.1544	0	**gal/1000 scf**

**** The Wobbe pressure base in the number considered is based upon the given Pb of the HHV above.***

#DIV/0 or 0 (zero) will appear in the Calculated Value Section when there is no C6+, C8+ or C10+ in the sample to calculate these factors.

BDL - Below Detection Limit. The H2S LOS has a detection limit of 0.25 ppm. A _ (an uderscore) indicates there was no tube pulled for H2S.

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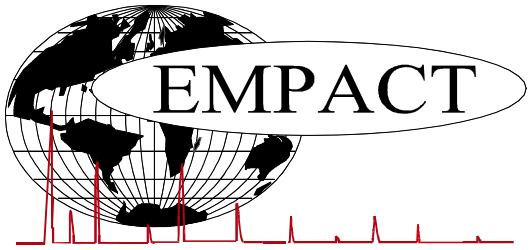

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY: **05-103-10261** NAME/DESCRIP : **E-M EMERALD C-1 HZ**
LEASE #: **CASING GAS**
FIELD/AREA:

PROJECT NO. : **202403078** ANALYSIS NO. : **01**
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OFFICE / BRANCH: MINOT, ND SAMPLE DATE : MARCH 18, 2024 9:45
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PRODUCER : EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE: SPOT
SAMPLE PRES. : 1.5 psig PROBE : NO
FLOW PRES. : psig CYLINDER NO. : 2080
LAB PRES: psig SAMPLED BY : GALE MCENDREE
SAMPLE TEMP. : 48 ºf SAMPLING COMPANY: EMPACT
AMBIENT TEMP.: ºf H2S BY STAIN TUBE: _ ppm mol
H2O BY STAIN TUBE: - #/mmcf CO2 BY STAIN TUBE: - Mol %
FIELD COMMENTS:
LAB COMMENTS:

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.73**	GPM @ **14.65**
Helium	---	0.53	0.07	---	---
Hydrogen	---	0.01	0.00	---	---
Oxygen/Argon	---	0.15	0.16	---	---
Nitrogen	---	9.66	9.08	---	---
Carbon Dioxide	---	0.55	0.81	---	---
Methane	P1	59.3772	31.9462	---	---
Ethane	P2	5.3339	5.3789	1.434	1.426
Propane	P3	7.4709	11.0483	2.068	2.057
i-Butane	I4	1.8865	3.6772	0.621	0.617
Methanol	X1	0.0061	0.0065	0.001	0.001
n-Butane	P4	4.6377	9.0400	1.469	1.461
2,2-Dimethylpropane	I5	0.0193	0.0467	0.007	0.007
Ethanol	X2	0.0004	0.0006	0.000	0.000
i-Pentane	I5	2.2911	5.5437	0.842	0.838
Acetone	X3	0.0033	0.0064	0.001	0.001
i-Propanol	X3	0.0006	0.0012	0.000	0.000
UnknownC4s	U4	0.0001	0.0002	0.000	0.000
n-Pentane	P5	2.1019	5.0859	0.766	0.762
t-Butanol	X4	0.0002	0.0005	0.000	0.000
2,2-Dimethylbutane	I6	0.0671	0.1939	0.028	0.028
Cyclopentane	N5	0.1851	0.4354	0.055	0.055
2,3-Dimethylbutane	I6	0.1466	0.4237	0.060	0.060
2-Methylpentane	I6	0.8385	2.4233	0.350	0.348
i-Butanol	X4	0.0001	0.0002	0.000	0.000
3-Methylpentane	I6	0.5284	1.5271	0.217	0.215
UnknownC5s	U5	0.0009	0.0022	0.000	0.000
n-Hexane	P6	0.9819	2.8377	0.406	0.404
2,2-Dimethylpentane	I7	0.0319	0.1072	0.015	0.015
Methylcyclopentane	N6	0.6515	1.8389	0.232	0.230
2,4-Dimethylpentane	I7	0.0618	0.2077	0.029	0.029

