

# **Catamount Energy Partners**

**San Juan Basin  
La Plata County CO  
Elsa 34-6-19 #2**

**Lateral #1 ST1**

**Plan: Plan #2**

## **Standard Survey Report**

**24 June, 2015**





Project: San Juan Basin  
Site: La Plata County CO  
Well: Elsa 34-6-19 #2  
Wellbore: Lateral #1 ST1  
Design: Plan #2

#### WELL DETAILS Elsa 34-6-19 #2

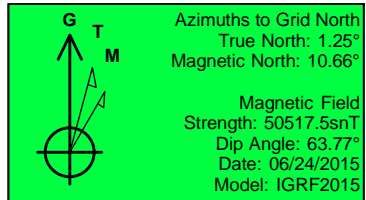
		Ground Level: 6971.0			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1190690.45	2407448.89	37° 10' 21.540 N	107° 32' 1.693 W

#### SITE DETAILS: La Plata County CO

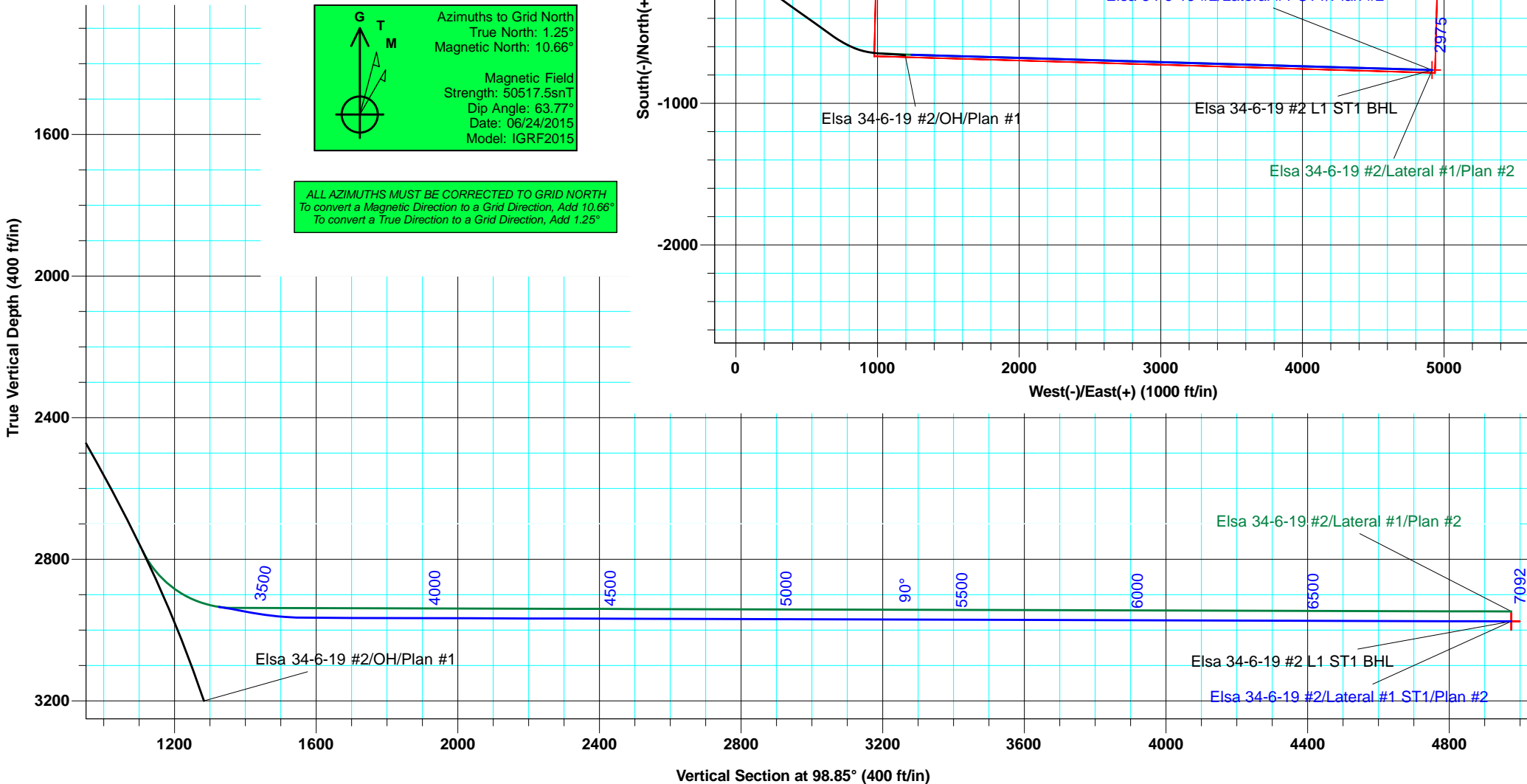
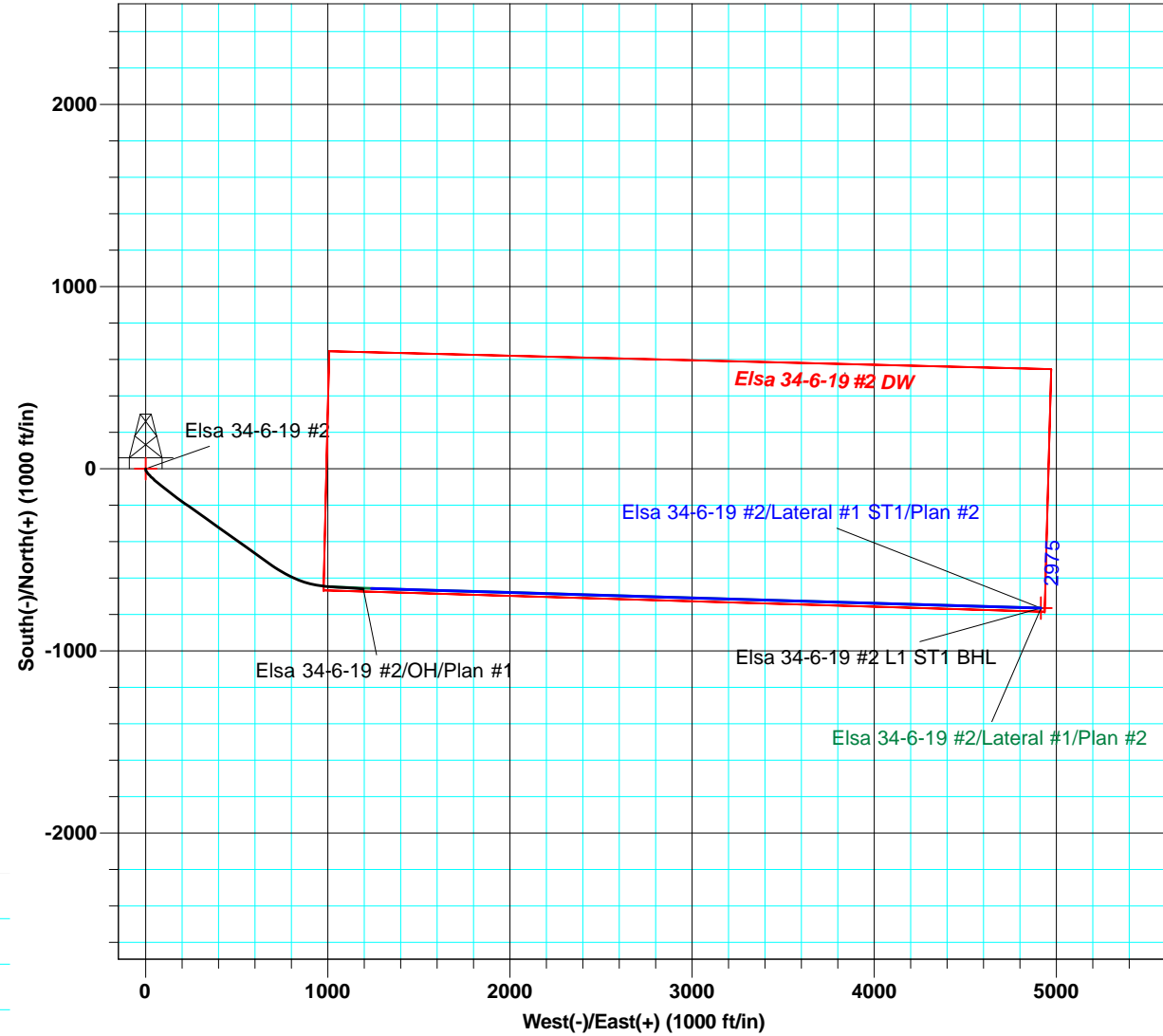
Site Centre Northing: 760788.19  
Easting: 2556100.64  
Positional Uncertainty: 0.0  
Local North: Grid

