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Isotech Gas Data

Isotech Lab No.	Sample Name	Sample Date	Sample Time	Field Name	Location	GC Date	He %	H_2 %	Ar %	O_2 %	CO_2 %	N_2 %	CO %	C_1 %	C_2 %	C_2H_4 %	C_3 %	C_3H_6 %	iC_4 %	nC_4 %	iC_5 %	nC_5 %	C_6+ %	MS Date	$\delta^{13}CO_2$ ‰	$\delta^{13}C_1$ ‰	δDC_1 ‰	$\delta^{13}C_2$ ‰	Specific Gravity	BTU	Comments
803441	SVP01-0910-1157	9/10/2021	11:57	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.999	12.24	8.16	78.60	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.0005						1.033	0	
803442	SVP02-0910-1202	9/10/2021	12:02	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.990	15.03	5.56	78.42	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.0003						1.023	0	
803443	SVP03-0910-1213	9/10/2021	12:13	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.971	15.93	6.61	76.49	nd	0.0005	nd	nd	nd	nd	nd	nd	nd	nd	0.0002						1.030	0	
803444	SVP04-0910-1218	9/10/2021	12:18	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.989	7.20	13.62	78.19	nd	0.0004	nd	nd	nd	nd	nd	nd	nd	nd	0.0002						1.056	0	
803445	SVP05-0910-1226	9/10/2021	12:26	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.994	4.26	14.99	79.73	nd	0.0282	0.0014	nd	nd	nd	nd	nd	nd	nd	0.0002						1.060	0	
803446	SVP06-0910-1222	9/10/2021	12:22	Williams Pad	Erie, CO	9/27/2021	nd	nd	1.00	6.33	12.72	79.95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.050	0	
803447	SVP07-0910-1230	9/10/2021	12:30	Williams Pad	Erie, CO	9/27/2021	nd	nd	1.02	10.26	8.27	80.45	nd	0.0006	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.031	0	
803448	SVP08-0910-1234	9/10/2021	12:34	Williams Pad	Erie, CO	9/27/2021	nd	nd	1.03	2.16	14.70	82.09	nd	0.0149	0.0009	nd	0.0001	nd	nd	nd	nd	nd	nd						1.056	0	
803449	SVP09-0910-1240	9/10/2021	12:40	Williams Pad	Erie, CO	9/16/2021	nd	nd	0.984	4.77	12.38	81.57	nd	0.266	0.0248	nd	0.0040	nd	0.0011	0.0010	0.0004	0.0003	0.0012	9/24/2021	-30.90	-32.1	-214	-26.0	1.045	3	Insufficient C3-C5 concentrations for isotopic analysis.
803450	SVP10-0910-1244	9/10/2021	12:44	Williams Pad	Erie, CO	9/27/2021	nd	nd	1.00	9.71	9.31	79.98	nd	0.0003	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.036	0	
803451	SVP11-0910-1249	9/10/2021	12:49	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.999	5.74	13.56	79.70	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.054	0	
803452	SVP12-0910-1253	9/10/2021	12:53	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.990	13.22	7.40	78.39	nd	0.0007	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.030	0	
803453	SVP13-0910-1257	9/10/2021	12:57	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.992	16.53	3.68	78.79	nd	0.0062	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.014	0	
803454	SVP14-0910-1305	9/10/2021	13:05	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.959	15.18	7.54	76.32	nd	0.0002	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.034	0	
803455	SVP15-0910-1310	9/10/2021	13:10	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.958	9.72	13.26	75.96	nd	0.0958	0.0024	nd	nd	nd	nd	nd	nd	nd	nd						1.057	1	
803456	SVP16-0910-1314	9/10/2021	13:14	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.959	16.82	6.32	75.90	nd	0.0009	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.029	0	
803457	SVP17-0910-1319	9/10/2021	13:19	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.977	19.53	2.13	77.36	nd	0.0017	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.010	0	
803458	SVP18-0910-1323	9/10/2021	13:23	Williams Pad	Erie, CO	9/27/2021	nd	nd	1.00	14.57	4.85	79.58	nd	0.0010	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.018	0	
803459	SVP19-0910-1327	9/10/2021	13:27	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.970	16.29	6.08	76.66	nd	0.0004	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.027	0	
803460	SVP20-0910-1331	9/10/2021	13:31	Williams Pad	Erie, CO	9/27/2021	nd	nd	0.988	10.92	9.95	78.14	nd	0.0033	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.041	0	