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2,2,3-Trimethylbutane	I7	0.0082	0.0276	0.004	0.004
n-Butanol	X4	0.0003	0.0007	0.000	0.000
Benzene	A6	0.0736	0.1928	0.021	0.021
3,3-Dimethylpentane	I7	0.0129	0.0434	0.006	0.006
Cyclohexane	N6	0.4801	1.3551	0.164	0.163
2-Methylhexane	I7	0.2092	0.7030	0.098	0.097
2,3-Dimethylpentane	I7	0.0700	0.2352	0.032	0.032
1,1-Dimethylcyclopentane	N7	0.0504	0.1660	0.021	0.021
3-Methylhexane	I7	0.2077	0.6980	0.096	0.095
1c,3-Dimethylcyclopentane	N7	0.0829	0.2730	0.038	0.038
1t,3-Dimethylcyclopentane	N7	0.0731	0.2407	0.034	0.034
3-Ethylpentane	I7	0.0099	0.0333	0.004	0.004
1t,2-Dimethylcyclopentane	N7	0.1273	0.4192	0.059	0.059
2,2,4-Trimethylpentane	I8	0.0010	0.0038	0.001	0.001
UnknownC6s	U6	0.0007	0.0020	0.000	0.000
n-Heptane	P7	0.2670	0.8972	0.124	0.123
1c,2-Dimethylcyclopentane	N7	0.0086	0.0283	0.004	0.004
Methylcyclohexane	N7	0.4005	1.3188	0.162	0.161
2,2-Dimethylhexane	I8	0.0201	0.0770	0.009	0.009
1,1,3-Trimethylcyclopentane	N7	0.0057	0.0215	0.003	0.003
Ethylcyclopentane	N7	0.0175	0.0576	0.007	0.007
2,5-Dimethylhexane	I8	0.0128	0.0490	0.007	0.007
2,2,3-Trimethylpentane	I8	0.0124	0.0475	0.006	0.006
2,4-Dimethylhexane	I8	0.0026	0.0100	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0183	0.0688	0.008	0.008
3,3-Dimethylhexane	I8	0.0035	0.0134	0.002	0.002
2,3,4-Trimethylpentane	I8	0.0017	0.0065	0.001	0.001
2,3,3-Trimethylpentane	I8	0.0010	0.0038	0.000	0.000
Toluene	A7	0.0489	0.1511	0.016	0.016
2,3-Dimethylhexane	I8	0.0116	0.0444	0.006	0.006
2-Methyl-3-ethylpentane	I8	0.0016	0.0061	0.001	0.001
1,1,2-Trimethylcyclopentane	N8	0.0001	0.0004	0.000	0.000
2-Methylheptane	I8	0.0395	0.1513	0.020	0.020
4-Methylheptane	I8	0.0104	0.0398	0.005	0.005
3-Methyl-3-ethylpentane	I8	0.0024	0.0092	0.001	0.001
3,4-Dimethylhexane	I8	0.0016	0.0061	0.001	0.001
1c,2c,4-Trimethylcyclopentane	N8	0.0009	0.0034	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0009	0.0034	0.000	0.000
3-Methylheptane	I8	0.0235	0.0900	0.012	0.012
1c,2t,3-Trimethylcyclopentane	N8	0.0415	0.1562	0.021	0.021
3-Ethylhexane	I8	0.0035	0.0134	0.002	0.002
1t,4-Dimethylcyclohexane	N8	0.0177	0.0666	0.009	0.009
1,1-Dimethylcyclohexane	N8	0.0069	0.0260	0.003	0.003
2,2,5-Trimethylhexane	I9	0.0004	0.0017	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0023	0.0086	0.001	0.001
3t-Ethylmethylcyclopentane	N8	0.0020	0.0075	0.001	0.001
2t-Ethylmethylcyclopentane	N8	0.0049	0.0184	0.003	0.003
1,1-Methylethylcyclopentane	N8	0.0010	0.0038	0.001	0.001
2,2,4-Trimethylhexane	I9	0.0008	0.0034	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0158	0.0595	0.008	0.008
1c,2c,3-Trimethylcyclopentane	N8	0.0002	0.0007	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0008	0.0030	0.000	0.000
UnknownC7s	U7	0.0004	0.0013	0.000	0.000
n-Octane	P8	0.0256	0.0981	0.013	0.013
1c,4-Dimethylcyclohexane	N8	0.0057	0.0215	0.003	0.003
i-Propylcyclopentane	I8	0.0009	0.0034	0.000	0.000
2,4,4-Trimethylhexane	I9	0.0001	0.0004	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0003	0.0013	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0003	0.0013	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0002	0.0009	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0003	0.0011	0.000	0.000
2,2-Dimethylheptane	I9	0.0019	0.0082	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0073	0.0309	0.004	0.004

2,2,3-Trimethylhexane	I9	0.0008	0.0034	0.000	0.000
2,4-Dimethylheptane	I9	0.0003	0.0013	0.000	0.000
4,4-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000
Ethylcyclohexane	N8	0.0008	0.0030	0.000	0.000
n-Propylcyclopentane	N8	0.0019	0.0071	0.001	0.001
1c,3c,5-Trimethylcyclohexane	N9	0.0004	0.0017	0.000	0.000
2,5-Dimethylheptane	I9	0.0005	0.0021	0.000	0.000
3,3-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
3,5-Dimethylheptane	I9	0.0001	0.0004	0.000	0.000
2,6-Dimethylheptane	I9	0.0002	0.0009	0.000	0.000
1,1,3-Trimethylcyclohexane	N9	0.0001	0.0004	0.000	0.000
Ethylbenzene	I8	0.0020	0.0071	0.001	0.001
1,3-Dimethylbenzene (m-Xylene)	A8	0.0034	0.0121	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0011	0.0039	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0004	0.0017	0.000	0.000
4-Methyloctane	I9	0.0001	0.0004	0.000	0.000
2-Methyloctane	I9	0.0001	0.0004	0.000	0.000
1c,2t,3-Trimethylcyclohexane	N9	0.0001	0.0004	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0004	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0002	0.0008	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0006	0.0021	0.000	0.000
i-Butylcyclopentane	N9	0.0001	0.0004	0.000	0.000
UnknownC8s	U8	0.0002	0.0008	0.000	0.000
n-Nonane	P9	0.0001	0.0004	0.000	0.000
UnknownC9s	U9	0.0006	0.0026	0.000	0.000
1,3-Di-n-propylbenzene	A12	0.0001	0.0005	0.000	0.000
1,3,5-Triethylbenzene	A12	0.0001	0.0005	0.000	0.000
n-Tetradecane	P14	0.0001	0.0007	0.000	0.000
UnknownC14s	U14	0.0001	0.0007	0.000	0.000
UnknownC15s	U15	0.0002	0.0014	0.000	0.000
n-Hexadecane	P16	0.0001	0.0008	0.000	0.000
UnknownC16s	U16	0.0001	0.0008	0.000	0.000
UnknownC17s	U17	0.0002	0.0016	0.000	0.000
UnknownC19s	U19	0.0003	0.0027	0.000	0.000
TOTAL		100.00000	100.00000	9.6497	9.5971

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0736	0.1928
TOLUENE	0.0489	0.1511
ETHYLBENZENE	0.0020	0.0071
XYLENES	0.0051	0.0181
TOTAL BTEX	0.1296	0.3691

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Mod ASTM D6730,GPA 2261 & GPA 2286.

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

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	NET WET REAL :	1416.6 /scf	1408.8 /scf
HHV	GROSS DRY REAL :	1576.1 /scf	1567.5 /scf
	GROSS WET REAL :	1548.7 /scf	1540.1 /scf
	NET HEATING VALUE (60 °F ideal reaction):		18259.3 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		19962.1 Btu/lbm
	RELATIVE DENSITY (AIR=1):		1.0289
	DENSITY		0.07857 lb/scf
	COMPRESSIBILITY FACTOR :		0.9950
	REGULAR WOBBE INDEX		1542.4

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

Net Dry Ideal BTU	4598.6 /scf	Relative Density - SG (Air=1)	3.1437	***C6+factors***
Gross Dry Ideal BTU	4952.8 /scf	**Z** Compressiblity Factor	0.99077	0.99029
Net Dry Ideal BTU	19392.4 /lb	Density Factor	239.886 lbm/1000 ft3	
Gross Dry Ideal BTU	20884.9 /lb	Molar Mass or MW	91.028 g/mol	
		Volume Liquid Ideal gas	2.369 scf/gal	24.2

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.

