



dig
Dolan Integration Group

Geochemistry for Energy

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received 08/15/2016
Complaint 200439757

Hydrocarbon Gas Composition and Stable Isotopes Data and Interpretation

Job #: 16070661
Lab #: DIG-009455
Client: COGCC
Sample Name(s): 753452

Analytical Report



Job #: 16070661
 Lab #: DIG-009455
 Client: COGCC
 Sample Name: 753452
 Date Sampled: 07/20/16
 Time Sampled: 9:45
 Sample Description: Water
 Sampling Notes:
 Date Received: 07/25/16
 Date Analyzed: Gas Composition: 8/3/16 ; $\delta^{13}\text{C}$: 8/5/16 ; δD : 8/8/16
 Date Reported: 08/15/16
 Comments: Headspace created with UHP Helium

Measured Values:	Measured ppm	Analyte mol % ^a	HC mol %	Total dissolved mg/L	$\delta^{13}\text{C}$ ‰ VPDB	δD ‰ VSMOW	Comments
Nitrogen (N ₂)	141746	31.7	-	8.66	-	-	
Oxygen + Argon (O ₂ +Ar)	21402	4.79	-	2.09	-	-	
Carbon Dioxide (CO ₂)	3754	0.84	-	7.45	-17.0	-	
Helium (He) ^b	na	na	-	na	-	-	Added Headspace
Hydrogen (H ₂)	nd	nd	-	nd	-	-	
Methane (CH ₄)	279750	62.57	99.84	14.35	-71.3	-250	
Ethane (C ₂ H ₆)	457	0.1	0.16	0.05	nd	-	
Propane (C ₃ H ₈)	nd	nd	nd	nd	nd	-	
iso-Butane (C ₄ H ₁₀)	nd	nd	nd	nd	nd	-	
n-Butane (C ₄ H ₁₀)	nd	nd	nd	nd	nd	-	
iso-Pentane (C ₅ H ₁₂)	nd	nd	nd	nd	nd	-	
n-Pentane (C ₅ H ₁₂)	nd	nd	nd	nd	nd	-	
Hexanes + (C ₆ H ₁₄)	nd	nd	nd	nd	nd	-	

Calculated Values:	
Total HCs (ppm)	280207
Gas Wetness (mol % C ₂ +C ₁ +))	0.16
C ₁ /(C ₂ +C ₃) (mol/mol)	612

^a Analyte concentrations normalized to 100% (Mol. % is approximately equal to Vol. %)

^b Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

HC= Hydrocarbons

nd = not detected

na = not analyzed

Stable isotope results based on multi-point laboratory calibration

Error $\delta^{13}\text{C}$ < 0.5 ‰

Error δD < 5.0 ‰

