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Lab #:	750220	Job #:	43908	IS-94649	Co. Job#:
Sample Name:	Costigan 6-8-20 / Surface Casing				Co. Lab#:
Company:	Crestone Peak Resources				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Bradenhead Testing				
Location:	16192173				
Formation:					
Sampling Point:	301900				
Date Sampled:	1/03/2020	11:10	Date Received:	1/09/2020	Date Reported: 1/29/2020

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	0.0114			
Hydrogen	nd			
Argon	0.433			
Oxygen	10.01			
Nitrogen	36.90			
Carbon Dioxide	0.043			
Methane	42.81	-48.3	-238	
Ethane	5.65	-32.1		
Ethylene	nd			
Propane	2.57	-28.5		
Propylene	nd			
Iso-butane	0.355	-31.3		
N-butane	0.719	-27.5		
Iso-pentane	0.213	-28.3		
N-pentane	0.182	-27.6		
Hexanes +	0.106			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 655
Specific gravity, calculated: 0.844

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

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. %.