ISOTOPIC NATURAL GAS ANALYSIS

PRIMARY DB KEY:	**05-103-10261**	NAME/DESCRIP :	**E-M EMERALD C-1 HZ CASING GAS**
LEASE #:			
FIELD/AREA:			
PROJECT NO. :	**202403078**	ANALYSIS NO. :	**01**
COMPANY NAME :	**EAGLE OPERATING**	ANALYSIS DATE:	APRIL 09, 2024 00:00
OFFICE / BRANCH:	MINOT, ND	SAMPLE DATE :	APRIL 2, 2024 07:55
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	1.5	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	0505
LAB PRES:		psig	SAMPLED BY :	GALE MCENDREE
SAMPLE TEMP. :	48	°f	SAMPLING COMPANY:	EMPACT
AMBIENT TEMP.:		°f	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	-	#/mmcf	CO2 BY STAIN TUBE:	- Mol %

FIELD COMMENTS:

LAB COMMENTS:

COMPONENTS	NORM. MOLE%	GPM @ 14.73	d13C ‰ VPDB	dD ‰ VSMOW
HELIUM	0.53	-	-	-
HYDROGEN	0.01	-	-	-
OXYGEN/ARGON	0.15	-	-	-
NITROGEN	9.66	-	-	-
CO2	0.55	-	-11.4	-
METHANE	59.38	-	-56.5	-222
ETHANE	5.33	1.4425	-33.4	-
PROPANE	7.47	2.0842	-29.7	-
ISOBUTANE	1.89	0.6276	-30.0	-
N-BUTANE	4.64	1.4828	-28.1	-
ISOPENTANE	2.50	0.8492	-26.9	-
N-PENTANE	2.10	0.7726	-27.1	-
HEXANES+	5.80	2.2937	-	-
TOTAL	100.00	9.5526		

BTU @ 60 DEG F		**14.73**	
	GROSS DRY REAL =	1562.1	**/scf**
	GROSS SATURATED REAL =	1534.9	**/scf**

RELATIVE DENSITY (AIR=1 @14.696 PSIA 60F)	1.0186
GRAVITY (LB/SCF)	0.07775
COMPRESSIBILITY FACTOR :	0.99500

NOTE: REFERENCE GPA 2261(ASTM D1945 & ASME-PTC), 2145, & 2172 CURRENT PUBLICATIONS

Reference: Per GPA 2172-14 sec 9 ***The C6+ is derived from the following ratios of C6, C7 & C8+ respectively:*** **60% 30% 10%**

The NG Composition File #: **202403078-01-H-527**
The Isotopic Data File #: **DIG-035130**

Note:Stable isotope results based on multi-point laboratory calibration
Presicion $\delta^{13}C$ < 0.5 ‰ **Precision δD < 5.0 ‰**
Values in red represent low peak heights. Interpret with caution.

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY: **05-103-09135** NAME/DESCRIP : **EMERALD C #275 CASING GAS**
LEASE #:
FIELD/AREA:

PROJECT NO. : **202403078** ANALYSIS NO. : **02**
COMPANY NAME : **EAGLE OPERATING** ANALYSIS DATE: MARCH 28, 2024 11:59
OFFICE / BRANCH: MINOT, ND SAMPLE DATE : MARCH 18, 2024 10:05
CUSTOMER REF: TO:
PRODUCER : EFFECTIVE DATE:

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

SAMPLE CYCLE: SAMPLE TYPE: SPOT
SAMPLE PRES. : 1.5 psig PROBE : NO
FLOW PRES. : psig CYLINDER NO. : 1100
LAB PRES: psig SAMPLED BY : GALE MCENDREE
SAMPLE TEMP. : 53 ºf SAMPLING COMPANY: EMPACT
AMBIENT TEMP.: ºf H2S BY STAIN TUBE: _ ppm mol
H2O BY STAIN TUBE: - #/mmcf CO2 BY STAIN TUBE: - Mol %
FIELD COMMENTS:
LAB COMMENTS:

COMPONENT	MOLE %	MASS %	GPM @ 14.73	GPM @ 14.65
ALCOHOLS	0.0068	0.0112	0.0020	0.0020
HELIUM	0.27	0.04	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.02	0.02	---	---
NITROGEN	1.98	2.16	---	---
CARBON DIOXIDE	2.80	4.81	---	---
METHANE	74.6781	46.7550	---	---
ETHANE	5.0184	5.8890	1.3472	1.3399
PROPANE	4.7467	8.1685	1.3120	1.3049
I-BUTANE	0.9357	2.1224	0.3069	0.3052
N-BUTANE	2.5345	5.7489	0.8019	0.7976
I-PENTANE	1.2656	3.5552	0.4568	0.4543
N-PENTANE	1.1170	3.1451	0.4065	0.4043
HEXANES PLUS	4.6272	17.5747	2.0197	2.0090
TOTALS	100.00000	100.00000	6.6530	6.6172

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0444	0.1353
TOLUENE	0.0542	0.1949
ETHYLBENZENE	0.0174	0.0721
XYLENES	0.0476	0.1972
TOTAL BTEX	0.1636	0.5995

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.

