

# **Catamount Energy Partners**

**San Juan Basin  
Archuleta County CO  
Lamke 33-5-29 #1**

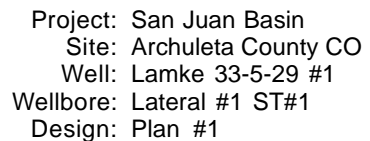
**Lateral #1 ST#1**

**Plan: Plan #1**

## **Standard Planning Report**

**14 December, 2015**





Ground Level: 6118.99

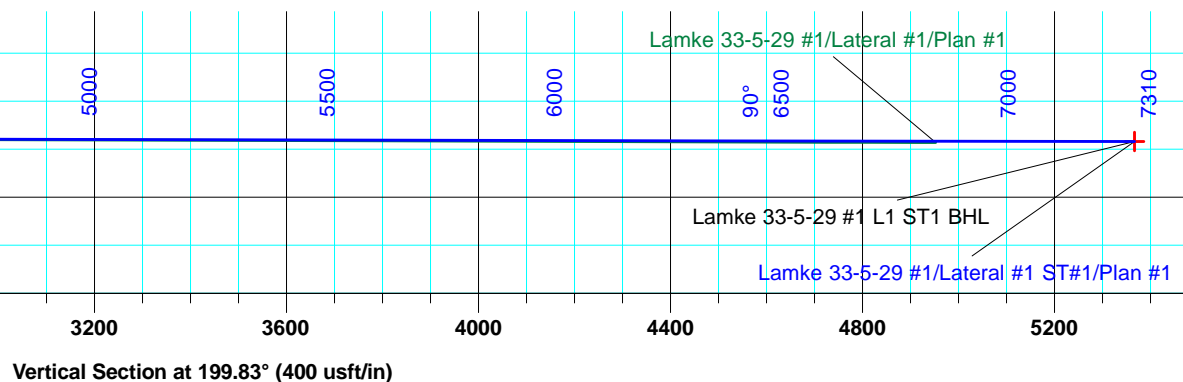
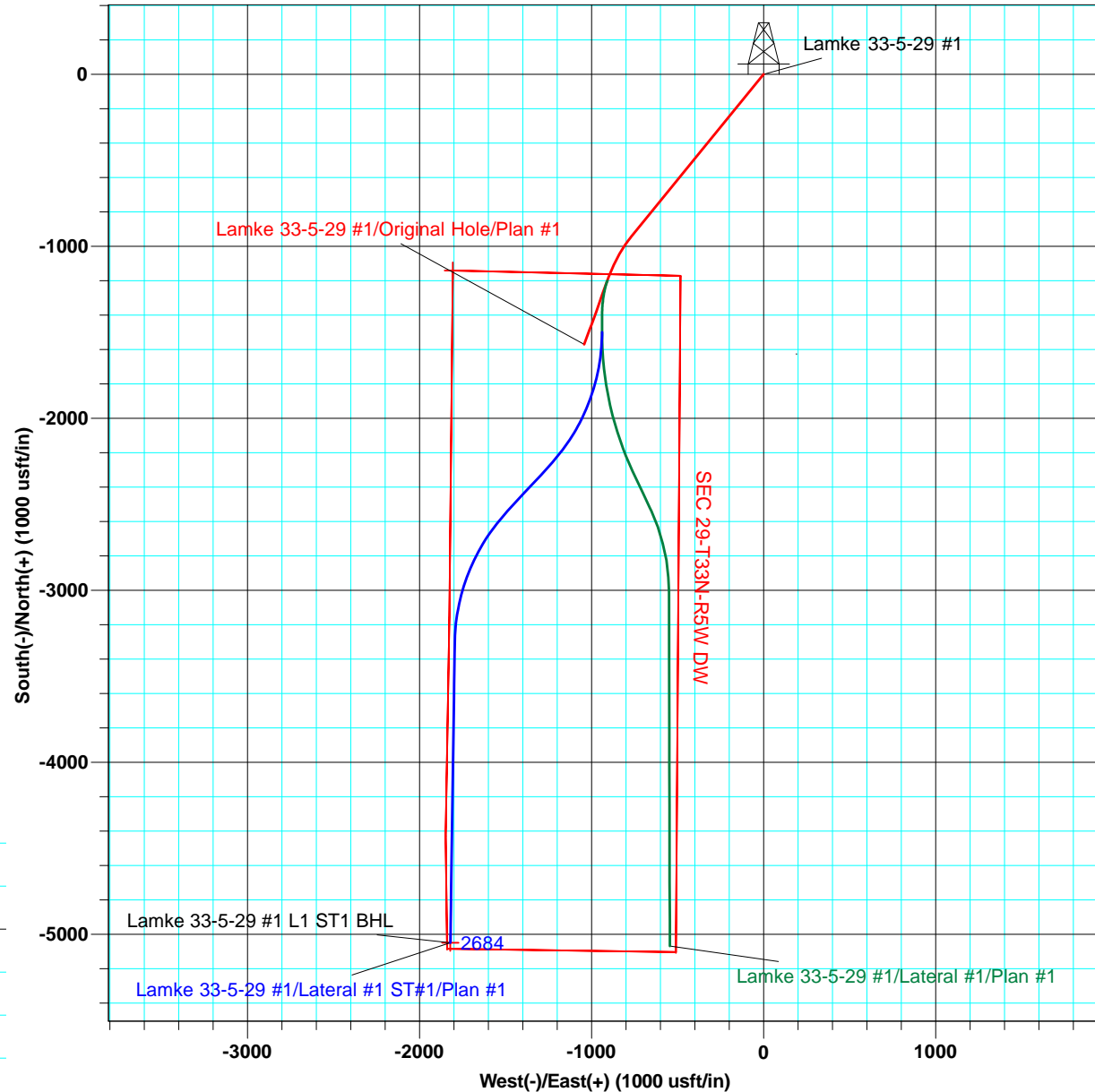
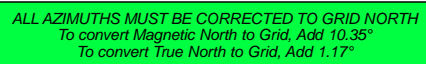
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1152541.71	2443521.11	37° 4' 11.971 N	107° 24' 26.481 W

