

Catamount Energy Partners

Standard Planning Report

IGS 146

Sec 21 T33N R8W

La Plata County CO

July 25, 2017



Catamount Energy Partners

DIRECTIONAL DRILLING PLAN

Well: IGS 146
 STR: Sec 21 T33N R8W
 Location (Ft.): 2098FSL, 1709FEL
 Field: Ignacio Blanco Field
 Co, State: La Plata County, Colorado

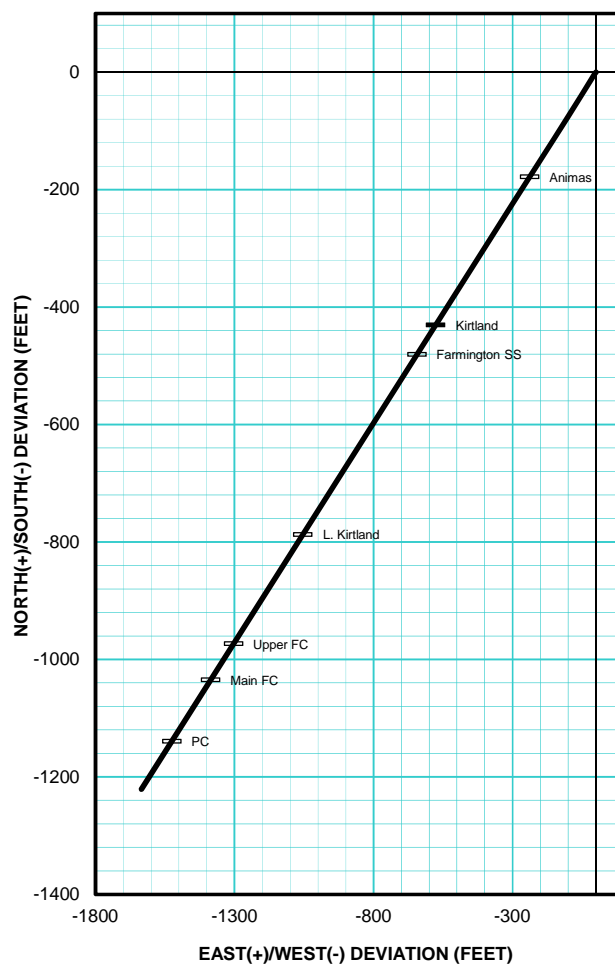
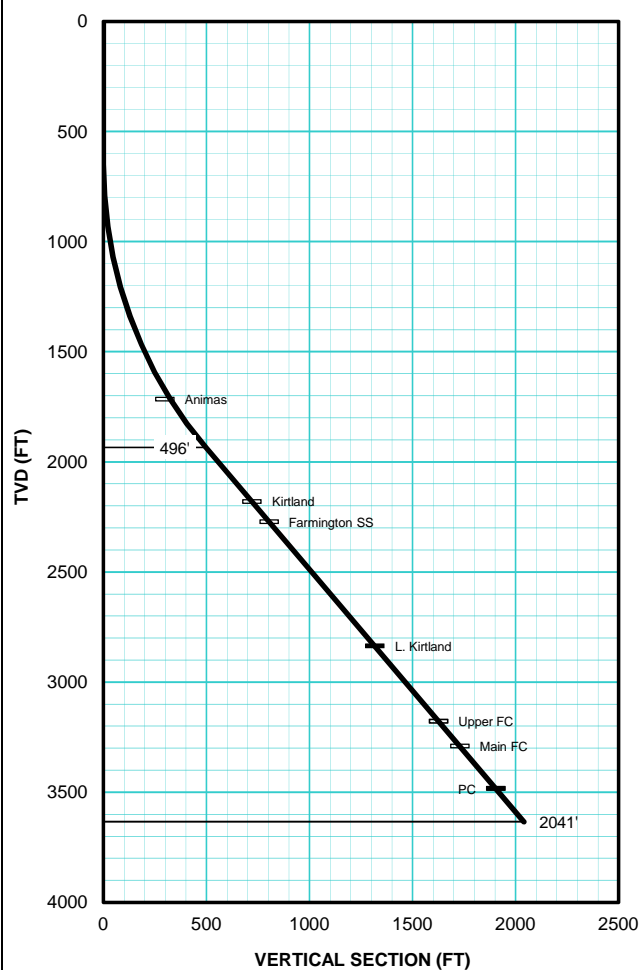
SECTION DETAILS