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

CALCULATED VALUES**

	BTU @	14.73	14.65
LHV	NET DRY REAL :	1297.4 /scf	1290.4 /scf
	NET WET REAL :	1274.8 /scf	1267.8 /scf
HHV	GROSS DRY REAL :	1423.9 /scf	1416.2 /scf
	GROSS WET REAL :	1399.1 /scf	1391.4 /scf

NET HEATING VALUE (60 °F ideal reaction):	19161.8 Btu/lbm
GROSS HEATING VALUE (60°F ideal reaction):	21026.6 Btu/lbm
RELATIVE DENSITY (AIR=1):	0.8839
DENSITY	0.06753 lbm/scf
COMPRESSIBILITY FACTOR :	0.9962
REGULAR WOBBE INDEX	1505.3

EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202403078	ANALYSIS NO. :	02
COMPANY NAME :	EAGLE OPERATING	ANALYSIS DATE:	MARCH 28, 2024 11:59
ACCOUNT NO. :		SAMPLE DATE :	MARCH 18, 2024 10:05
PRODUCER :		CYLINDER NO. :	1100
LEASE NO. :		SAMPLED BY :	GALE MCENDREE
NAME/DESCRIP :	EMERALD C #275 CASING GAS		
FIELD DATA		SAMPLE TEMP. :	53
SAMPLE PRES. :	1.5	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :	*SPOT* *NO PROBE*		

Componet	Mole %	Wt %
Helium	0.27	0.04
Hydrogen	0.00	0.00
Carbon Dioxide	2.80	4.81
Nitrogen	1.98	2.16
Methane	74.6781	46.7550
Ethane	5.0184	5.8890
Propane	4.7467	8.1685
Isobutane	0.9357	2.1224
n-Butane	2.5345	5.7489
Isopentane	1.1600	3.2662
n-Pentane	1.1170	3.1451
Cyclopentane	0.1056	0.2890
n-Hexane	0.5478	1.8423
Cyclohexane	0.0000	0.0000
Other Hexanes	1.2101	4.0399
Heptanes	1.3303	5.1824
Methylcyclohexane	0.4613	1.7676
2,2,4 Trimethylpentane	0.0011	0.0049
Benzene	0.0444	0.1353
Toluene	0.0542	0.1949
Ethylbenzene	0.0174	0.0721
Xylenes	0.0476	0.1972
C8+ Heavies	0.9130	4.1381
Subtotal	99.97320	99.96880
Oxygen/Argon	0.02	0.02
Alcohols	0.0068	0.0112
Total	100.00000	100.00000

Calculated Values BTU @ **14.73**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	1297.4	4953.7	5795.2	9804.2	**Btu/scf**
	Net Wet Real:	1274.8	4867.6	5694.4	9633.7	**Btu/scf**
HHV	Gross Dry Real:	1423.9	5333.6	6235.2	10543.5	**Btu/scf**
	Gross Wet Real:	1399.1	5240.9	6126.8	10360.2	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1505.3	2881.9	3106.9	4068.2	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		19161.8	19476.2	19741.5	20506.3	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		21026.6	20969.9	21242.2	22053.0	**Btu/lbm**
Molar Mass (MW):		25.62644	97.317	115.481	193.622	**g/mol**
Relative Density (AIR=1):		0.8839	3.3606	3.9872	6.6853	**SG**
Density:		0.06753	0.25646	0.30431	0.51022	**lbm/scf**
Compressiblity Factor:		0.9962	0.9928	0.9973	1.0000	**Z**
Liquid Volume real gas @:	**14.73**	20.0102	2.0126	0.4861	0	**gal/1000 scf**

**** The Wobbe pressure base in the number considered is based upon the given Pb of the HHV above.***

#DIV/0 or 0 (zero) will appear in the Calculated Value Section when there is no C6+, C8+ or C10+ in the sample to calculate these factors.

BDL - Below Detection Limit. The H2S LOS has a detection limit of 0.25 ppm. A _ (an uderscore) indicates there was no tube pulled for H2S.

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

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY:	**05-103-09135**	NAME/DESCRIP :	**EMERALD C #275**
LEASE #:			**CASING GAS**
FIELD/AREA:			
PROJECT NO. :	**202403078**	ANALYSIS NO. :	**02**
COMPANY NAME :	**EAGLE OPERATING**	ANALYSIS DATE:	MARCH 28, 2024 11:59
OFFICE / BRANCH:	MINOT, ND	SAMPLE DATE :	MARCH 18, 2024 10:05
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	SPOT
SAMPLE PRES. :	1.5 psig	PROBE :	NO
FLOW PRES. :	psig	CYLINDER NO. :	1100
LAB PRES:	psig	SAMPLED BY :	GALE MCENDREE
SAMPLE TEMP. :	53 ºf	SAMPLING COMPANY:	EMPACT
AMBIENT TEMP.:	ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	#/mmcf	CO2 BY STAIN TUBE:	Mol %
FIELD COMMENTS:			
LAB COMMENTS:			

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.73**	GPM @ **14.65**
Helium	---	0.27	0.04	---	---
Hydrogen	---	0.00	0.00	---	---
Oxygen/Argon	---	0.02	0.02	---	---
Nitrogen	---	1.98	2.16	---	---
Carbon Dioxide	---	2.80	4.81	---	---
Methane	P1	74.6781	46.7550	---	---
Ethane	P2	5.0184	5.8890	1.347	1.340
Propane	P3	4.7467	8.1685	1.312	1.305
i-Butane	I4	0.9357	2.1224	0.307	0.305
Methanol	X1	0.0042	0.0053	0.001	0.001
n-Butane	P4	2.5344	5.7487	0.802	0.798
2,2-Dimethylpropane	I5	0.0079	0.0222	0.003	0.003
Ethanol	X2	0.0004	0.0007	0.000	0.000
i-Pentane	I5	1.1521	3.2440	0.423	0.420
Acetone	X3	0.0015	0.0034	0.001	0.001
i-Propanol	X3	0.0005	0.0012	0.000	0.000
UnknownC4s	U4	0.0001	0.0002	0.000	0.000
n-Pentane	P5	1.1165	3.1437	0.407	0.404
t-Butanol	X4	0.0001	0.0003	0.000	0.000
2,2-Dimethylbutane	I6	0.0317	0.1066	0.013	0.013
Cyclopentane	N5	0.1056	0.2890	0.031	0.031
2,3-Dimethylbutane	I6	0.0751	0.2526	0.031	0.031
2-Methylpentane	I6	0.4415	1.4848	0.184	0.183
3-Methylpentane	I6	0.2824	0.9497	0.116	0.115
UnknownC5s	U5	0.0005	0.0014	0.000	0.000
n-Hexane	P6	0.5478	1.8423	0.226	0.225
2,2-Dimethylpentane	I7	0.0181	0.0708	0.008	0.008
Methylcyclopentane	N6	0.3792	1.2455	0.135	0.134
2,4-Dimethylpentane	I7	0.0368	0.1439	0.017	0.017
2,2,3-Trimethylbutane	I7	0.0049	0.0192	0.002	0.002

