

Catamount Energy Partners

Standard Planning Report

IGS 145B

Sec 20 T33N R8W

La Plata County CO

June 22, 2017



Catamount Energy Partners

DIRECTIONAL DRILLING PLAN

Well: IGS 145B
 STR: Sec 20 T33N R8W
 Location (Ft.): 1167FNL, 1081FEL
 Field: Ignacio Blanco Field
 Co, State: La Plata County, Colorado

SECTION DETAILS

Section	MD	Incl	Azi	TVD	+N/-S	+E/-W	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	440.00	0.00	0.00	440.00	0.00	0.00	0.00
3	1687.58	37.43	285.01	1600.73	101.85	-379.77	393.19
4	3899.16	37.43	285.01	3357.00	450.00	-1678.00	1737.29

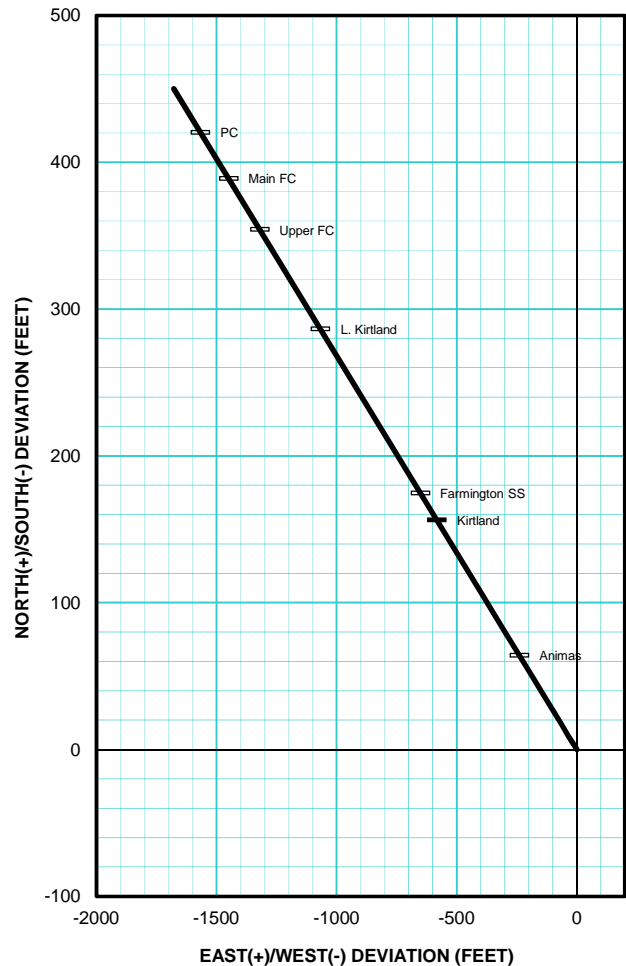
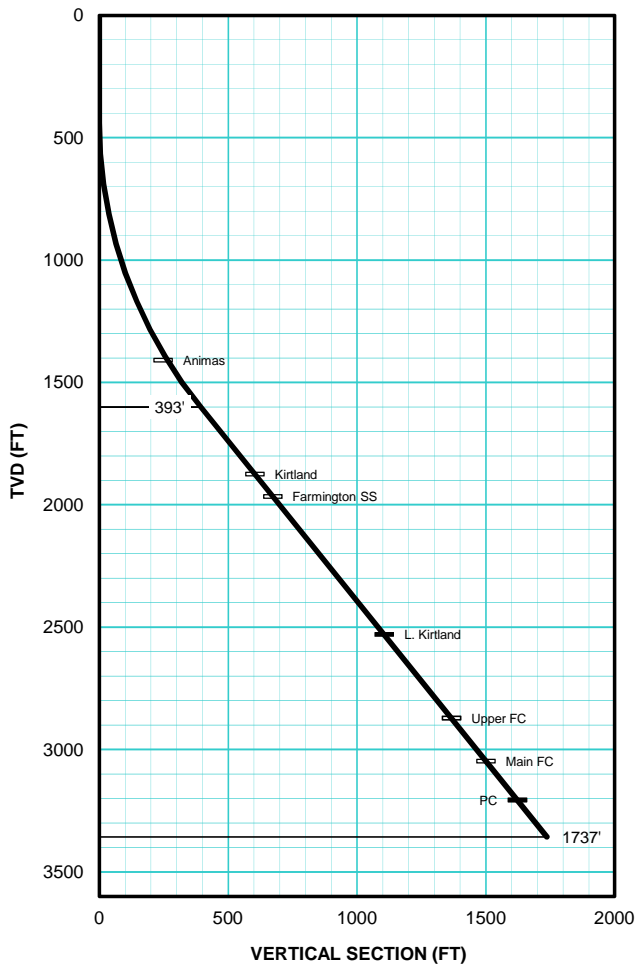
PBHL

