



EXTENDED GAS ANALYSIS

WHITA02GE

MaxxID

Client ID

N/A

Meter Number

C093250:ZB2919-01

Laboratory Number

WHITECAP RESOURCES INC.

Operator Name

05-16-006-13-W2M

LSD

Well ID

WHITECAP GOOD WATER GAS PLANT 05-16-006-13-W2M

KR

Initials of Sampler

WHITECAP

Sampling Company

Well/Plant/Facility

WEYBURN

K-502 COMPRESSOR 2ND STAGE SUCTION

13947,8889

Container Identity

Field or Area

Pool or Zone

Sample Point

Percent Full

Test Recovery

Interval

Elevations (m)

Sample Gathering Point

Solution Gas

Test Type

No.

Multiple Recovery

From:

To:

KB

GRD

Well Fluid Status

Well Status Mode

Production Rates

400

Gauge Pressures kPa

735

723

Temperature °C

38

27

Source

As Received

Well Status Type

Well Type

Water m³/d

Oil m³/d

Gas 1000m³/d

Source

As Received

Gas or Condensate Project

Licence No.

2020/12/15 14:00

Date Sampled Start

Date Sampled End

2020/12/18

Date Received

2020/12/18

Date Reported

2020/12/21

Date Reissued

YZ

Analyst

COMPOSITION

Component	Mole Fraction Air Free As Rec'd*	Mole Fraction Air Free Acid Gas Free	Liquid Volume mL/m³ Air Free As Rec'd	Historical Avg. Mole Fraction (23 data points)	Tolerance Score
H ₂	Trace	0.0003		0.0001	1.0
He	Trace	0.0002		0.0000	0.0
N ₂	0.0052	0.0362		0.0038	0.6
CO ₂	0.8391			0.7933	0.3
H ₂ S	0.0186			0.0181	0.1
C ₁	0.0273	0.1917		0.0235	0.4
C ₂	0.0198	0.1390	70.44	0.0191	0.2
C ₃	0.0337	0.2366	123.93	0.0355	0.2
iC ₄	0.0094	0.0661	41.14	0.0099	0.2
nC ₄	0.0244	0.1712	102.77	0.0255	0.2
iC ₅	0.0063	0.0444	30.97	0.0075	0.6
nC ₅	0.0061	0.0430	29.66	0.0073	0.6
C ₆	0.0043	0.0309	24.34	0.0055	0.7
C ₇	0.0029	0.0191	12.23		
C ₈	0.0028	0.0198	16.37		
C ₉	0.0001	0.0012	1.09		
C ₁₀₊	Trace	0.0003	0.44		
Total	1.0000	1.0000	453.38		
C ₇₊	0.0058	0.0404	30.13	0.0075	0.4
C ₁₂₊	Trace	Trace	0.07		
C ₁₅₊	Trace	Trace	0.04		

T-Score < 2 - indicates normal statistical behaviour

T-Score > 2 but < 3 - indicates some evidence of non-normal statistical behaviour

T-Score > 3 - indicates strong evidence of non-normal statistical behaviour

The H₂ content may be affected due to the degradation of H₂S.

*per Method GPA 2286-M

PROPERTIES

Calculated Molar Mass Moisture Free as Sampled	Calculated Relative Densities
44.0 Total	94.3 C ₇₊
1.530 Moisture Free as Sampled	1.592 Moisture & Acid Gas Free
3.277 C ₇₊ Moisture Free	
Calculated Pseudo Critical Properties	Calculated Vapour Pressure
As Sampled	Acid Gas Free
6941.6 pPc (kPa)	311.8 pTc (Kelvin)
4112.8 pPc (kPa)	349.4 pTc (Kelvin)
87.3 C ₅₊ (kPa)	
Calculated Gross Heating Value (MJ/m³) @ 101.325 kPa & 15°C	Gas Compressibility @ 101.325 kPa & 15°C
13.88 GPA 2172	95.30 GPA 2172 Acid Gas Free
186.13 C ₇₊ as Received	0.9929
Hydrogen Sulphide	
On Site	In Lab
Gastec (ppm v/v)	Tutweiler (mole%)
Gastec (ppm v/v)	Tutweiler (mole%)
1.86 H ₂ S from GC (mole%)	
Onsite analysis is required for accurate source H ₂ S content. H ₂ S degrades variably in all sample containers and is also matrix dependent.	