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n-Butanol	X4	0.0001	0.0003	0.000	0.000
Benzene	A6	0.0444	0.1353	0.012	0.012
3,3-Dimethylpentane	I7	0.0086	0.0336	0.004	0.004
2-Methylhexane	I7	0.1565	0.6120	0.073	0.073
2,3-Dimethylpentane	I7	0.0532	0.2081	0.024	0.024
1,1-Dimethylcyclopentane	N7	0.0372	0.1426	0.015	0.015
3-Methylhexane	I7	0.1684	0.6585	0.078	0.077
1c,3-Dimethylcyclopentane	N7	0.0660	0.2529	0.030	0.030
1t,3-Dimethylcyclopentane	N7	0.0603	0.2311	0.028	0.028
3-Ethylpentane	I7	0.0083	0.0325	0.004	0.004
1t,2-Dimethylcyclopentane	N7	0.1075	0.4119	0.049	0.049
2,2,4-Trimethylpentane	I8	0.0011	0.0049	0.001	0.001
UnknownC6s	U6	0.0002	0.0007	0.000	0.000
n-Heptane	P7	0.2939	1.1493	0.136	0.135
1c,2-Dimethylcyclopentane	N7	0.0117	0.0448	0.005	0.005
Methylcyclohexane	N7	0.4613	1.7676	0.186	0.185
2,2-Dimethylhexane	I8	0.0274	0.1222	0.013	0.013
1,1,3-Trimethylcyclopentane	N7	0.0086	0.0377	0.004	0.004
Ethylcyclopentane	N7	0.0228	0.0874	0.009	0.009
2,5-Dimethylhexane	I8	0.0212	0.0945	0.011	0.011
2,2,3-Trimethylpentane	I8	0.0216	0.0963	0.011	0.011
2,4-Dimethylhexane	I8	0.0029	0.0129	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0281	0.1231	0.013	0.013
3,3-Dimethylhexane	I8	0.0059	0.0263	0.003	0.003
2,3,4-Trimethylpentane	I8	0.0029	0.0129	0.001	0.001
2,3,3-Trimethylpentane	I8	0.0018	0.0080	0.001	0.001
Toluene	A7	0.0542	0.1949	0.018	0.018
2,3-Dimethylhexane	I8	0.0224	0.0999	0.011	0.011
2-Methyl-3-ethylpentane	I8	0.0030	0.0134	0.001	0.001
1,1,2-Trimethylcyclopentane	N8	0.0001	0.0004	0.000	0.000
2-Methylheptane	I8	0.0967	0.4311	0.050	0.050
4-Methylheptane	I8	0.0269	0.1199	0.014	0.014
3-Methyl-3-ethylpentane	I8	0.0046	0.0205	0.002	0.002
3,4-Dimethylhexane	I8	0.0033	0.0147	0.002	0.002
1c,2c,4-Trimethylcyclopentane	N8	0.0018	0.0079	0.001	0.001
1c,3-Dimethylcyclohexane	N8	0.0014	0.0061	0.001	0.001
3-Methylheptane	I8	0.0612	0.2728	0.031	0.031
1c,2t,3-Trimethylcyclopentane	N8	0.0939	0.4112	0.048	0.048
3-Ethylhexane	I8	0.0066	0.0294	0.003	0.003
1t,4-Dimethylcyclohexane	N8	0.0374	0.1638	0.019	0.019
1,1-Dimethylcyclohexane	N8	0.0146	0.0639	0.007	0.007
2,2,5-Trimethylhexane	I9	0.0018	0.0090	0.001	0.001
3c-Ethylmethylcyclopentane	N8	0.0060	0.0263	0.003	0.003
3t-Ethylmethylcyclopentane	N8	0.0053	0.0232	0.003	0.003
2t-Ethylmethylcyclopentane	N8	0.0130	0.0569	0.007	0.007
1,1-Methylethylcyclopentane	N8	0.0017	0.0075	0.001	0.001
2,2,4-Trimethylhexane	I9	0.0021	0.0105	0.001	0.001
1t,2-Dimethylcyclohexane	N8	0.0399	0.1747	0.020	0.020
1c,2c,3-Trimethylcyclopentane	N8	0.0005	0.0022	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0018	0.0079	0.001	0.001
UnknownC7s	U7	0.2675	1.0461	0.124	0.123
n-Octane	P8	0.1403	0.6254	0.072	0.072
1c,4-Dimethylcyclohexane	N8	0.0135	0.0591	0.007	0.007
i-Propylcyclopentane	I8	0.0032	0.0140	0.001	0.001
2,4,4-Trimethylhexane	I9	0.0002	0.0010	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0051	0.0255	0.003	0.003
2,2,3,4-Tetramethylpentane	I9	0.0012	0.0060	0.001	0.001
2,3,4-Trimethylhexane	I9	0.0015	0.0075	0.001	0.001
1c,2-Dimethylcyclohexane	N8	0.0013	0.0057	0.001	0.001
2,2-Dimethylheptane	I9	0.0144	0.0721	0.007	0.007
1,1,4-Trimethylcyclohexane	N9	0.0399	0.1966	0.021	0.021
2,2,3-Trimethylhexane	I9	0.0070	0.0350	0.004	0.004
2,4-Dimethylheptane	I9	0.0026	0.0130	0.001	0.001

