



# **Ursa Operating Company, LLC**

**Rio Blanco County, Colorado**

**Boies Ranch B-19N Pad**

**Boies Ranch B-19N FED 42C-19-2-97**

**Wellbore #1**

**Plan: APD**

## **Standard Planning Report**

**24 September, 2018**

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Boies Ranch B-19N FED 42C-19-2-97
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Boies Ranch B-19N FED 42C-19-2-97 @ 6325.8usft (Est KB)
<b>Project:</b>	Rio Blanco County, Colorado	<b>MD Reference:</b>	Boies Ranch B-19N FED 42C-19-2-97 @ 6325.8usft (Est KB)
<b>Site:</b>	Boies Ranch B-19N Pad	<b>North Reference:</b>	True
<b>Well:</b>	Boies Ranch B-19N FED 42C-19-2-97	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	APD		

<b>Project</b>	Rio Blanco County, Colorado		
<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 Northern Zone		Using geodetic scale factor

<b>Site</b>	Boies Ranch B-19N Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,203,643.43 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,206,000.33 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	39.857609622
		<b>Longitude:</b>	-108.328733084
		<b>Grid Convergence:</b>	-1.83 °

<b>Well</b>	Boies Ranch B-19N FED 42C-19-2-97, SHL: Lat 39.857599207 Long -108.328625632		
<b>Well Position</b>	<b>+N/-S</b>	-3.8 usft	<b>Northing:</b> 1,203,638.68 usft
	<b>+E/-W</b>	30.2 usft	<b>Easting:</b> 2,206,030.36 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	6,325.8 usft
		<b>Ground Level:</b>	6,304.8 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/16/2018	9.77	65.80	51,548

<b>Design</b>	APD				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	52.58	

<b>Plan Sections</b>										
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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,913.7	38.98	52.58	1,829.7	221.5	289.4	3.50	3.50	0.00	52.58	
6,469.4	38.98	52.58	5,371.3	1,962.9	2,565.3	0.00	0.00	0.00	0.00	
7,583.1	0.00	0.00	6,401.0	2,184.3	2,854.7	3.50	-3.50	0.00	180.00	B 19N FED 42C-19-2
12,517.1	0.00	0.00	11,335.0	2,184.3	2,854.7	0.00	0.00	0.00	0.00	

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<b>Project:</b>	Rio Blanco County, Colorado	<b>MD Reference:</b>	Boies Ranch B-19N FED 42C-19-2-97 @ 6325.8usft (Est KB)
<b>Site:</b>	Boies Ranch B-19N Pad	<b>North Reference:</b>	True
<b>Well:</b>	Boies Ranch B-19N FED 42C-19-2-97	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	APD		