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	650.00	0.00	0.00	650.00	0.00	0.00	0.00
3	2058.58	42.26	233.25	1934.31	-296.97	-397.66	496.31
4	4355.05	42.26	233.25	3634.00	-1221.00	-1635.00	2040.60 PBHL

ESTIMATED FORMATION TOP DETAILS

Formation	TVD Path	MD Path	+N/-S	+E/-W
Animas	1716.00	1763.62	-178.29	-238.74
Kirtland Shale	2181.00	2391.89	-431.08	-577.25
Farmington Sandstone	2273.00	2516.19	-481.10	-644.22
Lower Kirtland Shale	2837.00	3278.22	-787.71	-1054.80
Upper Fruitland Coal	3179.00	3740.30	-973.64	-1303.77
Main Fruitland Coal	3292.00	3892.97	-1035.07	-1386.03
Pictured Cliffs	3484.00	4152.39	-1139.45	-1525.80

GL: 6878'
 KB: 6889'



IGS 146, Plan 1

Operator	Catamount Energy Partners	Units	feet, °/100ft	10:03 Tuesday, July 25, 2017	Page 1 of 3
Field	Ignacio Blanco	County	La Plata	Vertical Section Azimuth	0
Well Name	IGS 146	State	CO	Survey Calculation Method	Minimum Curvature
Plan	1	Country		Database	Access

Location	NWSE SEC 21 T33N R8W	Map Zone	UTM	Lat Long Ref	NAD83
Site		Surface X		Surface Long	
Slot Name		Surface Y		Surface Lat	
Well Number	UWI	Surface Z		Global Z Ref	Mean Sea Level
Project	API 05067099150000	Ground Level	6878	Local North Ref	Grid
	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
*** 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	
450.00	0.00	0.0	450.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.0	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
550.00	0.00	0.0	550.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.0	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
*** KOP (at MD = 650.00)										
650.00	0.00	0.0	650.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	1.50	233.2	699.99	-0.39	-0.52	3.00	-0.39	0.00	0.00	
750.00	3.00	233.2	749.95	-1.57	-2.10	3.00	-1.57	0.00	0.00	
800.00	4.50	233.2	799.85	-3.52	-4.72	3.00	-3.52	0.00	0.00	
850.00	6.00	233.2	849.63	-6.26	-8.38	3.00	-6.26	0.00	0.00	
900.00	7.50	233.2	899.29	-9.78	-13.09	3.00	-9.78	0.00	0.00	
950.00	9.00	233.2	948.77	-14.07	-18.84	3.00	-14.07	0.00	0.00	
1000.00	10.50	233.2	998.04	-19.14	-25.62	3.00	-19.14	0.00	0.00	
1050.00	12.00	233.2	1047.08	-24.97	-33.44	3.00	-24.97	0.00	0.00	
1100.00	13.50	233.2	1095.85	-31.57	-42.28	3.00	-31.57	0.00	0.00	
1150.00	15.00	233.2	1144.31	-38.94	-52.14	3.00	-38.94	0.00	0.00	
1200.00	16.50	233.2	1192.43	-47.06	-63.02	3.00	-47.06	0.00	0.00	
1250.00	18.00	233.2	1240.18	-55.93	-74.90	3.00	-55.93	0.00	0.00	
1300.00	19.50	233.2	1287.52	-65.55	-87.77	3.00	-65.55	0.00	0.00	
1350.00	21.00	233.2	1334.43	-75.90	-101.64	3.00	-75.90	0.00	0.00	
1400.00	22.50	233.2	1380.87	-86.99	-116.48	3.00	-86.99	0.00	0.00	
1450.00	24.00	233.2	1426.81	-98.80	-132.30	3.00	-98.80	0.00	0.00	
1500.00	25.50	233.2	1472.22	-111.32	-149.07	3.00	-111.32	0.00	0.00	
1550.00	27.00	233.2	1517.06	-124.55	-166.79	3.00	-124.55	0.00	0.00	
1600.00	28.50	233.2	1561.31	-138.48	-185.44	3.00	-138.48	0.00	0.00	
1650.00	30.00	233.2	1604.93	-153.10	-205.01	3.00	-153.10	0.00	0.00	
1700.00	31.50	233.2	1647.90	-168.40	-225.50	3.00	-168.40	0.00	0.00	
1750.00	33.00	233.2	1690.18	-184.36	-246.87	3.00	-184.36	0.00	0.00	