4,4-Dimethylheptane	I9	0.0009	0.0045	0.000	0.000
Ethylcyclohexane	N8	0.0194	0.0850	0.009	0.009
n-Propylcyclopentane	N8	0.0204	0.0893	0.009	0.009
1c,3c,5-Trimethylcyclohexane	N9	0.0029	0.0143	0.001	0.001
2,5-Dimethylheptane	I9	0.0161	0.0806	0.009	0.009
3,3-Dimethylheptane	I9	0.0038	0.0190	0.002	0.002
2,6-Dimethylheptane	I9	0.0027	0.0135	0.001	0.001
1,1,3-Trimethylcyclohexane	N9	0.0037	0.0182	0.002	0.002
Ethylbenzene	I8	0.0174	0.0721	0.007	0.007
1c,2t,4t-Trimethylcyclohexane	N9	0.0008	0.0039	0.000	0.000
2,3-Dimethylheptane	I9	0.0006	0.0030	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0334	0.1384	0.013	0.013
1,4-Dimethylbenzene (p-Xylene)	A8	0.0064	0.0265	0.002	0.002
3,4-Dimethylheptane	I9	0.0010	0.0050	0.001	0.001
3,4-Dimethylheptane (2)	I9	0.0043	0.0215	0.002	0.002
4-Ethylheptane	I9	0.0015	0.0075	0.001	0.001
4-Methyloctane	I9	0.0056	0.0280	0.003	0.003
2-Methyloctane	I9	0.0062	0.0310	0.004	0.004
1c,2t,3-Trimethylcyclohexane	N9	0.0014	0.0069	0.001	0.001
3-Ethylheptane	I9	0.0016	0.0080	0.001	0.001
3-Methyloctane	I9	0.0013	0.0065	0.001	0.001
1c,2t,4c-Trimethylcyclohexane	I9	0.0057	0.0281	0.003	0.003
1,1,2-Trimethylcyclohexane	N9	0.0007	0.0034	0.000	0.000
3,3-Diethylpentane	I9	0.0016	0.0080	0.001	0.001
1,2-Dimethylbenzene (o-Xylene)	A8	0.0078	0.0323	0.003	0.003
i-Butylcyclopentane	N9	0.0041	0.0202	0.002	0.002
UnknownC8s	U8	0.0003	0.0013	0.000	0.000
n-Nonane	P9	0.0007	0.0035	0.000	0.000
1,1-Methylethylcyclohexane	N9	0.0008	0.0039	0.000	0.000
i-Propylbenzene	A9	0.0010	0.0047	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0010	0.000	0.000
2,6-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
n-Butylcyclopentane	N9	0.0002	0.0010	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0006	0.000	0.000
1,3-Methylethylbenzene	A9	0.0002	0.0009	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
t-Butylbenzene	A10	0.0001	0.0005	0.000	0.000
UnknownC9s	U9	0.0114	0.0571	0.006	0.006
n-Decane	P10	0.0002	0.0011	0.000	0.000
UnknownC10s	U10	0.0004	0.0022	0.000	0.000
n-Undecane	P11	0.0001	0.0006	0.000	0.000
1,3-Di-n-propylbenzene	A12	0.0001	0.0006	0.000	0.000
UnknownC11s	U11	0.0001	0.0006	0.000	0.000
n-Dodecane	P12	0.0001	0.0007	0.000	0.000
2-Methylnaphthalene	A11	0.0001	0.0006	0.000	0.000
n-Tridecane	P13	0.0002	0.0014	0.000	0.000
UnknownC13s	U13	0.0002	0.0014	0.000	0.000
n-Tetradecane	P14	0.0005	0.0039	0.000	0.000
UnknownC14s	U14	0.0001	0.0008	0.000	0.000
n-Pentadecane	P15	0.0002	0.0016	0.000	0.000
n-Hexadecane	P16	0.0002	0.0018	0.000	0.000
n-Heptadecane	P17	0.0005	0.0047	0.000	0.000
n-Octadecane	P18	0.0001	0.0010	0.000	0.000
UnknownC20s	U20	0.0003	0.0033	0.000	0.000
TOTAL		100.00000	100.00000	6.6530	6.6172

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0444	0.1353
TOLUENE	0.0542	0.1949
ETHYLBENZENE	0.0174	0.0721
XYLENES	0.0476	0.1972
TOTAL BTEX	0.1636	0.5995

CALCULATED VALUES**

	BTU @	14.73		14.65	
LHV	NET DRY REAL :	1297.4	/scf	1290.4	/scf
	NET WET REAL :	1274.8	/scf	1267.8	/scf
HHV	GROSS DRY REAL :	1423.9	/scf	1416.2	/scf
	GROSS WET REAL :	1399.1	/scf	1391.4	/scf
	NET HEATING VALUE (60 °F ideal reaction):			19161.8	Btu/lbm

GROSS HEATING VALUE (60°F ideal reaction):	21026.6	**Btu/lbm**
RELATIVE DENSITY (AIR=1):	0.8839	
DENSITY	0.06753	**lb/scf**
COMPRESSIBILITY FACTOR :	0.9962	
REGULAR WOBBE INDEX	1505.3	

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.

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

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

Net Dry Ideal BTU	4906.7 **/scf**	Relative Density - SG (Air=1)	3.3606		***C6+factors***
Gross Dry Ideal BTU	5283 **/scf**	**Z** Compressiblity Factor	0.99281		0.99205
Net Dry Ideal BTU	19476.2 **/lb**	Density Factor	256.461	**lbm/1000 ft3**	
Gross Dry Ideal BTU	20969.9 **/lb**	Molar Mass or MW	97.317	**g/mol**	
		Volume Liquid Ideal gas	2.008	**scf/gal**	23

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.