QC Check Std # 0415/5010 Date 2020/12/18 QC Passed Yes

Results relate only to items tested

Remarks:

NO ONSITE H₂S CONTENT RECORDED ON THE SAMPLING TAG.

MaxxALERT: Based on the historical data this sample is representative of the sample point.

MaxxALERT: The C₃ concentration is significantly higher than expected.MaxxALERT: A high CO₂ standard was used to calibrate the instrument for this sample.

Reference Method suffix "M" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

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MaxxALERT





EXTENDED GAS ANALYSIS

WHITECAP RESOURCES INC.

C093250:ZB2919-01

Operator Name

Laboratory Number

WHITECAP GOOD WATER GAS PLANT 05-16-006-13-W2M

K-502 COMPRESSOR 2ND STAGE SUCTION

Well Name

Sample Point

WHITECAP

WHITA02GE

Sampling Company

MaxxID

Client ID

2020/12/15 14:00

2020/12/18

2020/12/18

2020/12/21

YZ

Date Sampled Start

Date Sampled End

Date Received

Date Reported

Date Reissued

Analyst

COMPONENT	BOILING POINT (°C)	MOLE FRACTION AIR FREE AS REC'D	MOLE FRACTION AIR & ACID GAS FREE	LIQUID VOLUME mL/m3 AIR FREE AS REC'D
Hydrogen	-253	Trace	0.0003	
Helium	-269	Trace	0.0002	
Nitrogen	-196	0.0052	0.0362	
Carbon Dioxide	-79	0.8391		
Hydrogen Sulphide	-60	0.0186		
Methane	-162	0.0273	0.1917	
Ethane	-89	0.0198	0.1390	70.44
Propane	-42	0.0337	0.2366	123.93
Iso-Butane	-12	0.0094	0.0661	41.14
n-Butane	0	0.0244	0.1712	102.77
Iso-Pentane	28	0.0063	0.0444	30.97
n-Pentane	36	0.0061	0.0430	29.66
C ₆	37-69	0.0043	0.0309	24.34
C ₇	70-98	0.0029	0.0191	12.23
C ₈	99-126	0.0028	0.0198	16.37
C ₉	127-151	0.0001	0.0012	1.09
C ₁₀	152-174	Trace	0.0002	0.31
C ₁₁	175-196	Trace	0.0001	0.06
C ₁₂	197-216	Trace	Trace	0.01
C ₁₃	217-236	Trace	Trace	0.02
C ₁₄	237-253	0.0000	0.0000	0.00
C ₁₅ +	254+	Trace	Trace	0.04
TOTAL		1.0000	1.0000	453.38

SPECIFIC COMPONENTS

neoHexane (C ₆)	50	0.00002	0.00013	0.10
n-Hexane (C ₆)	69	0.00158	0.01105	8.66
Methylcyclopentane (C ₇)	72	0.00076	0.00530	3.57
Benzene (C ₇)	80	0.00116	0.00812	4.33
Cyclohexane (C ₇)	81	0.00046	0.00323	2.10
2,2,4-Trimethylpentane (C ₈)	99	0.00026	0.00182	1.80
Methylcyclohexane (C ₈)	101	0.00025	0.00172	1.32
Toluene (C ₈)	111	0.00030	0.00209	1.33
Ethylbenzene (C ₉)	136	0.00004	0.00025	0.18
m&p-Xylene (C ₉)	139	0.00002	0.00016	0.12
o-Xylene (C ₉)	144	0.00001	0.00004	0.03
1,2,4-Trimethylbenzene (C ₁₀)	169	Trace	0.00002	0.02

SUMMARY

					MOLAR MASS AIR FREE AS REC'D
C ₃ +	-42+	0.0900	0.6326	382.94	58.5
C ₅ +	28+	0.0225	0.1587	115.10	80.5
C ₆ +	36+	0.0101	0.0713	54.47	90.7
C ₇ +	70+	0.0058	0.0404	30.13	94.3
C ₁₀ +	152+	Trace	0.0003	0.44	145.3
C ₁₂ +	197+	Trace	Trace	0.07	198.4

Results relate only to items tested

Remarks:

NO ONSITE H2S CONTENT RECORDED ON THE SAMPLING TAG.

MaxxALERT: Based on the historical data this sample is representative of the sample point.