### 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
0.1	0.00	0.00	0.1	0.0	0.0	0.0	0.00	0.00	0.00
<b>SHL 39.857599207, -108.328625632</b>									
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	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>Start Build 3.50</b>									
900.0	3.50	52.58	899.9	1.9	2.4	3.1	3.50	3.50	0.00
1,000.0	7.00	52.58	999.5	7.4	9.7	12.2	3.50	3.50	0.00
1,070.2	9.46	52.58	1,069.0	13.5	17.7	22.3	3.50	3.50	0.00
<b>Mahogany Bench</b>									
1,100.0	10.50	52.58	1,098.3	16.7	21.8	27.4	3.50	3.50	0.00
1,128.2	11.49	52.58	1,126.0	19.9	26.0	32.8	3.50	3.50	0.00
<b>Dissolution Surface</b>									
1,200.0	14.00	52.58	1,196.0	29.5	38.6	48.6	3.50	3.50	0.00
1,300.0	17.50	52.58	1,292.3	46.0	60.2	75.8	3.50	3.50	0.00
1,400.0	21.00	52.58	1,386.7	66.1	86.4	108.7	3.50	3.50	0.00
1,500.0	24.50	52.58	1,478.9	89.6	117.1	147.4	3.50	3.50	0.00
1,600.0	28.00	52.58	1,568.5	116.4	152.2	191.6	3.50	3.50	0.00
1,700.0	31.50	52.58	1,655.3	146.6	191.6	241.2	3.50	3.50	0.00
1,800.0	35.00	52.58	1,739.0	179.9	235.1	296.1	3.50	3.50	0.00
1,900.0	38.50	52.58	1,819.1	216.3	282.6	355.9	3.50	3.50	0.00
1,913.7	38.98	52.58	1,829.7	221.5	289.4	364.4	3.50	3.50	0.00
<b>Start 4555.7 hold at 1913.7 MD</b>									
2,000.0	38.98	52.58	1,896.8	254.5	332.6	418.7	0.00	0.00	0.00
2,100.0	38.98	52.58	1,974.6	292.7	382.5	481.6	0.00	0.00	0.00
2,200.0	38.98	52.58	2,052.3	330.9	432.5	544.5	0.00	0.00	0.00
2,300.0	38.98	52.58	2,130.1	369.1	482.4	607.4	0.00	0.00	0.00
2,400.0	38.98	52.58	2,207.8	407.4	532.4	670.3	0.00	0.00	0.00
2,429.8	38.98	52.58	2,231.0	418.8	547.3	689.1	0.00	0.00	0.00
<b>Garden Gulch Mbr</b>									
2,500.0	38.98	52.58	2,285.5	445.6	582.3	733.2	0.00	0.00	0.00
2,600.0	38.98	52.58	2,363.3	483.8	632.3	796.2	0.00	0.00	0.00
2,646.0	38.98	52.58	2,399.0	501.4	655.2	825.1	0.00	0.00	0.00
<b>Wasatch</b>									
2,700.0	38.98	52.58	2,441.0	522.0	682.2	859.1	0.00	0.00	0.00
2,800.0	38.98	52.58	2,518.7	560.3	732.2	922.0	0.00	0.00	0.00
2,900.0	38.98	52.58	2,596.5	598.5	782.2	984.9	0.00	0.00	0.00
3,000.0	38.98	52.58	2,674.2	636.7	832.1	1,047.8	0.00	0.00	0.00
3,100.0	38.98	52.58	2,752.0	674.9	882.1	1,110.7	0.00	0.00	0.00
3,200.0	38.98	52.58	2,829.7	713.2	932.0	1,173.6	0.00	0.00	0.00
3,300.0	38.98	52.58	2,907.4	751.4	982.0	1,236.5	0.00	0.00	0.00
3,400.0	38.98	52.58	2,985.2	789.6	1,031.9	1,299.4	0.00	0.00	0.00
3,500.0	38.98	52.58	3,062.9	827.8	1,081.9	1,362.3	0.00	0.00	0.00
3,600.0	38.98	52.58	3,140.7	866.1	1,131.9	1,425.2	0.00	0.00	0.00
3,700.0	38.98	52.58	3,218.4	904.3	1,181.8	1,488.1	0.00	0.00	0.00
3,800.0	38.98	52.58	3,296.1	942.5	1,231.8	1,551.0	0.00	0.00	0.00

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<b>Well:</b>	Boies Ranch B-19N FED 42C-19-2-97	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	APD		