803461	SVP21-0910-1336	9/10/2021	13:36	Williams Pad	Erie, CO	9/28/2021	nd	nd	0.973	17.23	5.39	76.41	nd	0.0008	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.025	0	
803462	SVP22-0910-1340	9/10/2021	13:40	Williams Pad	Erie, CO	9/28/2021	nd	nd	0.976	21.71	0.63	76.68	nd	0.0005	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.005	0	
803463	SVP23-0910-1344	9/10/2021	13:44	Williams Pad	Erie, CO	9/28/2021	nd	nd	0.984	12.71	8.40	77.91	nd	0.0002	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.035	0	
803464	SVP24-0910-1350	9/10/2021	13:50	Williams Pad	Erie, CO	9/28/2021	nd	nd	0.975	16.58	5.42	77.02	nd	0.0003	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.024	0	
803465	SVP25-0910-1355	9/10/2021	13:55	Williams Pad	Erie, CO	9/28/2021	nd	nd	0.973	18.26	4.20	76.57	nd	0.0004	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.020	0	
803466	SVP26-0910-1400	9/10/2021	14:00	Williams Pad	Erie, CO	9/28/2021	nd	nd	0.977	7.03	14.49	77.50	nd	0.0039	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.061	0	
803467	SVW01-0910-1423	9/10/2021	14:23	Williams Pad	Erie, CO	9/16/2021	nd	nd	0.973	0.11	17.46	80.87	nd	0.545	0.0398	nd	0.0011	nd	0.0009	0.0003	0.0004	0.0002	0.0010	9/24/2021	-29.69	-25.0	-223	-20.1	1.066	6	Insufficient C3-C5 concentrations for isotopic analysis.
803468	SVW02-0910-1414	9/10/2021	14:14	Williams Pad	Erie, CO	9/28/2021	nd	nd	0.994	17.10	3.50	78.40	nd	0.0037	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.014	0	
809515	SVE02-1112-1036	11/12/2021	10:36	Williams Pad	ld County,	11/29/2021	nd	nd	0.988	3.17	16.43	79.41	nd	0.0041	0.0002	nd	0.0002	nd	nd	0.0002	nd	0.0002	0.0007						1.066	0	
809516	SVE05-1112-1047	11/12/2021	10:47	Williams Pad	ld County,	11/29/2021	nd	nd	0.968	15.68	6.59	76.74	nd	0.0150	0.0011	nd	0.0010	nd	0.0003	0.0008	0.0005	0.0007	0.0045						1.029	0	
809517	SVE12-1112-1104	11/12/2021	11:04	Williams Pad	ld County,	11/30/2021	nd	nd	1.01	12.60	5.24	80.34	nd	0.801	0.0091	nd	0.0001	nd	nd	nd	nd	nd	0.0002						1.014	8	
809518	SVE03-1112-1120	11/12/2021	11:20	Williams Pad	ld County,	11/30/2021	nd	nd	1.02	8.16	9.89	80.79	nd	0.140	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.037	1	
809519	SVE04-1112-1132	11/12/2021	11:32	Williams Pad	ld County,	11/30/2021	nd	nd	1.03	2.88	13.64	82.44	nd	0.0081	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.051	0	
809520	SVE06-1112-1140	11/12/2021	11:40	Williams Pad	ld County,	11/30/2021	nd	nd	1.02	8.64	9.33	81.00	nd	0.0063	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.035	0	
809521	SVE07-1112-1154	11/12/2021	11:54	Williams Pad	ld County,	11/30/2021	nd	nd	1.06	0.55	13.55	84.83	nd	0.0109	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.047	0	
809522	SVE11-1112-1205	11/12/2021	12:05	Williams Pad	ld County,	11/30/2021	nd	nd	1.10	0.16	11.78	86.95	nd	0.0092	0.0003	nd	nd	nd	nd	nd	nd	nd	nd						1.037	0	
809523	SVE10-1112-1220	11/12/2021	12:20	Williams Pad	ld County,	11/30/2021	nd	nd	0.979	16.67	4.91	77.44	nd	0.0004	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.021	0	
809524	SVE08-1112-1254	11/12/2021	12:54	Williams Pad	ld County,	11/30/2021	nd	nd	0.992	11.52	8.62	78.87	nd	0.0004	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.035	0	
809525	SVE09-1112-1306	11/12/2021	13:06	Williams Pad	ld County,	11/30/2021	nd	nd	0.974	16.09	5.75	77.19	nd	0.0007	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.025	0	
809526	SVE15-1112-1318	11/12/2021	13:18	Williams Pad	ld County,	11/30/2021	nd	nd	0.965	19.35	3.05	76.63	nd	0.0004	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.015	0	
809527	SVE14-1112-1332	11/12/2021	13:32	Williams Pad	ld County,	11/30/2021	nd	nd	0.964	18.81	3.85	76.38	nd	0.0004	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.018	0	
809528	SVE13-1112-1344	11/12/2021	13:44	Williams Pad	ld County,	11/30/2021	nd	nd	0.959	19.01	3.60	76.43	nd	0.0006	nd	nd	nd	nd	nd	nd	nd	nd	nd						1.017	0	