## Site Centre Northing: 1152541.71

Positional Uncertainty: 0.00  
Local North: Grid

## Geodetic System: US State Plane 1983

Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Southern Zone  
 System Datum: Mean Sea Level



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Lamke 33-5-29 #1
<b>Company:</b>	Catamount Energy Partners	<b>TVD Reference:</b>	6119' GL + 11' KB @ 6129.99usft
<b>Project:</b>	San Juan Basin	<b>MD Reference:</b>	6119' GL + 11' KB @ 6129.99usft
<b>Site:</b>	Archuleta County CO	<b>North Reference:</b>	Grid
<b>Well:</b>	Lamke 33-5-29 #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral #1 ST#1		
<b>Design:</b>	Plan #1		

<b>Project</b>	San Juan Basin, Southern Colorado, Fruitland Coal HZ		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Southern Zone		Using geodetic scale factor

<b>Site</b>	Archuleta County CO		
<b>Site Position:</b>		<b>Northing:</b>	1,152,541.71 usft
<b>From:</b>	Map	<b>Easting:</b>	2,443,521.11 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	6-1/8 "
		<b>Latitude:</b>	37° 4' 11.971 N
		<b>Longitude:</b>	107° 24' 26.481 W
		<b>Grid Convergence:</b>	-1.17 °

<b>Well</b>	Lamke 33-5-29 #1, Multi HZ FC Well		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b> 1,152,541.71 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b> 2,443,521.11 usft
<b>Position Uncertainty</b>	1.00 usft	<b>Wellhead Elevation:</b>	6,129.99 usft
		<b>Latitude:</b>	37° 4' 11.971 N
		<b>Longitude:</b>	107° 24' 26.481 W
		<b>Ground Level:</b>	6,118.99 usft

<b>Wellbore</b>	Lateral #1 ST#1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2015	12/14/2015	9.18	63.70	50,349

