

Lab #: 833298 Job #: 51463 IS-65777 Co. Job#:
 Sample Name: CS-4 Co. Lab#:
 Company: University of North Dakota - Energy & Environmental Resea
 API/Well:
 Container: IsoBag
 Field/Site Name: CSND
 Location: Center, ND
 Formation/Depth:
 Sampling Point:
 Date Sampled: 6/28/2022 14:30 Date Received: 7/05/2022 Date Reported: 7/18/2022

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	^{14}C conc. pMC	Tritium TU
Carbon Monoxide -----	nd				
Helium -----	nd				
Hydrogen -----	nd				
Argon -----	0.983				
Oxygen -----	16.32				
Nitrogen -----	81.46				
Carbon Dioxide -----	1.24	-16.57		47.0 \pm 0.2	
Methane -----	0.0010				
Ethane -----	nd				
Ethylene -----	nd				
Propane -----	nd				
Propylene -----	nd				
Iso-butane -----	nd				
N-butane -----	nd				
Iso-pentane -----	nd				
N-pentane -----	nd				
Hexanes + -----	0.0010				

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 0

Specific gravity, calculated: 1.001

Remarks:

Insufficient methane 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. %.

Lab #: 833299 Job #: 51463 IS-65777 Co. Job#:
 Sample Name: CS-9 Co. Lab#:
 Company: University of North Dakota - Energy & Environmental Resea
 API/Well:
 Container: IsoBag
 Field/Site Name: CSND
 Location: Center, ND
 Formation/Depth:
 Sampling Point:
 Date Sampled: 6/28/2022 15:00 Date Received: 7/05/2022 Date Reported: 7/18/2022

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	^{14}C conc. pMC	Tritium TU
Carbon Monoxide -----	nd				
Helium -----	nd				
Hydrogen -----	nd				
Argon -----	0.992				
Oxygen -----	4.89				
Nitrogen -----	86.63				
Carbon Dioxide -----	7.49	-18.93		8.5 ± 0.1	
Methane -----	0.0011				
Ethane -----	nd				
Ethylene -----	nd				
Propane -----	nd				
Propylene -----	nd				
Iso-butane -----	nd				
N-butane -----	nd				
Iso-pentane -----	nd				
N-pentane -----	nd				
Hexanes + -----	0.0009				

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 0

Specific gravity, calculated: 1.019

Remarks:

Insufficient methane 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. %.

Lab #: 833300 Job #: 51463 IS-65777 Co. Job#:
 Sample Name: CS-15 Co. Lab#:
 Company: University of North Dakota - Energy & Environmental Resea
 API/Well:
 Container: IsoBag
 Field/Site Name: CSND
 Location: Center, ND
 Formation/Depth:
 Sampling Point:
 Date Sampled: 6/28/2022 15:30 Date Received: 7/05/2022 Date Reported: 7/18/2022

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	^{14}C conc. pMC	Tritium TU
Carbon Monoxide -----	nd				
Helium -----	nd				
Hydrogen -----	nd				
Argon -----	0.985				
Oxygen -----	5.94				
Nitrogen -----	85.98				
Carbon Dioxide -----	7.09	-18.51		8.3 ± 0.1	
Methane -----	0.0013				
Ethane -----	nd				
Ethylene -----	nd				
Propane -----	nd				
Propylene -----	nd				
Iso-butane -----	nd				
N-butane -----	nd				
Iso-pentane -----	nd				
N-pentane -----	nd				
Hexanes + -----	0.0005				

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 0

Specific gravity, calculated: 1.019

Remarks:

Insufficient methane 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. %.