#### PROJECT DETAILS: San Juan Basin

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Southern Zone  
System Datum: Mean Sea Level



ALL AZIMUTHS MUST BE CORRECTED TO GRID NORTH  
To convert a Magnetic Direction to a Grid Direction, Add 10.66°  
To convert a True Direction to a Grid Direction, Add 1.25°



<b>Company:</b>	Catamount Energy Partners	<b>Local Co-ordinate Reference:</b>	Well Elsa 34-6-19 #2
<b>Project:</b>	San Juan Basin	<b>TVD Reference:</b>	6971' GL + 16' DFE @ 6987.0ft (D&J #1)
<b>Site:</b>	La Plata County CO	<b>MD Reference:</b>	6971' GL + 16' DFE @ 6987.0ft (D&J #1)
<b>Well:</b>	Elsa 34-6-19 #2	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral #1 ST1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #2	<b>Database:</b>	EDM 5000.1 Old

<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>	La Plata County CO		
<b>Site Position:</b>		<b>Northing:</b>	760,788.19 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,556,100.64 usft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	6-1/8 "
		<b>Latitude:</b>	36° 0' 0.000 N
		<b>Longitude:</b>	107° 0' 0.000 W
		<b>Grid Convergence:</b>	-0.92 °

<b>Well</b>	Elsa 34-6-19 #2, FC Horizontal Well		
<b>Well Position</b>	<b>+N-S</b>	0.0 ft	<b>Northing:</b> 1,190,690.45 usft
	<b>+E-W</b>	0.0 ft	<b>Easting:</b> 2,407,448.89 usft
<b>Position Uncertainty</b>		1.0 ft	<b>Wellhead Elevation:</b> ft
			<b>Latitude:</b> 37° 10' 21.540 N
			<b>Longitude:</b> 107° 32' 1.693 W
			<b>Ground Level:</b> 6,971.0 ft

<b>Wellbore</b>	Lateral #1 ST1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	06/24/15	9.42	63.77	50,517

<b>Design</b>	Plan #2				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	3,411.1	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N-S (ft)</b>	<b>+E-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	98.85	

<b>Survey Tool Program</b>	<b>Date</b>	06/24/15			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.0	3,130.7	Plan #1 (OH)	MWD SDI	MWD - Standard ver 1.0.1	
3,130.7	3,411.1	Plan #2 (Lateral #1)			
3,411.1	7,091.8	Plan #2 (Lateral #1 ST1)			

<b>Planned Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N-S (ft)</b>	<b>+E-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	4.00	170.00	599.9	-3.4	0.6	1.1	4.00	4.00	0.00
625.0	5.00	170.00	624.8	-5.4	0.9	1.8	4.00	4.00	0.00
700.0	7.31	151.69	699.4	-12.8	3.8	5.7	4.00	3.07	-24.41

<b>Company:</b>	Catamount Energy Partners	<b>Local Co-ordinate Reference:</b>	Well Elsa 34-6-19 #2
<b>Project:</b>	San Juan Basin	<b>TVD Reference:</b>	6971' GL + 16' DFE @ 6987.0ft (D&J #1)
<b>Site:</b>	La Plata County CO	<b>MD Reference:</b>	6971' GL + 16' DFE @ 6987.0ft (D&J #1)
<b>Well:</b>	Elsa 34-6-19 #2	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral #1 ST1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #2	<b>Database:</b>	EDM 5000.1 Old