ESTIMATED FORMATION TOP DETAILS

Formation	TVD Path	MD Path	+N/-S	+E/-W
Animas	1410.00	1447.41	64.04	-238.79
Kirtland Shale	1875.00	2032.96	156.22	-582.51
Farmington Sandstone	1967.00	2148.81	174.45	-650.52
Lower Kirtland Shale	2531.00	2859.02	286.26	-1067.43
Upper Fruitland Coal	2873.00	3289.69	354.05	-1320.23
Main Fruitland Coal	3048.00	3510.05	388.75	-1449.59
Pictured Cliffs	3207.00	3710.27	420.26	-1567.12

GL: 6752'

KB: 6763'



IGS 145B, Plan 1

Operator Catamount Energy Partners	Units feet, °/100ft	09:26 Wednesday, July 12, 2017 Page 1 of 3
Field Ignacio Blanco	County La Plata	Vertical Section Azimuth 0
Well Name IGS 145B	State CO	Survey Calculation Method Minimum Curvature
Plan 1	Country	Database Access

Location	Map Zone UTM	Lat Long Ref NAD83
Site	Surface X	Surface Long 37.09351
Slot Name	Surface Y	Surface Lat -107.73555
Well Number	Surface Z	Global Z Ref Mean Sea Level
Project	Ground Level 6752	Local North Ref Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
*** RKB (at MD = 0.00)										
0.00	0.00	0.0	0.00	0.00	0.00		0.00	0.00	0.00	
50.00	0.00	0.0	50.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.0	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.00	0.00	0.0	150.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.0	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
250.00	0.00	0.0	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.0	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
350.00	0.00	0.0	350.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.0	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
440.00	0.00	0.0	440.00	0.00	0.00	0.00	0.00	0.00	0.00	
450.00	0.30	285.0	450.00	0.01	-0.03	3.00	0.01	0.00	0.00	
500.00	1.80	285.0	499.99	0.24	-0.91	3.00	0.24	0.00	0.00	
550.00	3.30	285.0	549.94	0.82	-3.06	3.00	0.82	0.00	0.00	
600.00	4.80	285.0	599.81	1.74	-6.47	3.00	1.74	0.00	0.00	
650.00	6.30	285.0	649.58	2.99	-11.14	3.00	2.99	0.00	0.00	
700.00	7.80	285.0	699.20	4.58	-17.07	3.00	4.58	0.00	0.00	
750.00	9.30	285.0	748.64	6.50	-24.25	3.00	6.50	0.00	0.00	
800.00	10.80	285.0	797.87	8.76	-32.67	3.00	8.76	0.00	0.00	
850.00	12.30	285.0	846.86	11.36	-42.34	3.00	11.36	0.00	0.00	
900.00	13.80	285.0	895.57	14.28	-53.25	3.00	14.28	0.00	0.00	
950.00	15.30	285.0	943.96	17.53	-65.38	3.00	17.53	0.00	0.00	
1000.00	16.80	285.0	992.01	21.11	-78.73	3.00	21.11	0.00	0.00	
1050.00	18.30	285.0	1039.68	25.02	-93.29	3.00	25.02	0.00	0.00	
1100.00	19.80	285.0	1086.94	29.25	-109.06	3.00	29.25	0.00	0.00	
1150.00	21.30	285.0	1133.76	33.79	-126.01	3.00	33.79	0.00	0.00	
1200.00	22.80	285.0	1180.10	38.65	-144.14	3.00	38.65	0.00	0.00	
1250.00	24.30	285.0	1225.93	43.83	-163.43	3.00	43.83	0.00	0.00	
1300.00	25.80	285.0	1271.23	49.31	-183.88	3.00	49.31	0.00	0.00	
1350.00	27.30	285.0	1315.96	55.10	-205.47	3.00	55.10	0.00	0.00	
1400.00	28.80	285.0	1360.08	61.19	-228.17	3.00	61.19	0.00	0.00	
1450.00	30.30	285.0	1403.58	67.58	-251.99	3.00	67.58	0.00	0.00	
1500.00	31.80	285.0	1446.41	74.26	-276.90	3.00	74.26	0.00	0.00	
1550.00	33.30	285.0	1488.56	81.23	-302.88	3.00	81.23	0.00	0.00	
1600.00	34.80	285.0	1529.98	88.48	-329.92	3.00	88.48	0.00	0.00	
1650.00	36.30	285.0	1570.66	96.01	-358.00	3.00	96.01	0.00	0.00	
1687.58	37.43	285.0	1600.73	101.85	-379.77	3.00	101.85	0.00	0.00	
1700.00	37.43	285.0	1610.59	103.80	-387.07	0.00	103.80	0.00	0.00	

IGS 145B, Plan 1

Operator	Catamount Energy Partners	Units	feet, °/100ft	09:26 Wednesday, July 12, 2017	Page 2 of 3
Field	Ignacio Blanco	County	La Plata	Vertical Section Azimuth	0
Well Name	IGS 145B	State	CO	Survey Calculation Method	Minimum Curvature
Plan	1	Country		Database	Access

Location		Map Zone	UTM	Lat Long Ref	NAD83
Site		Surface X		Surface Long	37.09351
Slot Name		Surface Y		Surface Lat	-107.73555
Well Number		Surface Z		Global Z Ref	Mean Sea Level
Project		Ground Level	6752	Local North Ref	Grid
	UWI				
	API				
	MD/TVD Ref	KB			