MaxxALERT: The C3 concentration is significantly higher than expected.

MaxxALERT: A high CO2 standard was used to calibrate the instrument for this sample.

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SCOUT/CHEVRON v. PILOT - IPR2024-00385

Reference Method suffix "M" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

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Operator: WHITECAP RESOURCES INC.

Well Name: WHITECAP GOOD WATER GAS PLANT 05-16-006-13-W2M

LSD: 05-16-006-13-W2M

Sample Pt: K-502 COMPRESSOR 2ND STAGE SUCTION

Field: WEYBURN

Formation:

Sample:	VI0406	VL9598	VR6602	VX1493	WB9380	WH2206	WM5965	WX6268	XC4230	XF7170	XJ6553
Sample Pres(kPa)/ Temp(°C):	720 / 38	1750 / 40	750 / 38.6	718 / 38	728 / 41	730 / 38	700 / 33	715 / 22	650 / 44	1750 / 41	715 / 31
Sampled Date Start:	2019/03/05	2019/04/03	2019/05/14	2019/06/12	2019/07/09	2019/08/13	2019/09/11	2019/11/12	2019/12/10	2020/01/14	2020/02/11
Sampled Date End:											

Hydrogen	Trace	Trace	0.0001	0.0001	0.0001	Trace	0.0001	Trace	0.0001	0.0001	0.0001
Helium	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Nitrogen	0.0048	0.0050	0.0040	0.0040	0.0044	0.0040	0.0050	0.0045	0.0044	0.0022	0.0046
Carbon Dioxide	0.8389	0.8122	0.8207	0.8344	0.8292	0.8261	0.8306	0.8278	0.8214	0.8359	0.8272
Hydrogen Sulphide (H2S)	0.0203	0.0212	0.0205	0.0195	0.0209	0.0205	0.0201	0.0216	0.0226	0.0211	0.0181
Methane (C1)	0.0275	0.0376	0.0275	0.0238	0.0202	0.0290	0.0228	0.0278	0.0300	0.0299	0.0301
Ethane (C2)	0.0220	0.0224	0.0207	0.0193	0.0192	0.0211	0.0197	0.0200	0.0212	0.0221	0.0211
Propane (C3)	0.0352	0.0397	0.0376	0.0359	0.0383	0.0366	0.0355	0.0344	0.0417	0.0365	0.0381
Isobutane (iC4)	0.0098	0.0102	0.0112	0.0109	0.0108	0.0098	0.0112	0.0109	0.0094	0.0080	0.0101
n-Butane (nC4)	0.0242	0.0262	0.0281	0.0276	0.0284	0.0256	0.0284	0.0289	0.0241	0.0216	0.0254
Isopentane (iC5)	0.0059	0.0076	0.0079	0.0074	0.0084	0.0077	0.0077	0.0080	0.0078	0.0066	0.0073
n-Pentane (nC5)	0.0054	0.0073	0.0077	0.0070	0.0081	0.0075	0.0075	0.0077	0.0074	0.0063	0.0069
Hexanes (C6)	0.0031	0.0052	0.0059	0.0049	0.0058	0.0056	0.0056	0.0047	0.0047	0.0045	0.0049
Heptanes Plus	0.0029	0.0054	0.0081	0.0052	0.0062	0.0065	0.0058	0.0037	0.0052	0.0052	0.0061
Relative Density Moisture Free	1.520	1.522	1.542	1.537	1.546	1.534	1.541	1.531	1.528	1.525	1.531
Gross Heating Value As Sampled	13.30	15.87	16.24	14.76	15.64	15.34	15.27	14.93	15.30	13.96	15.09

Sample:	XN6484	XQ1738	XT3051	XX4775	YB5042	YD2093	YH1221	YM4242	YW5164	YW5165	YZ5419
Sample Pres(kPa)/ Temp(°C):	705 / 42	716 / 41	700 / 40	700 / 35	703 / 40	2450 / 40	700 / 42	724 / 43	743 / 38	750 / 38	760 / 38
Sampled Date Start:	2020/03/10	2020/04/07	2020/05/06	2020/06/10	2020/07/08	2020/07/23	2020/08/15	2020/09/19	2020/11/14	2020/11/15	2020/12/01
Sampled Date End:											