ISOTOPIC NATURAL GAS ANALYSIS

PRIMARY DB KEY:	**05-103-09135**	NAME/DESCRIP :	**EMERALD C #275 CASING GAS**
LEASE #:			
FIELD/AREA:			
PROJECT NO. :	**202403078**	ANALYSIS NO. :	**02**
COMPANY NAME :	**EAGLE OPERATING**	ANALYSIS DATE:	APRIL 09, 2024 00:00
OFFICE / BRANCH:	MINOT, ND	SAMPLE DATE :	APRIL 2, 2024 07:45
CUSTOMER REF:		TO:	
PRODUCER :		EFFECTIVE DATE:	

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

SAMPLE CYCLE:			SAMPLE TYPE:	SPOT
SAMPLE PRES. :	1.5	psig	PROBE :	NO
FLOW PRES. :		psig	CYLINDER NO. :	1047
LAB PRES:		psig	SAMPLED BY :	GALE MCENDREE
SAMPLE TEMP. :	53	°f	SAMPLING COMPANY:	EMPACT
AMBIENT TEMP.:		°f	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	-	#/mmcf	CO2 BY STAIN TUBE:	- Mol %

FIELD COMMENTS:

LAB COMMENTS:

COMPONENTS	NORM. MOLE%	**GPM @ 14.73**	**d13C ‰ VPDB**	**dD ‰ VSMOW**
HELIUM	0.27	-	-	-
HYDROGEN	0.00	-	-	-
OXYGEN/ARGON	0.02	-	-	-
NITROGEN	1.98	-	-	-
CO2	2.80	-	-7.3	-
METHANE	74.68	-	-54.9	-211
ETHANE	5.02	1.3524	-33.3	-
PROPANE	4.75	1.3162	-30.1	-
ISOBUTANE	0.94	0.3089	-30.4	-
N-BUTANE	2.53	0.8070	-28.1	-
ISOPENTANE	1.27	0.4256	-27.2	-
N-PENTANE	1.12	0.4075	-27.3	-
HEXANES+	4.63	1.8766	-	-
TOTAL	100.00	6.4942		

BTU @ 60 DEG F		**14.73**	
	GROSS DRY REAL =	1401.6	**/scf**
	GROSS SATURATED REAL =	1377.2	**/scf**

RELATIVE DENSITY (AIR=1 @14.696 PSIA 60F)	0.8684
GRAVITY (LB/SCF)	0.06627
COMPRESSIBILITY FACTOR :	0.99610

NOTE: REFERENCE GPA 2261(ASTM D1945 & ASME-PTC), 2145, & 2172 CURRENT PUBLICATIONS

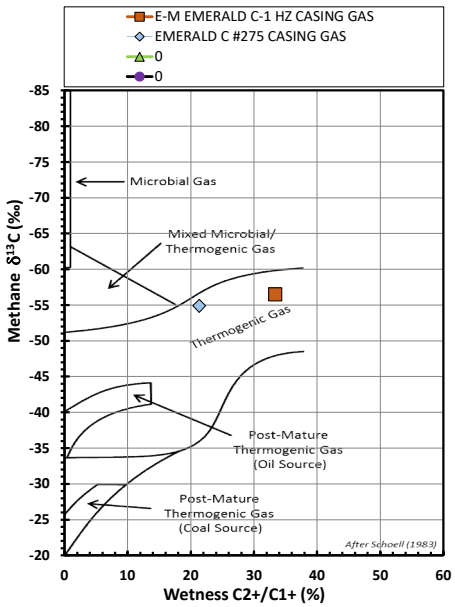
Reference: Per GPA 2172-14 sec 9 ***The C6+ is derived from the following ratios of C6, C7 & C8+ respectively:*** **60% 30% 10%**

The NG Composition File #: **202403078-02-H-527**
The Isotopic Data File #: **DIG-035129**

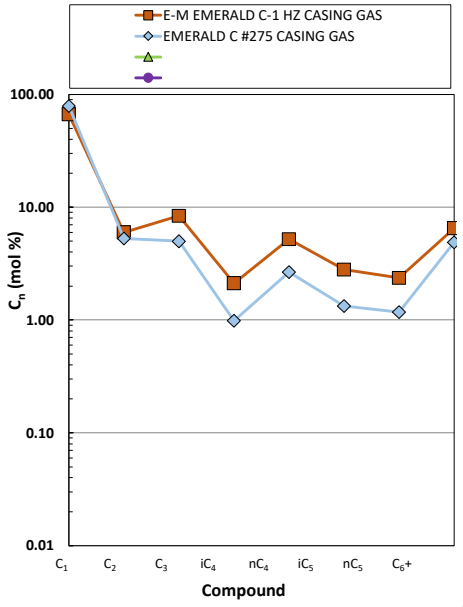
Note:Stable isotope results based on multi-point laboratory calibration
Presicion $\delta^{13}C$ < 0.5 ‰ **Precision δD < 5.0 ‰**
Values in red represent low peak heights. Interpret with caution.

EMPACT

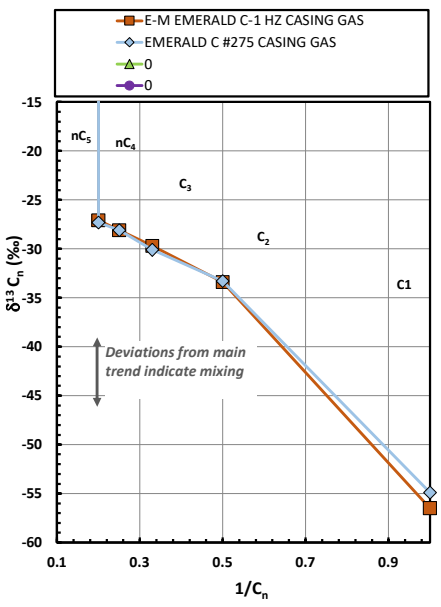
Methane $\delta^{13}C$ vs Wetness Genetic Classification Plot