IGS 146, Plan 1

Operator	Catamount Energy Partners	Units	feet, °/100ft	10:03 Tuesday, July 25, 2017	Page 2 of 3
Field	Ignacio Blanco	County	La Plata	Vertical Section Azimuth	0
Well Name	IGS 146	State	CO	Survey Calculation Method	Minimum Curvature
Plan	1	Country		Database	Access

Location	NWSE SEC 21 T33N R8W	Map Zone	UTM	Lat Long Ref	NAD83
Site		Surface X		Surface Long	
Slot Name		Surface Y		Surface Lat	
Well Number	UWI	Surface Z		Global Z Ref	Mean Sea Level
Project	API 05067099150000	Ground Level	6878	Local North Ref	Grid
	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
1800.00	34.50	233.2	1731.76	-200.98	-269.13	3.00	-200.98	0.00	0.00	
1850.00	36.00	233.2	1772.59	-218.25	-292.25	3.00	-218.25	0.00	0.00	
1900.00	37.50	233.2	1812.65	-236.15	-316.22	3.00	-236.15	0.00	0.00	
1950.00	39.00	233.2	1851.91	-254.67	-341.02	3.00	-254.67	0.00	0.00	
2000.00	40.50	233.2	1890.35	-273.80	-366.64	3.00	-273.80	0.00	0.00	
2050.00	42.00	233.2	1927.95	-293.53	-393.05	3.00	-293.53	0.00	0.00	
2058.58	42.26	233.2	1934.31	-296.97	-397.66	3.00	-296.97	0.00	0.00	
2100.00	42.26	233.2	1964.96	-313.64	-419.98	0.00	-313.64	0.00	0.00	
2150.00	42.26	233.2	2001.97	-333.75	-446.92	0.00	-333.75	0.00	0.00	
2200.00	42.26	233.2	2038.98	-353.87	-473.86	0.00	-353.87	0.00	0.00	
2250.00	42.26	233.2	2075.98	-373.99	-500.80	0.00	-373.99	0.00	0.00	
2300.00	42.26	233.2	2112.99	-394.11	-527.74	0.00	-394.11	0.00	0.00	
2350.00	42.26	233.2	2150.00	-414.23	-554.68	0.00	-414.23	0.00	0.00	
2400.00	42.26	233.2	2187.00	-434.35	-581.62	0.00	-434.35	0.00	0.00	
2450.00	42.26	233.2	2224.01	-454.47	-608.56	0.00	-454.47	0.00	0.00	
2500.00	42.26	233.2	2261.02	-474.58	-635.50	0.00	-474.58	0.00	0.00	
2550.00	42.26	233.2	2298.02	-494.70	-662.44	0.00	-494.70	0.00	0.00	
2600.00	42.26	233.2	2335.03	-514.82	-689.38	0.00	-514.82	0.00	0.00	
2650.00	42.26	233.2	2372.04	-534.94	-716.32	0.00	-534.94	0.00	0.00	
2700.00	42.26	233.2	2409.04	-555.06	-743.26	0.00	-555.06	0.00	0.00	
2750.00	42.26	233.2	2446.05	-575.18	-770.20	0.00	-575.18	0.00	0.00	
2800.00	42.26	233.2	2483.06	-595.29	-797.14	0.00	-595.29	0.00	0.00	
2850.00	42.26	233.2	2520.06	-615.41	-824.08	0.00	-615.41	0.00	0.00	
2900.00	42.26	233.2	2557.07	-635.53	-851.02	0.00	-635.53	0.00	0.00	
2950.00	42.26	233.2	2594.08	-655.65	-877.96	0.00	-655.65	0.00	0.00	
3000.00	42.26	233.2	2631.08	-675.77	-904.90	0.00	-675.77	0.00	0.00	
3050.00	42.26	233.2	2668.09	-695.89	-931.84	0.00	-695.89	0.00	0.00	
3100.00	42.26	233.2	2705.10	-716.01	-958.78	0.00	-716.01	0.00	0.00	
3150.00	42.26	233.2	2742.10	-736.12	-985.72	0.00	-736.12	0.00	0.00	
3200.00	42.26	233.2	2779.11	-756.24	-1012.66	0.00	-756.24	0.00	0.00	
3250.00	42.26	233.2	2816.12	-776.36	-1039.60	0.00	-776.36	0.00	0.00	
3300.00	42.26	233.2	2853.12	-796.48	-1066.54	0.00	-796.48	0.00	0.00	
3350.00	42.26	233.2	2890.13	-816.60	-1093.48	0.00	-816.60	0.00	0.00	
3400.00	42.26	233.2	2927.14	-836.72	-1120.42	0.00	-836.72	0.00	0.00	
3450.00	42.26	233.2	2964.14	-856.83	-1147.36	0.00	-856.83	0.00	0.00	
3500.00	42.26	233.2	3001.15	-876.95	-1174.30	0.00	-876.95	0.00	0.00	
3550.00	42.26	233.2	3038.16	-897.07	-1201.24	0.00	-897.07	0.00	0.00	