All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19
nd = not detected, na = not analyzed
In red = isotopes obtained online via GC-C-IRMS/GC-P-IRMS

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Lab #:	803441	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP01-0910-1157				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 11:57	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.999			
Oxygen	12.24			
Nitrogen	78.60			
Carbon Dioxide	8.16			
Methane	nd			
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: 1.033

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. %.

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Lab #:	803442	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP02-0910-1202				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:02	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.990			
Oxygen	15.03			
Nitrogen	78.42			
Carbon Dioxide	5.56			
Methane	nd			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	0.0003			

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

Specific gravity, calculated: 1.023

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. %.

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Lab #:	803443	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP03-0910-1213				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:13	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.971			
Oxygen	15.93			
Nitrogen	76.49			
Carbon Dioxide	6.61			
Methane	0.0005			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	0.0002			

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

Specific gravity, calculated: 1.030

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. %.

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Lab #:	803444	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP04-0910-1218				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:18	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.989			
Oxygen	7.20			
Nitrogen	78.19			
Carbon Dioxide	13.62			
Methane	0.0004			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	0.0002			

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

Specific gravity, calculated: 1.056

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. %.

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Lab #:	803445	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP05-0910-1226				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:26	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.994			
Oxygen	4.26			
Nitrogen	79.73			
Carbon Dioxide	14.99			
Methane	0.0282			
Ethane	0.0014			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	0.0002			

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

Specific gravity, calculated: 1.060

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. %.

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Lab #:	803446	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP06-0910-1222				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:22	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.00			
Oxygen	6.33			
Nitrogen	79.95			
Carbon Dioxide	12.72			
Methane	nd			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.050

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. %.

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Lab #:	803447	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP07-0910-1230				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:30	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.02			
Oxygen	10.26			
Nitrogen	80.45			
Carbon Dioxide	8.27			
Methane	0.0006			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 0
Specific gravity, calculated: 1.031

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. %.

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Lab #:	803448	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP08-0910-1234				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:34	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.03			
Oxygen	2.16			
Nitrogen	82.09			
Carbon Dioxide	14.70			
Methane	0.0149			
Ethane	0.0009			
Ethylene	nd			
Propane	0.0001			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.056

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. %.

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Lab #:	803449	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP09-0910-1240				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:40	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.984			
Oxygen	4.77			
Nitrogen	81.57			
Carbon Dioxide	12.38	-30.90		
Methane	0.266	-32.1	-214	
Ethane	0.0248	-26.0		
Ethylene	nd			
Propane	0.0040			
Propylene	nd			
Iso-butane	0.0011			
N-butane	0.0010			
Iso-pentane	0.0004			
N-pentane	0.0003			
Hexanes +	0.0012			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 3
Specific gravity, calculated: 1.045

Remarks: Insufficient C3-C5 concentrations for isotopic analysis.
Methane and ethane 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. %.

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Lab #:	803450	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP10-0910-1244				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:44	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.00			
Oxygen	9.71			
Nitrogen	79.98			
Carbon Dioxide	9.31			
Methane	0.0003			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.036

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. %.

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Lab #:	803451	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP11-0910-1249				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:49	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.999			
Oxygen	5.74			
Nitrogen	79.70			
Carbon Dioxide	13.56			
Methane	nd			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.054

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. %.

