

Lab #: 746650 Job #: 43749 IS-94649 Co. Job#:
 Sample Name: Vogl McCoy 2E-5H-F287 / Production Casing Co. Lab#:
 Company: Crestone Peak Resources
 API/Well:
 Container: IsoTube®
 Field/Site Name: Bradenhead Testing
 Location: C74817
 Formation:
 Sampling Point: 433791
 Date Sampled: 12/10/2019 12:00 Date Received: 12/16/2019 Date Reported: 1/23/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0105			
Hydrogen -----	0.173			
Argon -----	nd			
Oxygen -----	0.077			
Nitrogen -----	0.51			
Carbon Dioxide -----	1.83	2.6		
Methane -----	75.13	-49.5	-255	
Ethane -----	13.82	-33.7		
Ethylene -----	0.0052			
Propane -----	5.55	-29.6		
Propylene -----	0.0002			
Iso-butane -----	0.644	-31.9		
N-butane -----	1.80	-28.5		
Iso-pentane -----	0.237	-28.3		
N-pentane -----	0.196	-27.8		
Hexanes + -----	0.0147			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1248

Specific gravity, calculated: 0.738

Remarks: Isotopes obtained online via GC-C-IRMS/GC-P-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 746651 Job #: 43749 IS-94649 Co. Job#:
 Sample Name: Vogl McCoy 2E-5H-F287 / Surface Casing Co. Lab#:
 Company: Crestone Peak Resources
 API/Well:
 Container: IsoTube®
 Field/Site Name: Bradenhead Testing
 Location: C74817
 Formation:
 Sampling Point: 433791
 Date Sampled: 12/10/2019 12:00 Date Received: 12/16/2019 Date Reported: 1/23/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	0.0343			
Argon -----	0.0134			
Oxygen -----	0.12			
Nitrogen -----	0.45			
Carbon Dioxide -----	0.005			
Methane -----	99.11	-51.5	-310	
Ethane -----	0.119	-34.0		
Ethylene -----	0.0002			
Propane -----	0.0864	-30.8		
Propylene -----	0.0002			
Iso-butane -----	0.0123	-32.9		
N-butane -----	0.0321	-29.3		
Iso-pentane -----	0.0062			
N-pentane -----	0.0056			
Hexanes + -----	0.0022			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1011

Specific gravity, calculated: 0.559

Remarks: Insufficient CO2 and C5 concentrations for isotopic analysis. Isotopes obtained online via GC-C-IRMS/GC-P-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 746672 Job #: 43749 IS-94649 Co. Job#:
 Sample Name: Vogl-McCoy 2E-5H-F267 / Intermediate Casing Co. Lab#:
 Company: Crestone Peak Resources
 API/Well:
 Container: IsoTube®
 Field/Site Name: Bradenhead Testing
 Location: C74817
 Formation:
 Sampling Point: 433791
 Date Sampled: 12/10/2019 12:44 Date Received: 12/16/2019 Date Reported: 1/23/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	nd			
Argon -----	0.0219			
Oxygen -----	0.32			
Nitrogen -----	1.16			
Carbon Dioxide -----	0.15	10.2		
Methane -----	98.28	-51.8	-315	
Ethane -----	0.0243	-34.0		
Ethylene -----	0.0002			
Propane -----	0.0182	-29.9		
Propylene -----	0.0002			
Iso-butane -----	0.0040			
N-butane -----	0.0096			
Iso-pentane -----	0.0031			
N-pentane -----	0.0038			
Hexanes + -----	0.0029			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 998

Specific gravity, calculated: 0.563

Remarks: Insufficient C4-C5 concentrations for isotopic analysis. Isotopes obtained online via GC-C-IRMS/GC-P-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.