

Lab #: 774272 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Thomas 33-7 Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 291136   
 Date Sampled: 9/14/2020 10:40 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0274			
Hydrogen -----	nd			
Argon -----	0.0563			
Oxygen -----	1.37			
Nitrogen -----	5.27			
Carbon Dioxide -----	0.012			
Methane -----	77.26	-51.3	-245	
Ethane -----	9.48	-32.9		
Ethylene -----	nd			
Propane -----	4.47	-29.5		
Propylene -----	nd			
Iso-butane -----	0.538	-31.8		
N-butane -----	1.04	-28.8		
Iso-pentane -----	0.218	-28.3		
N-pentane -----	0.184	-27.8		
Hexanes + -----	0.0787			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1137

Specific gravity, calculated: 0.706

Remarks: W44167 8503

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 #: 774273 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Mantle 1 Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 244876   
 Date Sampled: 9/29/2020 14:00 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	nd			
Argon -----	0.0133			
Oxygen -----	0.34			
Nitrogen -----	0.77			
Carbon Dioxide -----	1.63	9.3		
Methane -----	69.37	-47.7	-254	
Ethane -----	15.26	-28.6		
Ethylene -----	nd			
Propane -----	7.64	-25.4		
Propylene -----	0.0004			
Iso-butane -----	1.30	-29.3		
N-butane -----	2.28	-25.4		
Iso-pentane -----	0.580	-27.4		
N-pentane -----	0.502	-25.0		
Hexanes + -----	0.314			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1346

Specific gravity, calculated: 0.803

Remarks: 1619267 9728

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 #: 774274 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Mantle 1 Production Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 244876   
 Date Sampled: 9/29/2020 14:00 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0092			
Hydrogen -----	0.161			
Argon -----	0.0128			
Oxygen -----	0.26			
Nitrogen -----	1.06			
Carbon Dioxide -----	2.15	2.9		
Methane -----	78.31	-47.9	-222	
Ethane -----	11.35	-28.3		
Ethylene -----	nd			
Propane -----	4.11	-25.3		
Propylene -----	0.0002			
Iso-butane -----	0.690	-28.9		
N-butane -----	1.23	-25.5		
Iso-pentane -----	0.302	-27.2		
N-pentane -----	0.255	-24.8		
Hexanes + -----	0.100			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1192

Specific gravity, calculated: 0.716

Remarks: 1619267 9728

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 #: 774275 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Shaffer Newman 24-13 Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 295524   
 Date Sampled: 9/14/2020 12:30 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0458			
Hydrogen -----	nd			
Argon -----	0.0153			
Oxygen -----	0.15			
Nitrogen -----	2.15			
Carbon Dioxide -----	0.97	3.1		
Methane -----	78.40	-54.6	-229	
Ethane -----	8.20	-31.6		
Ethylene -----	0.0001			
Propane -----	4.66	-28.4		
Propylene -----	nd			
Iso-butane -----	0.927	-31.1		
N-butane -----	2.30	-27.8		
Iso-pentane -----	0.841	-28.5		
N-pentane -----	0.973	-27.1		
Hexanes + -----	0.368			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1257

Specific gravity, calculated: 0.749

Remarks: W49983 8503

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 #: 774276 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Shaffer Newman 1-8-13 Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 296095   
 Date Sampled: 9/14/2020 12:30 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0443			
Hydrogen -----	nd			
Argon -----	0.0765			
Oxygen -----	1.78			
Nitrogen -----	7.65			
Carbon Dioxide -----	0.015			
Methane -----	77.48	-54.2	-239	
Ethane -----	6.78	-33.4		
Ethylene -----	nd			
Propane -----	4.15	-30.0		
Propylene -----	nd			
Iso-butane -----	0.559	-31.5		
N-butane -----	1.04	-28.7		
Iso-pentane -----	0.206	-28.3		
N-pentane -----	0.166	-28.0		
Hexanes + -----	0.0541			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1082