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Lab #:	803452	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP12-0910-1253				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:53	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.990			
Oxygen	13.22			
Nitrogen	78.39			
Carbon Dioxide	7.40			
Methane	0.0007			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.030

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. %.

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Lab #:	803453	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP13-0910-1257				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 12:57	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.992			
Oxygen	16.53			
Nitrogen	78.79			
Carbon Dioxide	3.68			
Methane	0.0062			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.014

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. %.

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Lab #:	803454	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP14-0910-1305				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:05	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.959			
Oxygen	15.18			
Nitrogen	76.32			
Carbon Dioxide	7.54			
Methane	0.0002			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.034

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. %.

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Lab #:	803455	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP15-0910-1310				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:10	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.958			
Oxygen	9.72			
Nitrogen	75.96			
Carbon Dioxide	13.26			
Methane	0.0958			
Ethane	0.0024			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1

Specific gravity, calculated: 1.057

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. %.

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Lab #:	803456	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP16-0910-1314				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:14	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.959			
Oxygen	16.82			
Nitrogen	75.90			
Carbon Dioxide	6.32			
Methane	0.0009			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.029

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. %.

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Lab #:	803457	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP17-0910-1319				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:19	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.977			
Oxygen	19.53			
Nitrogen	77.36			
Carbon Dioxide	2.13			
Methane	0.0017			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.010

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. %.

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Lab #:	803458	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP18-0910-1323				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:23	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.00			
Oxygen	14.57			
Nitrogen	79.58			
Carbon Dioxide	4.85			
Methane	0.0010			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.018

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. %.

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Lab #:	803459	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP19-0910-1327				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:27	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.970			
Oxygen	16.29			
Nitrogen	76.66			
Carbon Dioxide	6.08			
Methane	0.0004			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.027

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. %.

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Lab #:	803460	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP20-0910-1331				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:31	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.988			
Oxygen	10.92			
Nitrogen	78.14			
Carbon Dioxide	9.95			
Methane	0.0033			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.041

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. %.

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Lab #:	803461	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP21-0910-1336				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:36	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.973			
Oxygen	17.23			
Nitrogen	76.41			
Carbon Dioxide	5.39			
Methane	0.0008			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.025

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. %.

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Lab #:	803462	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP22-0910-1340				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:40	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.976			
Oxygen	21.71			
Nitrogen	76.68			
Carbon Dioxide	0.63			
Methane	0.0005			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.005

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. %.

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Lab #:	803463	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP23-0910-1344				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:44	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.984			
Oxygen	12.71			
Nitrogen	77.91			
Carbon Dioxide	8.40			
Methane	0.0002			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.035

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. %.

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Lab #:	803464	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP24-0910-1350				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:50	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.975			
Oxygen	16.58			
Nitrogen	77.02			
Carbon Dioxide	5.42			
Methane	0.0003			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.024

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. %.

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Lab #:	803465	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP25-0910-1355				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 13:55	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.973			
Oxygen	18.26			
Nitrogen	76.57			
Carbon Dioxide	4.20			
Methane	0.0004			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.020

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. %.

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Lab #:	803466	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVP26-0910-1400				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 14:00	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.977			
Oxygen	7.03			
Nitrogen	77.50			
Carbon Dioxide	14.49			
Methane	0.0039			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.061

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. %.

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Lab #:	803467	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVW01-0910-1423				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 14:23	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.973			
Oxygen	0.11			
Nitrogen	80.87			
Carbon Dioxide	17.46	-29.69		
Methane	0.545	-25.0	-223	
Ethane	0.0398	-20.1		
Ethylene	nd			
Propane	0.0011			
Propylene	nd			
Iso-butane	0.0009			
N-butane	0.0003			
Iso-pentane	0.0004			
N-pentane	0.0002			
Hexanes +	0.0010			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 6
Specific gravity, calculated: 1.066

Remarks: Insufficient C3-C5 concentrations for isotopic analysis.
Methane and ethane 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. %.

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Lab #:	803468	Job #:	48784	IS-107457	Co. Job#:
Sample Name:	SVW02-0910-1414				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Erie, CO				
Formation:					
Sampling Point:					
Date Sampled:	9/10/2021 14:14	Date Received:	9/15/2021	Date Reported:	9/29/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.994			
Oxygen	17.10			
Nitrogen	78.40			
Carbon Dioxide	3.50			
Methane	0.0037			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.014

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. %.

