Exova 7217 Roper Ro Edmonton, Alb T6B 3J4, Cana	oad NW F: berta E:	+1 (780) 438-5522 +1 (780) 434-8586 Edmonton@exova.co www.exova.com	om					ge 1 of 2
Gas Ana	alvsis							
							Lot Number: Report Number: Reference Sample IE	965738 1866823 D: 4560315
		Prairie	Petro-Chem	n Ltd.			EX12013/MLFx2	
	Well License No.	Turada		Operator	0.040.00		Containe	er Identity
<u>10-08-01</u>	Location		a OII and Ga	IS 12-09/10-0 Well Name	8-013-28		KB Elev, m	GR Elev, m
	Field/Area		Pool/Zone	<u>DT</u>			Prairie Petro	
	Field/Area	Test Recovery			Sampl	er	Corr	npany
Test	Туре No	-						
Multiple F	Recovery n/a							
Te	est Interval, m	Not Identi					N	
		Type of Produc		ample Point	Flowing	Gas L	Meter # / Sample	
		Production Rat			m³/d Oil		m³/d Gas	- 10³ m³/d
Pe	erforations, m						<u></u>	
		Gauge Pressu				65		
		Temperature, °		Dauraa	Compled	20		
2012	2 10 11				Sampled		Date On	Date Off
	3-10-11 npled (Y-M-D)	Time Sample	id E	2013-10-18 Date Received (Y-M-D		013-10-18 Reported (Y-M-D)	Other I	Information
	Mole E	raction	Petroleum	Gross Hea	ating Value - N	loisture Free		
Comp.					5			
		Free)	Liquid Content	MJ/m	<sup>3</sup> @15°C, 101.	325 kPa	Pseudocriti	cal Properties
		Free) Acid Gas Free	mL/m <sup>3</sup>	MJ/m AGA #5	<sup>3</sup> @15°C, 101. AGA #5	325 kPa GPA 2172	Pseudocritie Pressure, kPa	cal Properties Temperature, K
H2		•	mL/m <sup>3</sup>	AGA #5 As Received	AGA #5 Acid Gas Free	GPA 2172 As Received	Pressure, kPa	Temperature, K
	As Received	Acid Gas Free	mL/m <sup>3</sup>	AGA #5	AGA #5	GPA 2172		-
H2	As Received 0.0010	Acid Gas Free 0.0010	mL/m <sup>3</sup>	AGA #5 As Received	AGA #5 Acid Gas Free 18.75	GPA 2172 As Received 18.68	Pressure, kPa	Temperature, K
H2 He N2 CO2	As Received 0.0010 0.0070	Acid Gas Free 0.0010 0.0070	mL/m <sup>3</sup>	AGA #5 As Received 18.68	AGA #5 Acid Gas Free 18.75	GPA 2172 As Received 18.68 ensity - Moistur	Pressure, kPa 	Temperature, K
H2 He N2	As Received 0.0010 0.0070 0.8229	Acid Gas Free 0.0010 0.0070 0.8263	mL/m <sup>3</sup>	AGA #5 As Received 18.68 Id Absolute, F	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA sg/m <sup>3</sup>	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m³	Temperature, K 171.0 (GPA 2172) Relative
H2 He N2 CO2 H2S C1	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0000 0.0050	<sup>-</sup> mL/m <sup>3</sup>	AGA #5 As Received 18.68	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA sg/m <sup>3</sup>	GPA 2172 As Received 18.68 ensity - Moistur #5)	Pressure, kPa 	Temperature, K 171.0 (GPA 2172)
H2 He N2 CO2 H2S C1 C2	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0035	   12.4	AGA #5 As Received 18.68 Id Absolute, P 1.358	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA sg/m <sup>3</sup>	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m³	Temperature, K 171.0 (GPA 2172) Relative
H2 He N2 CO2 H2S C1 C2 C3	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.0692	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0050 0.0035 0.0694	12.4 254.3	AGA #5 As Received 18.68 Id Absolute, P 1.358	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA cg/m <sup>3</sup> tive Molecular	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360	Temperature, K 171.0 (GPA 2172) <u>Relative</u> 1.110
H2 He N2 CO2 H2S C1 C2 C3 iC4	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.0692           0.0267	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0035 0.0694 0.0268	12.4 254.3 116.6	AGA #5 As Received 18.68 Id Absolute, F 1.358 Rela	AGA #5 Acid Gas Free 18.75 Ceal Gas (AGA cg/m <sup>3</sup> tive Molecular	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass	Pressure, kPa 3474 re Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure
H2 He N2 CO2 H2S C1 C2 C3 iC4 nC4	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.0692           0.0267           0.0365	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0035 0.0694 0.0268 0.0367	12.4 254.3 116.6 153.6	AGA #5 As Received 18.68 Id Absolute, H 1.358 Rela Total Ga 32.12	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA cg/m <sup>3</sup> tive Molecular as	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass C7+ 106.40	Pressure, kPa 3474 re Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide g/m <sup>3</sup> 0.11	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure Pentanes Plus, kPa
H2 He N2 CO2 H2S C1 C2 C3 iC4 nC4 iC5	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.0692           0.0267           0.0365           0.0082	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0035 0.0694 0.0268 0.0367 0.0082	12.4 254.3 116.6 153.6 40.0	AGA #5 As Received 18.68 Id Absolute, F 1.358 Rela Total Ga 32.12 . H2S was d	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA ag/m <sup>3</sup> tive Molecular as	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass C7+ 106.40 by GC/SCD:	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide g/m <sup>3</sup> 0.11 78.3 ppm (mol/mol)	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure Pentanes Plus, kPa