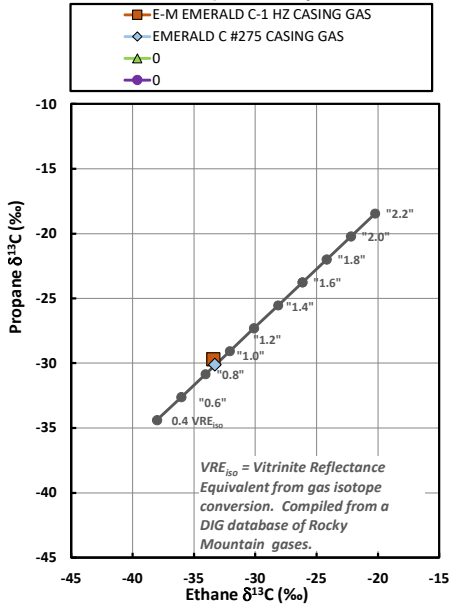
Hydrocarbon Composition Plot



Mixing Plot

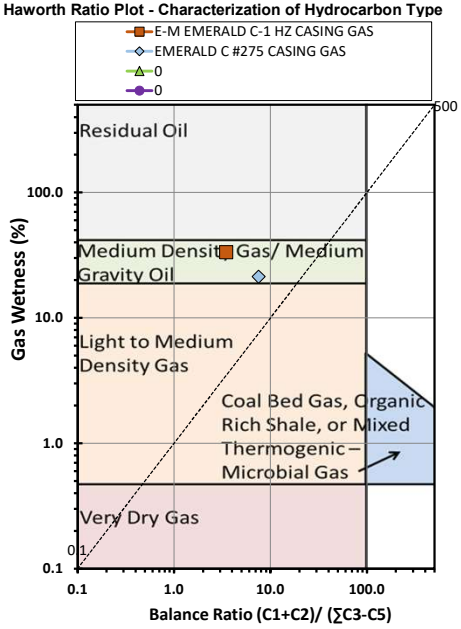


Ethane - Propane Maturity Plot

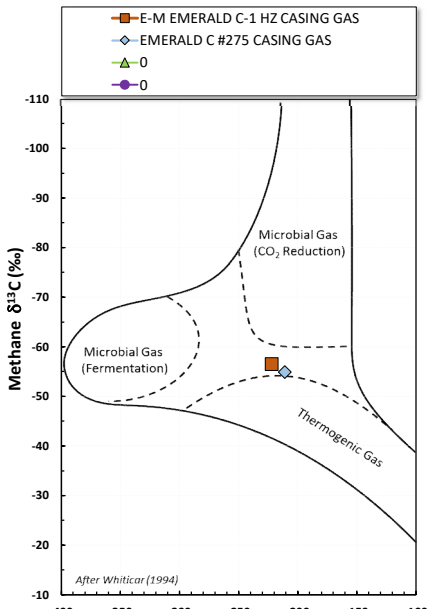


dig

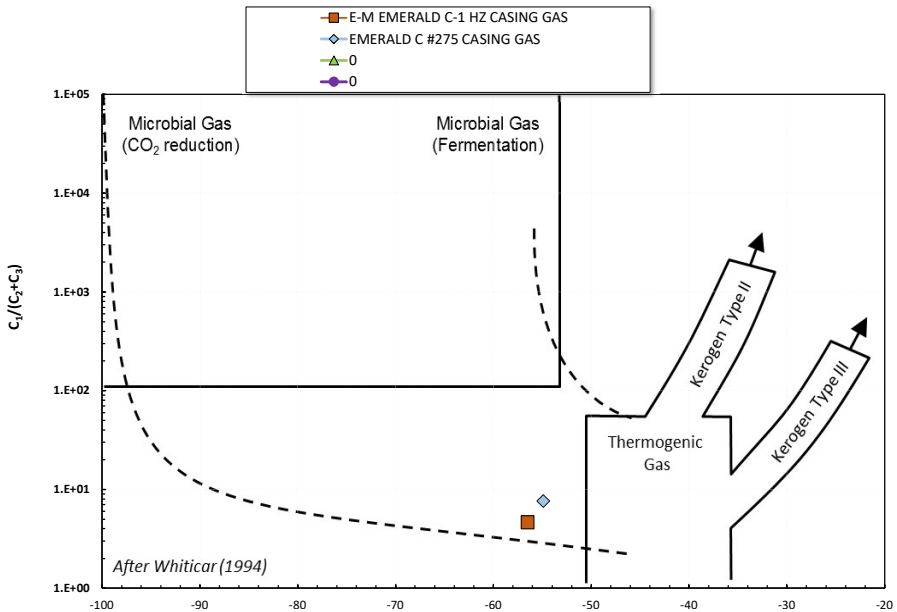
Haworth Ratio Plot - Characterization of Hydrocarbon Type



Methane $\delta^{13}C$ vs δD Genetic Classification Plot



Methane $\delta^{13}C$ vs C1/(C2+C3) Genetic Classification Plot



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365 S. Main St.
Brighton, CO 80601
(303)637-0150
1-800-637-0150

CHAIN OF CUSTODY RECORD

CO. NAME: Eagle Operating	CONTACT NAME: Tom Cavanaugh	TELE. NO.: 303-726-1511	LAB PROJECT NO.
Sampler *(PRINT NAME):* Gale L McEndree	Signature:	FAX NO:	202403078
PROJECT INFO. / NO.			

SAMPLE ID	SAMPLE DESCRIPTION	Comp.	Grab	Date & Time	SAMPLE MATRIX	Container	No. of Containers	ANALYSIS / METHOD			REMARKS
	Emerald C #275										
	Casing Gas		X	4-2-24. 7:45	NG	300cc	1		ISO	DHA	1047 / 1.5# / 28 deg
	CasingnGas		X	4-2-24. 7:45	NG	Tedlar	1		ISO	DHA	# 1
	E-M Emerald C-1 HZ										
	Casing Gas		X	4-2-24. 7:55	NG	300cc	1		ISO	DHA	0505 / 1.5# / 30 deg
	Casing Gas		X	4-2-24. 7:55	NG	300cc	1		ISO	DHA	# 2

COMMENTS:

Relinquished by:(Signature)	Received by:(Signature) MLB	TIme: 13:29	Date: 4-3-2024
Relinquished by:(Signature	Received by:(Signature)	TIme:	Date:
Laboratory:	Received for Laboratory by:	TIme:	Date:
Method of Shipment:	Dispatched by:(Signature)	TIme:	Date:

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	E-M Emerald C-1 HZ										
	Casing Gas		X	4-2-24. 7:55	NG	300cc	1		ISO	DHA	0505 / 1.5# / 30 deg
	Casing Gas		X	4-2-24. 7:55	NG	300cc	1		ISO	DHA	# 2

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