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Lab #:	809515	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE02-1112-1036				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 10:36	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.988			
Oxygen	3.17			
Nitrogen	79.41			
Carbon Dioxide	16.43			
Methane	0.0041			
Ethane	0.0002			
Ethylene	nd			
Propane	0.0002			
Propylene	nd			
Iso-butane	nd			
N-butane	0.0002			
Iso-pentane	nd			
N-pentane	0.0002			
Hexanes +	0.0007			

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

Specific gravity, calculated: 1.066

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809516	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE05-1112-1047				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 10:47	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.968			
Oxygen	15.68			
Nitrogen	76.74			
Carbon Dioxide	6.59			
Methane	0.0150			
Ethane	0.0011			
Ethylene	nd			
Propane	0.0010			
Propylene	nd			
Iso-butane	0.0003			
N-butane	0.0008			
Iso-pentane	0.0005			
N-pentane	0.0007			
Hexanes +	0.0045			

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

Specific gravity, calculated: 1.029

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809517	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE12-1112-1104				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 11:04	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.01			
Oxygen	12.60			
Nitrogen	80.34			
Carbon Dioxide	5.24			
Methane	0.801			
Ethane	0.0091			
Ethylene	nd			
Propane	0.0001			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	0.0002			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 8

Specific gravity, calculated: 1.014

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809518	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE03-1112-1120				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 11:20	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.02			
Oxygen	8.16			
Nitrogen	80.79			
Carbon Dioxide	9.89			
Methane	0.140			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1

Specific gravity, calculated: 1.037

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809519	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE04-1112-1132				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 11:32	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.03			
Oxygen	2.88			
Nitrogen	82.44			
Carbon Dioxide	13.64			
Methane	0.0081			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.051

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809520	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE06-1112-1140				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 11:40	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.02			
Oxygen	8.64			
Nitrogen	81.00			
Carbon Dioxide	9.33			
Methane	0.0063			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.035

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809521	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE07-1112-1154				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 11:54	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.06			
Oxygen	0.55			
Nitrogen	84.83			
Carbon Dioxide	13.55			
Methane	0.0109			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.047

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809522	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE11-1112-1205				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 12:05	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	1.10			
Oxygen	0.16			
Nitrogen	86.95			
Carbon Dioxide	11.78			
Methane	0.0092			
Ethane	0.0003			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.037

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809523	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE10-1112-1220				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 12:20	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.979			
Oxygen	16.67			
Nitrogen	77.44			
Carbon Dioxide	4.91			
Methane	0.0004			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.021

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809524	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE08-1112-1254				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 12:54	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.992			
Oxygen	11.52			
Nitrogen	78.87			
Carbon Dioxide	8.62			
Methane	0.0004			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.035

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809525	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE09-1112-1306				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 13:06	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.974			
Oxygen	16.09			
Nitrogen	77.19			
Carbon Dioxide	5.75			
Methane	0.0007			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.025

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809526	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE15-1112-1318				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 13:18	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.965			
Oxygen	19.35			
Nitrogen	76.63			
Carbon Dioxide	3.05			
Methane	0.0004			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.015

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809527	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE14-1112-1332				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 13:32	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.964			
Oxygen	18.81			
Nitrogen	76.38			
Carbon Dioxide	3.85			
Methane	0.0004			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.018

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.

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Lab #:	809528	Job #:	49384	IS-69033	Co. Job#:
Sample Name:	SVE13-1112-1344				Co. Lab#:
Company:	Anadarko				
API/Well:					
Container:	IsoTube®				
Field/Site Name:	Williams Pad				
Location:	Weld County, CO				
Formation:					
Sampling Point:					
Date Sampled:	11/12/2021 13:44	Date Received:	11/17/2021	Date Reported:	12/01/2021

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.959			
Oxygen	19.01			
Nitrogen	76.43			
Carbon Dioxide	3.60			
Methane	0.0006			
Ethane	nd			
Ethylene	nd			
Propane	nd			
Propylene	nd			
Iso-butane	nd			
N-butane	nd			
Iso-pentane	nd			
N-pentane	nd			
Hexanes +	nd			

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

Specific gravity, calculated: 1.017

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon 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. %.