<b>Design</b>	Plan #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	3,508.99	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	199.83	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
3,508.99	89.83	180.13	2,675.26	-1,499.01	-939.16	0.00	0.00	0.00	0.00	
4,358.99	89.83	222.63	2,677.78	-2,272.48	-1,242.02	5.00	0.00	5.00	90.00	
4,728.99	89.83	222.63	2,678.88	-2,544.68	-1,492.62	0.00	0.00	0.00	0.00	
5,565.09	89.90	180.83	2,680.95	-3,304.25	-1,795.35	5.00	0.01	-5.00	-89.96	
7,310.01	89.90	180.83	2,683.99	-5,048.98	-1,820.57	0.00	0.00	0.00	0.00	Lamke 33-5-29 #1

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Lamke 33-5-29 #1
<b>Company:</b>	Catamount Energy Partners	<b>TVD Reference:</b>	6119' GL + 11' KB @ 6129.99usft
<b>Project:</b>	San Juan Basin	<b>MD Reference:</b>	6119' GL + 11' KB @ 6129.99usft
<b>Site:</b>	Archuleta County CO	<b>North Reference:</b>	Grid
<b>Well:</b>	Lamke 33-5-29 #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral #1 ST#1		
<b>Design:</b>	Plan #1		

## Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	360.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	360.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	360.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	360.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
440.00	0.00	360.00	440.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	1.80	219.18	499.99	-0.73	-0.60	0.89	3.00	3.00	0.00
600.00	4.80	219.18	599.81	-5.19	-4.23	6.32	3.00	3.00	0.00
700.00	7.80	219.18	699.20	-13.70	-11.16	16.67	3.00	3.00	0.00
800.00	10.80	219.18	797.87	-26.22	-21.37	31.92	3.00	3.00	0.00
900.00	13.80	219.18	895.57	-42.74	-34.83	52.02	3.00	3.00	0.00
1,000.00	16.80	219.18	992.01	-63.19	-51.49	76.91	3.00	3.00	0.00
1,100.00	19.80	219.18	1,086.94	-87.53	-71.33	106.53	3.00	3.00	0.00
1,200.00	22.80	219.18	1,180.10	-115.69	-94.27	140.80	3.00	3.00	0.00
1,300.00	25.80	219.18	1,271.23	-147.58	-120.26	179.63	3.00	3.00	0.00
1,400.00	28.80	219.18	1,360.08	-183.13	-149.23	222.90	3.00	3.00	0.00
1,500.00	31.80	219.18	1,446.41	-222.24	-181.10	270.50	3.00	3.00	0.00
1,600.00	34.80	219.18	1,529.98	-264.80	-215.78	322.29	3.00	3.00	0.00
1,700.00	37.80	219.18	1,610.57	-310.69	-253.17	378.14	3.00	3.00	0.00
1,800.00	40.80	219.18	1,687.94	-359.78	-293.18	437.90	3.00	3.00	0.00
1,900.00	43.80	219.18	1,761.90	-411.95	-335.68	501.39	3.00	3.00	0.00