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
800.0	10.92	140.58	798.1	-25.7	12.8	16.6	4.00	3.61	-11.11
900.0	14.73	135.05	895.6	-42.0	27.8	33.9	4.00	3.81	-5.53
1,000.0	18.62	131.78	991.4	-61.7	48.7	57.6	4.00	3.89	-3.28
1,100.0	22.54	129.60	1,085.0	-84.5	75.4	87.5	4.00	3.93	-2.17
1,200.0	26.49	128.05	1,176.0	-110.5	107.7	123.4	4.00	3.95	-1.55
1,300.0	30.45	126.87	1,263.9	-139.5	145.6	165.3	4.00	3.96	-1.18
1,400.0	34.42	125.95	1,348.2	-171.3	188.7	212.8	4.00	3.97	-0.93
1,463.0	36.92	125.45	1,399.4	-192.7	218.6	245.6	4.00	3.97	-0.78
1,500.0	36.92	125.45	1,429.0	-205.6	236.7	265.5	0.00	0.00	0.00
1,600.0	36.92	125.45	1,508.9	-240.4	285.6	319.2	0.00	0.00	0.00
1,700.0	36.92	125.45	1,588.9	-275.3	334.6	372.9	0.00	0.00	0.00
1,800.0	36.92	125.45	1,668.8	-310.1	383.5	426.6	0.00	0.00	0.00
1,900.0	36.92	125.45	1,748.8	-345.0	432.4	480.4	0.00	0.00	0.00
2,000.0	36.92	125.45	1,828.7	-379.8	481.4	534.1	0.00	0.00	0.00
2,100.0	36.92	125.45	1,908.7	-414.7	530.3	587.8	0.00	0.00	0.00
2,200.0	36.92	125.45	1,988.6	-449.5	579.3	641.5	0.00	0.00	0.00
2,300.0	36.92	125.45	2,068.6	-484.4	628.2	695.2	0.00	0.00	0.00
2,328.6	36.92	125.45	2,091.4	-494.3	642.2	710.6	0.00	0.00	0.00
<b>Elsa 34-6-19 #2 DW</b>									
2,400.0	36.92	125.45	2,148.5	-519.2	677.1	748.9	0.00	0.00	0.00
2,410.5	36.92	125.45	2,156.9	-522.9	682.3	754.6	0.00	0.00	0.00
2,500.0	35.12	122.07	2,229.3	-552.1	726.0	802.3	3.00	-2.02	-3.78
2,600.0	33.22	117.93	2,312.0	-580.2	774.6	854.6	3.00	-1.90	-4.14
2,700.0	31.48	113.37	2,396.5	-603.4	822.8	905.8	3.00	-1.74	-4.56
2,800.0	29.91	108.35	2,482.5	-621.7	870.4	955.7	3.00	-1.57	-5.02
2,900.0	28.55	102.87	2,569.8	-634.8	917.4	1,004.1	3.00	-1.36	-5.48
3,000.0	27.44	96.94	2,658.1	-642.9	963.6	1,051.0	3.00	-1.12	-5.93
3,047.1	27.00	94.00	2,700.0	-645.0	985.0	1,072.5	3.00	-0.92	-6.24
3,100.0	26.21	94.00	2,747.3	-646.7	1,008.6	1,096.1	1.50	-1.50	0.00
3,130.7	25.75	94.00	2,774.9	-647.6	1,022.0	1,109.5	1.50	-1.50	0.00
3,150.0	29.60	93.65	2,792.0	-648.2	1,031.0	1,118.4	20.00	19.98	-1.82
3,175.0	34.60	93.30	2,813.1	-649.0	1,044.2	1,131.6	20.00	19.99	-1.39
3,200.0	39.60	93.03	2,833.1	-649.8	1,059.3	1,146.6	20.00	19.99	-1.08
3,225.0	44.59	92.81	2,851.6	-650.7	1,076.0	1,163.3	20.00	19.99	-0.87
3,250.0	49.59	92.63	2,868.6	-651.5	1,094.3	1,181.5	20.00	19.99	-0.73
3,275.0	54.59	92.48	2,884.0	-652.4	1,114.0	1,201.1	20.00	19.99	-0.63
3,300.0	59.59	92.34	2,897.6	-653.3	1,135.0	1,221.9	20.00	19.99	-0.55
3,325.0	64.59	92.21	2,909.3	-654.2	1,157.0	1,243.9	20.00	20.00	-0.50
3,350.0	69.59	92.10	2,919.0	-655.0	1,180.0	1,266.7	20.00	20.00	-0.46
3,375.0	74.59	91.99	2,926.7	-655.9	1,203.8	1,290.4	20.00	20.00	-0.43
3,400.0	79.59	91.89	2,932.3	-656.7	1,228.2	1,314.5	20.00	20.00	-0.41
3,411.1	81.80	91.84	2,934.1	-657.1	1,239.1	1,325.4	20.00	20.00	-0.40
3,450.0	79.47	91.84	2,940.4	-658.3	1,277.5	1,363.5	6.00	-6.00	0.00