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
1750.00	37.43	285.0	1650.30	111.67	-416.42	0.00	111.67	0.00	0.00	
1800.00	37.43	285.0	1690.00	119.54	-445.77	0.00	119.54	0.00	0.00	
1850.00	37.43	285.0	1729.71	127.42	-475.12	0.00	127.42	0.00	0.00	
1900.00	37.43	285.0	1769.42	135.29	-504.47	0.00	135.29	0.00	0.00	
1950.00	37.43	285.0	1809.12	143.16	-533.82	0.00	143.16	0.00	0.00	
2000.00	37.43	285.0	1848.83	151.03	-563.17	0.00	151.03	0.00	0.00	
2050.00	37.43	285.0	1888.53	158.90	-592.52	0.00	158.90	0.00	0.00	
2100.00	37.43	285.0	1928.24	166.77	-621.87	0.00	166.77	0.00	0.00	
2150.00	37.43	285.0	1967.95	174.64	-651.22	0.00	174.64	0.00	0.00	
2200.00	37.43	285.0	2007.65	182.51	-680.57	0.00	182.51	0.00	0.00	
2250.00	37.43	285.0	2047.36	190.38	-709.92	0.00	190.38	0.00	0.00	
2300.00	37.43	285.0	2087.07	198.26	-739.27	0.00	198.26	0.00	0.00	
2350.00	37.43	285.0	2126.77	206.13	-768.62	0.00	206.13	0.00	0.00	
2400.00	37.43	285.0	2166.48	214.00	-797.97	0.00	214.00	0.00	0.00	
2450.00	37.43	285.0	2206.18	221.87	-827.32	0.00	221.87	0.00	0.00	
2500.00	37.43	285.0	2245.89	229.74	-856.68	0.00	229.74	0.00	0.00	
2550.00	37.43	285.0	2285.60	237.61	-886.03	0.00	237.61	0.00	0.00	
2600.00	37.43	285.0	2325.30	245.48	-915.38	0.00	245.48	0.00	0.00	
2650.00	37.43	285.0	2365.01	253.35	-944.73	0.00	253.35	0.00	0.00	
2700.00	37.43	285.0	2404.72	261.22	-974.08	0.00	261.22	0.00	0.00	
2750.00	37.43	285.0	2444.42	269.10	-1003.43	0.00	269.10	0.00	0.00	
2800.00	37.43	285.0	2484.13	276.97	-1032.78	0.00	276.97	0.00	0.00	
2850.00	37.43	285.0	2523.83	284.84	-1062.13	0.00	284.84	0.00	0.00	
2900.00	37.43	285.0	2563.54	292.71	-1091.48	0.00	292.71	0.00	0.00	
2950.00	37.43	285.0	2603.25	300.58	-1120.83	0.00	300.58	0.00	0.00	
3000.00	37.43	285.0	2642.95	308.45	-1150.18	0.00	308.45	0.00	0.00	
3050.00	37.43	285.0	2682.66	316.32	-1179.53	0.00	316.32	0.00	0.00	
3100.00	37.43	285.0	2722.37	324.19	-1208.88	0.00	324.19	0.00	0.00	
3150.00	37.43	285.0	2762.07	332.06	-1238.23	0.00	332.06	0.00	0.00	
3200.00	37.43	285.0	2801.78	339.94	-1267.58	0.00	339.94	0.00	0.00	
3250.00	37.43	285.0	2841.48	347.81	-1296.93	0.00	347.81	0.00	0.00	
3300.00	37.43	285.0	2881.19	355.68	-1326.29	0.00	355.68	0.00	0.00	
3350.00	37.43	285.0	2920.90	363.55	-1355.64	0.00	363.55	0.00	0.00	
3400.00	37.43	285.0	2960.60	371.42	-1384.99	0.00	371.42	0.00	0.00	
3450.00	37.43	285.0	3000.31	379.29	-1414.34	0.00	379.29	0.00	0.00	
3500.00	37.43	285.0	3040.02	387.16	-1443.69	0.00	387.16	0.00	0.00	
3550.00	37.43	285.0	3079.72	395.03	-1473.04	0.00	395.03	0.00	0.00	

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ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
3600.00	37.43	285.0	3119.43	402.91	-1502.39	0.00	402.91	0.00	0.00	
3650.00	37.43	285.0	3159.13	410.78	-1531.74	0.00	410.78	0.00	0.00	
3700.00	37.43	285.0	3198.84	418.65	-1561.09	0.00	418.65	0.00	0.00	
3750.00	37.43	285.0	3238.55	426.52	-1590.44	0.00	426.52	0.00	0.00	
3800.00	37.43	285.0	3278.25	434.39	-1619.79	0.00	434.39	0.00	0.00	
3850.00	37.43	285.0	3317.96	442.26	-1649.14	0.00	442.26	0.00	0.00	
3899.16	37.43	285.0	3357.00	450.00	-1678.00	0.00	450.00	0.00	0.00	