Hydrogen	0.0001	Trace	0.0001	Trace	0.0001	0.0001	Trace	Trace	Trace	0.0001	Trace
Helium	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Nitrogen	0.0041	0.0029	0.0046	0.0017	0.0033	0.0024	0.0019	0.0012	0.0024	0.0122	0.0034
Carbon Dioxide	0.8302	0.8477	0.8323	0.8270	0.8287	0.8380	0.8327	0.8258	0.8374	0.8176	0.8233
Hydrogen Sulphide (H2S)	0.0213	0.0169	0.0176	0.0189	0.0159	0.0173	0.0163	0.0182	0.0166	0.0152	0.0163
Methane (C1)	0.0285	0.0183	0.0281	0.0147	0.0208	0.0148	0.0119	0.0109	0.0220	0.0362	0.0290
Ethane (C2)	0.0197	0.0190	0.0198	0.0165	0.0192	0.0179	0.0176	0.0172	0.0202	0.0222	0.0210
Propane (C3)	0.0353	0.0359	0.0348	0.0364	0.0373	0.0374	0.0408	0.0385	0.0365	0.0346	0.0385
Isobutane (iC4)	0.0092	0.0094	0.0108	0.0112	0.0105	0.0109	0.0116	0.0109	0.0106	0.0097	0.0104
n-Butane (nC4)	0.0237	0.0244	0.0274	0.0296	0.0277	0.0280	0.0300	0.0290	0.0268	0.0253	0.0265
Isopentane (iC5)	0.0072	0.0072	0.0073	0.0095	0.0085	0.0087	0.0097	0.0096	0.0075	0.0072	0.0081
n-Pentane (nC5)	0.0070	0.0068	0.0069	0.0096	0.0085	0.0084	0.0095	0.0099	0.0073	0.0070	0.0079
Hexanes (C6)	0.0052	0.0051	0.0050	0.0092	0.0069	0.0066	0.0071	0.0094	0.0055	0.0051	0.0060
Heptanes Plus	0.0085	0.0064	0.0053	0.0157	0.0126	0.0095	0.0109	0.0194	0.0072	0.0076	0.0096
Relative Density Moisture Free	1.538	1.544	1.534	1.583	1.562	1.563	1.574	1.594	1.546	1.524	1.545
Gross Heating Value As Sampled	15.06	14.12	14.86	18.13	16.83	16.01	17.26	18.87	15.22	15.28	16.37

Sample:	ZB2918	ZB2919
Sample Pres(kPa)/ Temp(°C):	735 / 38	735 / 38
Sampled Date Start:	2020/12/15	2020/12/15
Sampled Date End:		

Component	Ave. of last 23 samples	# 23	# 24	Variance	T-Factor	Std. Dev
Hydrogen	0.0001	0.0001	Trace	-0.0001	1.0	0.0001
Helium		Trace	Trace			
Nitrogen	0.0040	0.0051	0.0052	0.0012	0.6	0.0021
Carbon Dioxide	0.8286	0.8135	0.8391	0.0105	1.3	0.0084
Hydrogen Sulphide (H2S)	0.0189	0.0178	0.0186	-0.0003	0.1	0.0022
Methane (C1)	0.0252	0.0372	0.0273	0.0021	0.3	0.0076
Ethane (C2)	0.0201	0.0222	0.0198	-0.0003	0.2	0.0017
Propane (C3)	0.0372	0.0396	0.0337	-0.0035	1.8	0.0020
Isobutane (iC4)	0.0103	0.0103	0.0094	-0.0009	1.1	0.0008
n-Butane (nC4)	0.0267	0.0262	0.0244	-0.0023	1.1	0.0021
Isopentane (iC5)	0.0079	0.0078	0.0063	-0.0016	1.8	0.0009
n-Pentane (nC5)	0.0076	0.0075	0.0061	-0.0015	1.5	0.0010
Hexanes (C6)	0.0057	0.0053	0.0043	-0.0014	1.0	0.0014
Heptanes Plus	0.0078	0.0074	0.0058	-0.0020	0.5	0.0038
Relative Density Moisture Free	1.543	1.528	1.530	-0.013	0.7	0.020
Gross Heating Value As Sampled	15.65	16.20	13.88	-1.77	1.4	1.28

* - Variance/Standard Deviation >= 2.0

** - Variance/Standard Deviation >= 3.0