H2 He N2 CO2 H2S C1 C2 C3 iC4 nC4 iC5 nC5	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.0692           0.0267           0.0365           0.0082           0.0074	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0035 0.0694 0.0268 0.0367 0.0082 0.0074	12.4 254.3 116.6 153.6 40.0 35.8	AGA #5 As Received 18.68 Id Absolute, F 1.358 Rela Total Ga 32.12 . H2S was d	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA ag/m <sup>3</sup> tive Molecular as	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass C7+ 106.40	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide g/m <sup>3</sup> 0.11 78.3 ppm (mol/mol)	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure Pentanes Plus, kPa
H2 He N2 CO2 H2S C1 C2 C3 iC4 nC4 iC5 nC5 C6	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.0692           0.0267           0.0365           0.0082           0.0074           0.0043	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.00050 0.0035 0.0694 0.0268 0.0367 0.0082 0.0074 0.0044	12.4 12.4 254.3 116.6 153.6 40.0 35.8 23.6	AGA #5 As Received 18.68 Id Absolute, F 1.358 Rela Total Ga 32.12 . H2S was d	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA ag/m <sup>3</sup> tive Molecular as	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass C7+ 106.40 by GC/SCD:	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide g/m <sup>3</sup> 0.11 78.3 ppm (mol/mol)	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure Pentanes Plus, kPa
H2 He N2 CO2 H2S C1 C2 C3 iC4 nC4 iC5 nC5 C6 C7	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.0692           0.0267           0.0365           0.0074           0.0074           0.0029	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0035 0.0694 0.0268 0.0367 0.0082 0.0074 0.0074 0.0044 0.0029	12.4 254.3 116.6 153.6 40.0 35.8 23.6 17.9	AGA #5 As Received 18.68 Id Absolute, F 1.358 Rela Total Ga 32.12 . H2S was d	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA ag/m <sup>3</sup> tive Molecular as	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass C7+ 106.40 by GC/SCD:	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide g/m <sup>3</sup> 0.11 78.3 ppm (mol/mol)	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure Pentanes Plus, kPa
H2 He N2 CO2 H2S C1 C2 C3 iC4 nC4 iC5 nC5 C6 C7 C8	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.00692           0.0267           0.0365           0.0082           0.0074           0.0043           0.0029           0.0010	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0050 0.0035 0.0694 0.0268 0.0367 0.0082 0.0074 0.0074 0.0029 0.0010	mL/m <sup>3</sup> 12.4 254.3 116.6 153.6 40.0 35.8 23.6 17.9 6.8	AGA #5 As Received 18.68 Id Absolute, F 1.358 Rela Total Ga 32.12 . H2S was d	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA ag/m <sup>3</sup> tive Molecular as	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass C7+ 106.40 by GC/SCD:	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide g/m <sup>3</sup> 0.11 78.3 ppm (mol/mol)	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure Pentanes Plus, kPa
H2 He N2 CO2 H2S C1 C2 C3 iC4 nC4 iC5 nC5 C6 C7 C8 C9	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.00692           0.0267           0.0365           0.0074           0.0029           0.0010           0.0029	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0035 0.0694 0.0268 0.0367 0.0082 0.0074 0.0044 0.0029 0.0010 0.0003	12.4 12.4 254.3 116.6 153.6 40.0 35.8 23.6 17.9 6.8 2.2	AGA #5 As Received 18.68 Id Absolute, F 1.358 Rela Total Ga 32.12 . H2S was d	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA ag/m <sup>3</sup> tive Molecular as	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass C7+ 106.40 by GC/SCD:	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide g/m <sup>3</sup> 0.11 78.3 ppm (mol/mol)	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure Pentanes Plus, kPa
H2 He N2 CO2 H2S C1 C2 C3 iC4 nC4 iC5 nC5 C6 C7 C8	As Received           0.0010           0.0070           0.8229           0.0039           0.0001           0.0050           0.0035           0.00692           0.0267           0.0365           0.0082           0.0074           0.0043           0.0029           0.0010	Acid Gas Free 0.0010 0.0070 0.8263 0.0000 0.0000 0.0050 0.0050 0.0035 0.0694 0.0268 0.0367 0.0082 0.0074 0.0074 0.0029 0.0010	mL/m <sup>3</sup> 12.4 254.3 116.6 153.6 40.0 35.8 23.6 17.9 6.8	AGA #5 As Received 18.68 Id Absolute, F 1.358 Rela Total Ga 32.12 . H2S was d	AGA #5 Acid Gas Free 18.75 De eal Gas (AGA ag/m <sup>3</sup> tive Molecular as	GPA 2172 As Received 18.68 ensity - Moistur #5) Relative 1.109 Mass C7+ 106.40 by GC/SCD:	Pressure, kPa 3474 e Free, As Sampled Real Gas Absolute, kg/m <sup>3</sup> 1.360 Hydrogen Sulfide g/m <sup>3</sup> 0.11 78.3 ppm (mol/mol)	Temperature, K 171.0 (GPA 2172) Relative 1.110 Vapour Pressure Pentanes Plus, kPa