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)
3,900.0	38.98	52.58	3,373.9	980.7	1,281.7	1,613.9	0.00	0.00	0.00
4,000.0	38.98	52.58	3,451.6	1,019.0	1,331.7	1,676.8	0.00	0.00	0.00
4,062.3	38.98	52.58	3,500.0	1,042.7	1,362.8	1,716.0	0.00	0.00	0.00
<b>Surface Casing</b>									
4,100.0	38.98	52.58	3,529.3	1,057.2	1,381.6	1,739.7	0.00	0.00	0.00
4,200.0	38.98	52.58	3,607.1	1,095.4	1,431.6	1,802.6	0.00	0.00	0.00
4,300.0	38.98	52.58	3,684.8	1,133.6	1,481.6	1,865.5	0.00	0.00	0.00
4,400.0	38.98	52.58	3,762.6	1,171.9	1,531.5	1,928.4	0.00	0.00	0.00
4,500.0	38.98	52.58	3,840.3	1,210.1	1,581.5	1,991.3	0.00	0.00	0.00
4,600.0	38.98	52.58	3,918.0	1,248.3	1,631.4	2,054.2	0.00	0.00	0.00
4,700.0	38.98	52.58	3,995.8	1,286.5	1,681.4	2,117.1	0.00	0.00	0.00
4,800.0	38.98	52.58	4,073.5	1,324.8	1,731.3	2,180.0	0.00	0.00	0.00
4,900.0	38.98	52.58	4,151.2	1,363.0	1,781.3	2,242.9	0.00	0.00	0.00
5,000.0	38.98	52.58	4,229.0	1,401.2	1,831.2	2,305.8	0.00	0.00	0.00
5,100.0	38.98	52.58	4,306.7	1,439.4	1,881.2	2,368.7	0.00	0.00	0.00
5,200.0	38.98	52.58	4,384.5	1,477.7	1,931.2	2,431.6	0.00	0.00	0.00
5,300.0	38.98	52.58	4,462.2	1,515.9	1,981.1	2,494.5	0.00	0.00	0.00
5,400.0	38.98	52.58	4,539.9	1,554.1	2,031.1	2,557.4	0.00	0.00	0.00
5,500.0	38.98	52.58	4,617.7	1,592.3	2,081.0	2,620.3	0.00	0.00	0.00
5,600.0	38.98	52.58	4,695.4	1,630.5	2,131.0	2,683.2	0.00	0.00	0.00
5,700.0	38.98	52.58	4,773.2	1,668.8	2,180.9	2,746.1	0.00	0.00	0.00
5,786.0	38.98	52.58	4,840.0	1,701.6	2,223.9	2,800.2	0.00	0.00	0.00
<b>Ft Union</b>									
5,800.0	38.98	52.58	4,850.9	1,707.0	2,230.9	2,809.0	0.00	0.00	0.00
5,900.0	38.98	52.58	4,928.6	1,745.2	2,280.9	2,872.0	0.00	0.00	0.00
6,000.0	38.98	52.58	5,006.4	1,783.4	2,330.8	2,934.9	0.00	0.00	0.00
6,100.0	38.98	52.58	5,084.1	1,821.7	2,380.8	2,997.8	0.00	0.00	0.00
6,200.0	38.98	52.58	5,161.8	1,859.9	2,430.7	3,060.7	0.00	0.00	0.00
6,300.0	38.98	52.58	5,239.6	1,898.1	2,480.7	3,123.6	0.00	0.00	0.00
6,400.0	38.98	52.58	5,317.3	1,936.3	2,530.6	3,186.5	0.00	0.00	0.00
6,469.4	38.98	52.58	5,371.3	1,962.9	2,565.3	3,230.1	0.00	0.00	0.00
<b>Start Drop -3.50</b>									
6,500.0	37.91	52.58	5,395.2	1,974.4	2,580.4	3,249.1	3.50	-3.50	0.00
6,600.0	34.41	52.58	5,476.0	2,010.3	2,627.3	3,308.1	3.50	-3.50	0.00
6,700.0	30.91	52.58	5,560.1	2,043.1	2,670.1	3,362.1	3.50	-3.50	0.00
6,800.0	27.41	52.58	5,647.5	2,072.7	2,708.8	3,410.8	3.50	-3.50	0.00
6,900.0	23.91	52.58	5,737.6	2,099.0	2,743.2	3,454.1	3.50	-3.50	0.00
7,000.0	20.41	52.58	5,830.2	2,121.9	2,773.1	3,491.8	3.50	-3.50	0.00
7,100.0	16.91	52.58	5,924.9	2,141.3	2,798.5	3,523.8	3.50	-3.50	0.00
7,200.0	13.41	52.58	6,021.4	2,157.2	2,819.3	3,549.9	3.50	-3.50	0.00
7,300.0	9.91	52.58	6,119.3	2,169.5	2,835.3	3,570.1	3.50	-3.50	0.00
7,392.6	6.67	52.58	6,211.0	2,177.6	2,845.9	3,583.5	3.50	-3.50	0.00
<b>Ohio Creek</b>									
7,400.0	6.41	52.58	6,218.3	2,178.1	2,846.6	3,584.3	3.50	-3.50	0.00
7,500.0	2.91	52.58	6,318.0	2,183.1	2,853.1	3,592.4	3.50	-3.50	0.00
7,583.1	0.00	0.00	6,401.0	2,184.3	2,854.7	3,594.5	3.50	-3.50	0.00
<b>Back to Vertical - Start 4629.0 hold at 7583.1 MD - Williams Fork - Top of Gas - B 19N FED 42C-19-2-97 TGT</b>									
7,600.0	0.00	0.00	6,417.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00
7,700.0	0.00	0.00	6,517.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00
7,800.0	0.00	0.00	6,617.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00
7,900.0	0.00	0.00	6,717.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00