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Project		Ground Level	6878	Local North Ref	Grid
	UWI				
	API				
	05067099150000				
	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
3600.00	42.26	233.2	3075.16	-917.19	-1228.18	0.00	-917.19	0.00	0.00	
3650.00	42.26	233.2	3112.17	-937.31	-1255.12	0.00	-937.31	0.00	0.00	
3700.00	42.26	233.2	3149.17	-957.43	-1282.06	0.00	-957.43	0.00	0.00	
3750.00	42.26	233.2	3186.18	-977.55	-1309.00	0.00	-977.55	0.00	0.00	
3800.00	42.26	233.2	3223.19	-997.66	-1335.94	0.00	-997.66	0.00	0.00	
3850.00	42.26	233.2	3260.19	-1017.78	-1362.88	0.00	-1017.78	0.00	0.00	
3900.00	42.26	233.2	3297.20	-1037.90	-1389.82	0.00	-1037.90	0.00	0.00	
3950.00	42.26	233.2	3334.21	-1058.02	-1416.76	0.00	-1058.02	0.00	0.00	
4000.00	42.26	233.2	3371.21	-1078.14	-1443.70	0.00	-1078.14	0.00	0.00	
4050.00	42.26	233.2	3408.22	-1098.26	-1470.64	0.00	-1098.26	0.00	0.00	
4100.00	42.26	233.2	3445.23	-1118.37	-1497.58	0.00	-1118.37	0.00	0.00	
4150.00	42.26	233.2	3482.23	-1138.49	-1524.52	0.00	-1138.49	0.00	0.00	
4200.00	42.26	233.2	3519.24	-1158.61	-1551.46	0.00	-1158.61	0.00	0.00	
4250.00	42.26	233.2	3556.25	-1178.73	-1578.40	0.00	-1178.73	0.00	0.00	
4300.00	42.26	233.2	3593.25	-1198.85	-1605.34	0.00	-1198.85	0.00	0.00	
4350.00	42.26	233.2	3630.26	-1218.97	-1632.28	0.00	-1218.97	0.00	0.00	
4355.05	42.26	233.2	3634.00	-1221.00	-1635.00	0.00	-1221.00	0.00	0.00	