Specific gravity, calculated: 0.701

Remarks: W49984 8503

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 #: 774277 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Helen 0-4-23 Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 414882   
 Date Sampled: 9/14/2020 3:40 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0306			
Hydrogen -----	nd			
Argon -----	0.0118			
Oxygen -----	0.21			
Nitrogen -----	1.28			
Carbon Dioxide -----	0.009			
Methane -----	80.16	-51.3	-245	
Ethane -----	10.53	-32.8		
Ethylene -----	nd			
Propane -----	5.23	-29.4		
Propylene -----	nd			
Iso-butane -----	0.639	-31.7		
N-butane -----	1.32	-28.6		
Iso-pentane -----	0.240	-28.4		
N-pentane -----	0.232	-27.4		
Hexanes + -----	0.109			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1222

Specific gravity, calculated: 0.702

Remarks: W61695 8503

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 #: 774278 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Branch 0-6-23 Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 286189   
 Date Sampled: 9/10/2020 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	nd			
Argon -----	0.886			
Oxygen -----	20.19			
Nitrogen -----	73.74			
Carbon Dioxide -----	0.066	-11.6		
Methane -----	4.21	-41.6	-230	
Ethane -----	0.506	-29.6		
Ethylene -----	nd			
Propane -----	0.258	-27.3		
Propylene -----	nd			
Iso-butane -----	0.0411	-29.9		
N-butane -----	0.0688	-26.5		
Iso-pentane -----	0.0177	-27.2		
N-pentane -----	0.0129	-25.9		
Hexanes + -----	0.0062			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 63

Specific gravity, calculated: 0.985

Remarks: W31355 8503

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 #: 774279 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Doniphan Shields 21-11 Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 272864   
 Date Sampled: 9/14/2020 9:35 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.143			
Hydrogen -----	nd			
Argon -----	0.136			
Oxygen -----	2.91			
Nitrogen -----	14.58			
Carbon Dioxide -----	0.018			
Methane -----	78.61	-60.0	-217	
Ethane -----	1.96	-34.5		
Ethylene -----	nd			
Propane -----	1.07	-30.6		
Propylene -----	nd			
Iso-butane -----	0.154	-31.4		
N-butane -----	0.235	-29.1		
Iso-pentane -----	0.0547	-28.4		
N-pentane -----	0.0540	-27.8		
Hexanes + -----	0.0750			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 879

Specific gravity, calculated: 0.660

Remarks: W19536 8503

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 #: 774280 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Branch 0-6-23 Production Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 286189   
 Date Sampled: 9/10/2020 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0070			
Hydrogen -----	0.0669			
Argon -----	0.0137			
Oxygen -----	0.35			
Nitrogen -----	1.01			
Carbon Dioxide -----	2.49	3.1		
Methane -----	74.94	-47.3	-230	
Ethane -----	11.99	-30.0		
Ethylene -----	0.0013			
Propane -----	5.13	-26.4		
Propylene -----	nd			
Iso-butane -----	0.921	-29.8		
N-butane -----	1.89	-26.2		
Iso-pentane -----	0.585	-27.5		
N-pentane -----	0.506	-25.6		
Hexanes + -----	0.0992			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1245

Specific gravity, calculated: 0.756

Remarks: W31355 8503

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 #: 774281 Job #: 46124 IS-94649 Co. Job#:   
 Sample Name: Thomas 2-8-7 Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location:   
 Formation:   
 Sampling Point: 292901   
 Date Sampled: 9/14/2020 10:40 Date Received: 10/26/2020 Date Reported: 12/14/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0295			
Hydrogen -----	0.0126			
Argon -----	0.0536			
Oxygen -----	1.32			
Nitrogen -----	5.04			
Carbon Dioxide -----	0.012			
Methane -----	77.39	-51.4	-245	
Ethane -----	9.32	-33.4		
Ethylene -----	nd			
Propane -----	4.59	-29.2		
Propylene -----	nd			
Iso-butane -----	0.555	-31.7		
N-butane -----	1.11	-28.8		
Iso-pentane -----	0.252	-28.2		
N-pentane -----	0.216	-28.0		
Hexanes + -----	0.102			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1146

Specific gravity, calculated: 0.708

Remarks: W44164 8503

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. %.