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<b>Well:</b>	Elsa 34-6-19 #2	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral #1 ST1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #2	<b>Database:</b>	EDM 5000.1 Old

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,457.8	79.00	91.84	2,941.9	-658.5	1,285.2	1,371.2	6.00	-6.00	0.00
3,487.0	79.00	91.84	2,947.4	-659.5	1,313.8	1,399.6	0.00	0.00	0.00
3,500.0	79.78	91.83	2,949.8	-659.9	1,326.5	1,412.2	6.00	6.00	-0.09
3,550.0	82.78	91.78	2,957.4	-661.4	1,375.9	1,461.3	6.00	6.00	-0.09
3,600.0	85.78	91.74	2,962.4	-663.0	1,425.7	1,510.7	6.00	6.00	-0.09
3,650.0	88.78	91.69	2,964.8	-664.5	1,475.6	1,560.2	6.00	6.00	-0.09
3,667.6	89.83	91.68	2,965.0	-665.0	1,493.2	1,577.7	6.00	6.00	-0.09
3,700.0	89.83	91.68	2,965.1	-665.9	1,525.5	1,609.8	0.00	0.00	0.00
3,800.0	89.83	91.68	2,965.4	-668.9	1,625.5	1,709.0	0.00	0.00	0.00
3,900.0	89.83	91.68	2,965.7	-671.8	1,725.5	1,808.2	0.00	0.00	0.00
4,000.0	89.83	91.68	2,966.0	-674.7	1,825.4	1,907.5	0.00	0.00	0.00
4,100.0	89.83	91.68	2,966.2	-677.6	1,925.4	2,006.7	0.00	0.00	0.00
4,200.0	89.83	91.68	2,966.5	-680.6	2,025.3	2,105.9	0.00	0.00	0.00
4,300.0	89.83	91.68	2,966.8	-683.5	2,125.3	2,205.1	0.00	0.00	0.00
4,400.0	89.83	91.68	2,967.1	-686.4	2,225.2	2,304.3	0.00	0.00	0.00
4,500.0	89.83	91.68	2,967.4	-689.3	2,325.2	2,403.6	0.00	0.00	0.00
4,600.0	89.83	91.68	2,967.7	-692.3	2,425.2	2,502.8	0.00	0.00	0.00
4,700.0	89.83	91.68	2,968.0	-695.2	2,525.1	2,602.0	0.00	0.00	0.00
4,800.0	89.83	91.68	2,968.3	-698.1	2,625.1	2,701.2	0.00	0.00	0.00
4,900.0	89.83	91.68	2,968.6	-701.0	2,725.0	2,800.4	0.00	0.00	0.00
5,000.0	89.83	91.68	2,968.9	-704.0	2,825.0	2,899.6	0.00	0.00	0.00
5,100.0	89.83	91.68	2,969.2	-706.9	2,924.9	2,998.9	0.00	0.00	0.00
5,200.0	89.83	91.68	2,969.5	-709.8	3,024.9	3,098.1	0.00	0.00	0.00
5,300.0	89.83	91.68	2,969.8	-712.8	3,124.9	3,197.3	0.00	0.00	0.00
5,400.0	89.83	91.68	2,970.0	-715.7	3,224.8	3,296.5	0.00	0.00	0.00
5,500.0	89.83	91.68	2,970.3	-718.6	3,324.8	3,395.7	0.00	0.00	0.00
5,600.0	89.83	91.68	2,970.6	-721.5	3,424.7	3,494.9	0.00	0.00	0.00
5,700.0	89.83	91.68	2,970.9	-724.5	3,524.7	3,594.2	0.00	0.00	0.00
5,800.0	89.83	91.68	2,971.2	-727.4	3,624.6	3,693.4	0.00	0.00	0.00
5,900.0	89.83	91.68	2,971.5	-730.3	3,724.6	3,792.6	0.00	0.00	0.00
6,000.0	89.83	91.68	2,971.8	-733.2	3,824.5	3,891.8	0.00	0.00	0.00
6,100.0	89.83	91.68	2,972.1	-736.2	3,924.5	3,991.0	0.00	0.00	0.00
6,200.0	89.83	91.68	2,972.4	-739.1	4,024.5	4,090.3	0.00	0.00	0.00
6,300.0	89.83	91.68	2,972.7	-742.0	4,124.4	4,189.5	0.00	0.00	0.00
6,400.0	89.83	91.68	2,973.0	-744.9	4,224.4	4,288.7	0.00	0.00	0.00
6,500.0	89.83	91.68	2,973.3	-747.9	4,324.3	4,387.9	0.00	0.00	0.00
6,600.0	89.83	91.68	2,973.6	-750.8	4,424.3	4,487.1	0.00	0.00	0.00
6,700.0	89.83	91.68	2,973.9	-753.7	4,524.2	4,586.3	0.00	0.00	0.00
6,800.0	89.83	91.68	2,974.1	-756.7	4,624.2	4,685.6	0.00	0.00	0.00
6,900.0	89.83	91.68	2,974.4	-759.6	4,724.2	4,784.8	0.00	0.00	0.00
7,000.0	89.83	91.68	2,974.7	-762.5	4,824.1	4,884.0	0.00	0.00	0.00
7,091.9	89.83	91.68	2,975.0	-765.2	4,916.0	4,975.2	0.00	0.00	0.00

