

# ANALYSIS REPORT

Lab #: 375813 Job #: 22654 IS-64384  
 Sample Name/Number: 752165 Goss  
 Company: Colorado Oil & Gas Conservation  
 Date Sampled: 8/21/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: TBAL  
 Location:  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 8/26/2013 Date Reported: 9/13/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.66			
Oxygen -----	4.61			
Nitrogen -----	89.98			
Carbon Dioxide -----	0.93	-25.7		
Methane -----	2.82	-56.2	-128	
Ethane -----	0.0013			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			
Water -----			-75.7	-10.02
Dissolved Inorganic Carbon -		-18.0		

## Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.77

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Isotopes obtained online via GC-C/P-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 375814 Job #: 22654 IS-64384  
 Sample Name/Number: 285662 Sanch Tr  
 Company: Colorado Oil & Gas Conservation  
 Date Sampled: 8/22/2013  
 Container: Dissolved Gas Bottle  
 Field/Site Name: TBAL  
 Location:  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 8/26/2013 Date Reported: 9/13/2013

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	0.134			
Oxygen -----	2.86			
Nitrogen -----	6.51			
Carbon Dioxide -----	0.69	10.8		
Methane -----	89.79	-52.00	-236.1	
Ethane -----	0.0181			
Ethylene -----	nd			
Propane -----	0.0003			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			
Water -----			-74.5	-10.24
Dissolved Inorganic Carbon -		18.8		

**Remarks:**

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.70

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

\*\* Carbon dioxide isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.