2,000.00	46.80	219.18	1,832.23	-467.05	-380.58	568.45	3.00	3.00	0.00
2,108.74	50.06	219.18	1,904.37	-530.11	-431.97	645.20	3.00	3.00	0.00
2,200.00	50.06	219.18	1,962.95	-584.35	-476.17	711.22	0.00	0.00	0.00
2,300.00	50.06	219.18	2,027.15	-643.79	-524.60	783.57	0.00	0.00	0.00
2,400.00	50.06	219.18	2,091.34	-703.23	-573.04	855.91	0.00	0.00	0.00
2,500.00	50.06	219.18	2,155.54	-762.67	-621.47	928.26	0.00	0.00	0.00
2,600.00	50.06	219.18	2,219.73	-822.10	-669.91	1,000.60	0.00	0.00	0.00
2,700.00	50.06	219.18	2,283.93	-881.54	-718.34	1,072.94	0.00	0.00	0.00
2,790.76	50.06	219.18	2,342.19	-935.49	-762.30	1,138.60	0.00	0.00	0.00
2,800.00	50.02	218.70	2,348.13	-941.00	-766.75	1,145.30	4.00	-0.42	-5.19
2,900.00	49.73	213.48	2,412.60	-1,002.75	-811.77	1,218.66	4.00	-0.29	-5.22
3,000.00	49.67	208.23	2,477.30	-1,068.18	-850.86	1,293.47	4.00	-0.06	-5.24
3,100.00	49.85	203.00	2,541.92	-1,136.97	-883.84	1,369.37	4.00	0.18	-5.24
3,157.61	50.06	200.00	2,578.99	-1,178.00	-900.00	1,413.44	4.00	0.36	-5.20
3,189.99	49.74	200.00	2,599.85	-1,201.27	-908.47	1,438.21	1.00	-1.00	0.00
3,200.00	51.49	198.75	2,606.20	-1,208.57	-911.03	1,445.94	20.00	17.51	-12.51
3,225.00	55.92	195.87	2,621.00	-1,227.80	-917.01	1,466.06	20.00	17.72	-11.51
3,250.00	60.41	193.28	2,634.19	-1,248.35	-922.34	1,487.20	20.00	17.96	-10.36
3,275.00	64.94	190.91	2,645.66	-1,270.06	-926.99	1,509.20	20.00	18.15	-9.47
<b>SEC 29-T33N-R5W DW</b>									
3,300.00	69.52	188.71	2,655.34	-1,292.77	-930.91	1,531.89	20.00	18.28	-8.79
3,325.00	74.11	186.64	2,663.14	-1,316.30	-934.07	1,555.11	20.00	18.39	-8.28
3,350.00	78.73	184.67	2,669.00	-1,340.48	-936.46	1,578.66	20.00	18.46	-7.91
3,375.00	83.36	182.75	2,672.90	-1,365.11	-938.06	1,602.37	20.00	18.51	-7.66
3,400.00	87.99	180.87	2,674.78	-1,390.02	-938.85	1,626.07	20.00	18.54	-7.52
3,409.90	89.83	180.13	2,674.97	-1,399.92	-938.93	1,635.41	20.00	18.55	-7.47
3,508.99	89.83	180.13	2,675.26	-1,499.01	-939.16	1,728.71	0.00	0.00	0.00
3,600.00	89.83	184.68	2,675.53	-1,589.92	-942.99	1,815.52	5.00	0.00	5.00
3,700.00	89.83	189.68	2,675.83	-1,689.10	-955.49	1,913.06	5.00	0.00	5.00
3,800.00	89.83	194.68	2,676.13	-1,786.81	-976.58	2,012.14	5.00	0.00	5.00
3,900.00	89.83	199.68	2,676.42	-1,882.32	-1,006.12	2,112.00	5.00	0.00	5.00
4,000.00	89.83	204.68	2,676.72	-1,974.89	-1,043.86	2,211.89	5.00	0.00	5.00
4,100.00	89.83	209.68	2,677.02	-2,063.81	-1,089.53	2,311.03	5.00	0.00	5.00