5 Montgomery

Sara Montgomery, B.Sc Quality Officer

Note: Physical constants used in calculations from GPA Standard 2145-09

Approved by:

Exova 
 Extora
 1: +1 (760) 436-5322

 7217 Roper Road NW
 F: +1 (780) 434-8586

 Edmonton, Alberta
 E: Edmonton@exova.com

 CB 244 Capada
 W: WMW oxpora.com
 T6B 3J4, Canada

T: +1 (780) 438-5522 W: www.exova.com

# **Methodology and Notes**



Bill To:	Prairie Petro-Chem Ltd.	Project:		Lot ID:	965738
Report To:	Prairie Petro-Chem Ltd.	ID:		Control Number:	
	738 - 6 Street	Name:	Tundra Oil and Gas 10-8-13-28	Date Received:	Oct 18, 2013
	Estevan, SK, Canada	Location:	12-09/10-08-013-28	Date Reported:	Oct 18, 2013
	S4A 1A4	LSD:	10-08-013-28 W1	Report Number:	,
Attn:	Accounts Payable	P.O.:			
Sampled By:	DT	Acct code:			
Company:	Prairie Petro				

## **Method of Analysis**

Method Name	Reference	Method	Date Analysis Started	Location
Natural Gas - C7/10 Composition	GPA	<ul> <li>* Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography, 2261-00</li> </ul>	18-Oct-13	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	18-Oct-13	Exova Edmonton
Total Reduced Sulfur Analysis of Natural Gas	ASTM	* Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence, D 5504-08	18-Oct-13	Exova Edmonton
		* Reference Method Modified		
References				

ASTM	Annual Book of ASTM Standards
GPA	Gas Processors Association

## **Comments:**

• Sample 965738-1; 4560315 H2S was determined by GC/SCD: 78.3 ppm (mol/mol)

• Sample 965738-1; 4560315 H2S analysis was corrected for 9 % air content.

Exova T 7217 Roper Road NW F Edmonton, Alberta E T6B 3J4, Canada W

T: +1 (780) 438-5522 F: +1 (780) 434-8586 E: Edmonton@exova.com W: www.exova.com

# **Report Transmission Cover Page**



Report To:	Prairie Petro-Chem I Prairie Petro-Chem I 738 - 6 Street Estevan, SK, Canada S4A 1A4 Accounts Payable	td. ID: Name:	Tundra Oil and Gas 10-8-13-28 12-09/10-08-013-28 10-08-013-28 W1	Lot ID: Control Number: Date Received: Date Reported: Report Number:	Oct 18, 2013	
1 ,	Prairie Petro	Acci code.				
Contact & Affiliat	tion	Address	Delivery Commitm	nents		
Jocelyn Griffin		738 - 6 Street	On [Lot Verificatio	n] send		
Prairie Petro-Chem Ltd.		Estevan, Saskatchewan S	4A 1A4 (COA) by Email	(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
Accounts Payable Prairie Petro-Chem Ltd.	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

# Notes To Clients:

• Sample 965738-1; 4560315 H2S was determined by GC/SCD: 78.3 ppm (mol/mol)

Phone: (306) 634-5808

Email: ppc.lab@clariant.com

Fax: (306) 634-6694

• Sample 965738-1; 4560315 H2S analysis was corrected for 9 % air content.

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