**Elsa 34-6-19 #2 L1 ST1 BHL**

<b>Company:</b>	Catamount Energy Partners	<b>Local Co-ordinate Reference:</b>	Well Elsa 34-6-19 #2
<b>Project:</b>	San Juan Basin	<b>TVD Reference:</b>	6971' GL + 16' DFE @ 6987.0ft (D&J #1)
<b>Site:</b>	La Plata County CO	<b>MD Reference:</b>	6971' GL + 16' DFE @ 6987.0ft (D&J #1)
<b>Well:</b>	Elsa 34-6-19 #2	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral #1 ST1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #2	<b>Database:</b>	EDM 5000.1 Old

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
Elsa 34-6-19 #2 DW	0.00	0.00	2,700.0	0.0	0.0	1,190,690.45	2,407,448.89	37° 10' 21.540 N	107° 32' 1.693 W
- plan misses target center by 1013.5ft at 2328.6ft MD (2091.4 TVD, -494.3 N, 642.2 E)									
- Polygon									
Point 1			2,700.0	644.9	1,008.3	1,191,335.36	2,408,457.20		
Point 2			2,700.0	546.9	4,972.9	1,191,237.36	2,412,421.84		
Point 3			2,700.0	-785.2	4,936.0	1,189,905.24	2,412,384.94		
Point 4			2,700.0	-667.1	977.2	1,190,023.34	2,408,426.10		
Elsa 34-6-19 #2 L1 ST1	0.00	360.00	2,975.0	-765.2	4,916.0	1,189,925.24	2,412,364.94	37° 10' 15.030 N	107° 31' 0.764 W
- plan hits target center									
- Point									

Checked By: _____	Approved By: _____	Date: _____
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