

Gas Analysis

Lot Number: **1045633**
Report Number: 1977604
Reference Sample ID: 4965061

Meter # / Sample ID		Operator		Container Identity	
05-23-012-27		Tundra 5-23-12-27 Battery		EX11656/MLFx2	
Location		Well Name		Well License No. KB Elev, m GR Elev, m	
Field/Area		Formation		Pool Surface Location	
Test Type		Sampler		Company	
n/a		Gas leg on Separator		Clariant INC	
Multiple Recovery		Sample Point		Other Information	

Test Interval, m	Test Recovery:						
	Type of Production:	Pumping	Flowing	Gas Lift	Swab		
Perforations, m	Production Rates:	Water	m ³ /d	Oil	m ³ /d	Gas 10 ³ m ³ /d	
	Gauge Pressure, kPa	300				Other ID	Schematic ID
	Temperature, °C	22				Other	
	Source	Sampled	Received				

2014-12-11	2014-12-18	2014-12-24		
Date Sampled (Y-M-D)	Time Sampled	Date Received (Y-M-D)	Date Reported (Y-M-D)	Date On Date Off

Comp.	Mole Fraction		Petroleum Liquid Content mL/m ³	Gross Heating Value, MJ/m ³			Pseudocritical Properties	
	As Received	Acid Gas Free		AGA #5 As Received	AGA #5 Acid Gas Free	GPA 2172 As Received	Pressure, kPa	Temperature, K
H2	0.0020	0.0024		35.16	40.69	35.16	4591	243.3
He	0.0035	0.0045		Density Ideal Gas (AGA #5)			Density Real Gas (GPA 2172)	
N2	0.4016	0.4834		Absolute, kg/m³		Relative	Absolute, kg/m³	
CO2	0.1134	0.0000		1.429	1.166		1.435	1.171
H2S	0.0560	0.0000		Relative Molecular Mass			Mole Fraction C7+ Vapour Pressure Pentanes Plus, kPa	
C1	0.0743	0.0894		Total Gas		C7+	0.0017	107
C2	0.1627	0.1958	578.2	C7+ Fraction As Gas			C7+ Density Liquid	
C3	0.1171	0.1410	430.3	Relative Density		GHV (MJ/m³)	Relative	kg/m ³
iC4	0.0209	0.0252	91.3	3.602	219.83		0.694	694
nC4	0.0316	0.0381	133.0	Hydrogen Sulfide			Compressibility Z	
iC5	0.0088	0.0105	43.0	g/m³			AGA #5	GPA #2172
nC5	0.0037	0.0044	17.9	80.70			0.99557	0.99540
C6	0.0027	0.0032	14.8	Hydrogen Sulfide				
C7	0.0013	0.0016	8.0	ppm (mol/mol)	Method		Field Value (ppm)	Field Method
C8	0.0003	0.0004	2.1	56000	Chromatography TCD			
C9	0.0001	0.0001	0.8					
C10+	Trace	Trace	0.0					
Total	1.0000	1.0000	1319.4					

Approved by:

Robert Lessard, BSc
Consulting Scientist - Reservoir Fluids

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
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Note: Physical constants used in calculations from GPA Standard 2145-09. Gas properties calculated on air and moisture free basis with reference conditions 101.325 kPa and 15 °C.

Methodology and Notes

Bill To: Clariant (Canada) INC dba	Project:	Lot ID: 1045633
Report To: Clariant (Canada) INC dba	ID:	Control Number:
738 - 6 Street	Name: Tundra 5-23-12-27 Battery	Date Received: Dec 18, 2014
Estevan, SK, Canada	Location: 4-23/5-23-12-27	Date Reported: Dec 24, 2014
S4A 1A4	LSD: 05-23-012-27	Report Number: 1977604
Attn: Clinton Lund	P.O.:	
Sampled By: P. Meikle	Acct code:	
Company: Clariant INC		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Natural Gas - C7/10 Composition	GPA	* Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography, 2261-00	24-Dec-14	Exova Edmonton
Natural Gas - C7/10 Composition	GPA	Calculation of Gross Heating Value, Relative Density and Compressibility Factor for Natural Gas Mixtures from Compositional Analysis, 2172-09	24-Dec-14	Exova Edmonton

** Reference Method Modified*

References

GPA Gas Processors Association

Comments:

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

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Report Transmission Cover Page

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Company: Clariant INC		

Contact & Affiliation	Address	Delivery Commitments
Accounts Payable Clariant (Canada) INC dba Prairie	738 - 6 Street Estevan, Saskatchewan S4A 1A4 Phone: (306) 634-5808 Fax: (306) 634-6694 Email: ppc.payables@clariant.com	On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report
Clinton Lund Clariant (Canada) INC dba Prairie	738 - 6 Street Estevan, Saskatchewan S4A 1A4 Phone: (306) 634-5808 Fax: (306) 634-6694 Email: clinton.lund@clariant.com	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report

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