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<b>Project:</b>	San Juan Basin	<b>MD Reference:</b>	6119' GL + 11' KB @ 6129.99usft
<b>Site:</b>	Archuleta County CO	<b>North Reference:</b>	Grid
<b>Well:</b>	Lamke 33-5-29 #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral #1 ST#1		
<b>Design:</b>	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,200.00	89.83	214.68	2,677.31	-2,148.42	-1,142.78	2,408.68	5.00	0.00	5.00	
4,300.00	89.83	219.68	2,677.61	-2,228.07	-1,203.20	2,504.10	5.00	0.00	5.00	
4,358.99	89.83	222.63	2,677.78	-2,272.48	-1,242.02	2,559.04	5.00	0.00	5.00	
4,400.00	89.83	222.63	2,677.91	-2,302.65	-1,269.79	2,596.85	0.00	0.00	0.00	
4,500.00	89.83	222.63	2,678.20	-2,376.22	-1,337.52	2,689.03	0.00	0.00	0.00	
4,600.00	89.83	222.63	2,678.50	-2,449.79	-1,405.25	2,781.21	0.00	0.00	0.00	
4,700.00	89.83	222.63	2,678.80	-2,523.36	-1,472.98	2,873.39	0.00	0.00	0.00	
4,728.99	89.83	222.63	2,678.88	-2,544.68	-1,492.62	2,900.12	0.00	0.00	0.00	
4,800.00	89.83	219.08	2,679.09	-2,598.38	-1,539.06	2,966.39	5.00	0.00	-5.00	
4,900.00	89.84	214.08	2,679.38	-2,678.66	-1,598.64	3,062.11	5.00	0.01	-5.00	
5,000.00	89.84	209.08	2,679.66	-2,763.82	-1,651.00	3,159.98	5.00	0.01	-5.00	
5,100.00	89.85	204.08	2,679.92	-2,853.22	-1,695.73	3,259.26	5.00	0.01	-5.00	
5,200.00	89.86	199.08	2,680.17	-2,946.18	-1,732.50	3,359.18	5.00	0.01	-5.00	
5,300.00	89.87	194.08	2,680.41	-3,041.99	-1,761.04	3,458.99	5.00	0.01	-5.00	
5,400.00	89.88	189.08	2,680.63	-3,139.92	-1,781.11	3,557.92	5.00	0.01	-5.00	
5,500.00	89.89	184.08	2,680.83	-3,239.23	-1,792.57	3,655.23	5.00	0.01	-5.00	
5,565.09	89.90	180.83	2,680.95	-3,304.25	-1,795.35	3,717.34	5.00	0.01	-5.00	
5,600.00	89.90	180.83	2,681.01	-3,339.16	-1,795.86	3,750.35	0.00	0.00	0.00	
5,700.00	89.90	180.83	2,681.18	-3,439.15	-1,797.30	3,844.90	0.00	0.00	0.00	
5,800.00	89.90	180.83	2,681.36	-3,539.14	-1,798.75	3,939.45	0.00	0.00	0.00	
5,900.00	89.90	180.83	2,681.53	-3,639.12	-1,800.19	4,034.00	0.00	0.00	0.00	
6,000.00	89.90	180.83	2,681.71	-3,739.11	-1,801.64	4,128.56	0.00	0.00	0.00	
6,100.00	89.90	180.83	2,681.88	-3,839.10	-1,803.08	4,223.11	0.00	0.00	0.00	
6,200.00	89.90	180.83	2,682.05	-3,939.09	-1,804.53	4,317.66	0.00	0.00	0.00	
6,300.00	89.90	180.83	2,682.23	-4,039.08	-1,805.97	4,412.21	0.00	0.00	0.00	
6,400.00	89.90	180.83	2,682.40	-4,139.07	-1,807.42	4,506.76	0.00	0.00	0.00	
6,500.00	89.90	180.83	2,682.58	-4,239.06	-1,808.86	4,601.31	0.00	0.00	0.00	
6,600.00	89.90	180.83	2,682.75	-4,339.05	-1,810.31	4,695.86	0.00	0.00	0.00	
6,700.00	89.90	180.83	2,682.93	-4,439.04	-1,811.75	4,790.42	0.00	0.00	0.00	
6,800.00	89.90	180.83	2,683.10	-4,539.03	-1,813.20	4,884.97	0.00	0.00	0.00	
6,900.00	89.90	180.83	2,683.28	-4,639.02	-1,814.64	4,979.52	0.00	0.00	0.00	
7,000.00	89.90	180.83	2,683.45	-4,739.01	-1,816.09	5,074.07	0.00	0.00	0.00	
7,100.00	89.90	180.83	2,683.63	-4,839.00	-1,817.53	5,168.62	0.00	0.00	0.00	
7,200.00	89.90	180.83	2,683.80	-4,938.99	-1,818.98	5,263.17	0.00	0.00	0.00	
7,300.00	89.90	180.83	2,683.98	-5,038.98	-1,820.42	5,357.72	0.00	0.00	0.00	
7,310.01	89.90	180.83	2,683.99	-5,048.98	-1,820.57	5,367.18	0.00	0.00	0.00	
Lamke 33-5-29 #1 L1 ST1 BHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
Lamke 33-5-29 #1 L1	0.00	360.00	2,683.99	-5,048.98	-1,820.57	1,147,492.56	2,441,700.48	37° 3' 21.693 N	107° 24' 47.664 W	
- plan hits target center										
- Point										