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<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	APD		

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)	
8,000.0	0.00	0.00	6,817.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,100.0	0.00	0.00	6,917.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,200.0	0.00	0.00	7,017.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,300.0	0.00	0.00	7,117.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,400.0	0.00	0.00	7,217.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,500.0	0.00	0.00	7,317.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,600.0	0.00	0.00	7,417.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,700.0	0.00	0.00	7,517.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,800.0	0.00	0.00	7,617.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
8,900.0	0.00	0.00	7,717.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,000.0	0.00	0.00	7,817.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,100.0	0.00	0.00	7,917.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,200.0	0.00	0.00	8,017.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,300.0	0.00	0.00	8,117.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,400.0	0.00	0.00	8,217.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,500.0	0.00	0.00	8,317.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,600.0	0.00	0.00	8,417.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,700.0	0.00	0.00	8,517.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,800.0	0.00	0.00	8,617.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
9,900.0	0.00	0.00	8,717.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,000.0	0.00	0.00	8,817.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,100.0	0.00	0.00	8,917.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,200.0	0.00	0.00	9,017.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,300.0	0.00	0.00	9,117.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,400.0	0.00	0.00	9,217.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,500.0	0.00	0.00	9,317.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,600.0	0.00	0.00	9,417.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,692.1	0.00	0.00	9,510.0	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
<b>Cameo</b>										
10,700.0	0.00	0.00	9,517.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,800.0	0.00	0.00	9,617.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
10,900.0	0.00	0.00	9,717.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,000.0	0.00	0.00	9,817.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,100.0	0.00	0.00	9,917.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,200.0	0.00	0.00	10,017.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,237.1	0.00	0.00	10,055.0	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
<b>Rollins</b>										
11,300.0	0.00	0.00	10,117.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,381.1	0.00	0.00	10,199.0	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
<b>Cozzette</b>										
11,400.0	0.00	0.00	10,217.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,500.0	0.00	0.00	10,317.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,600.0	0.00	0.00	10,417.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,700.0	0.00	0.00	10,517.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,715.1	0.00	0.00	10,533.0	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
<b>Corcoran</b>										
11,800.0	0.00	0.00	10,617.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
11,899.1	0.00	0.00	10,717.0	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
<b>Upper Sego</b>										
11,900.0	0.00	0.00	10,717.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
12,000.0	0.00	0.00	10,817.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Boies Ranch B-19N FED 42C-19-2-97
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Boies Ranch B-19N FED 42C-19-2-97 @ 6325.8usft (Est KB)
<b>Project:</b>	Rio Blanco County, Colorado	<b>MD Reference:</b>	Boies Ranch B-19N FED 42C-19-2-97 @ 6325.8usft (Est KB)
<b>Site:</b>	Boies Ranch B-19N Pad	<b>North Reference:</b>	True
<b>Well:</b>	Boies Ranch B-19N FED 42C-19-2-97	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	APD		

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)	
12,100.0	0.00	0.00	10,917.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
12,200.0	0.00	0.00	11,017.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
12,300.0	0.00	0.00	11,117.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
12,400.0	0.00	0.00	11,217.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
12,500.0	0.00	0.00	11,317.9	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
12,517.1	0.00	0.00	11,335.0	2,184.3	2,854.7	3,594.5	0.00	0.00	0.00	
TD at 12517.1 - BHL 39.8635951, -108.3184563										

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									
B 19N FED 42C-19-2-97	0.00	0.00	6,401.0	2,184.3	2,854.7	1,205,730.81	2,208,953.25	39.863595100	-108.318456300
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D4,629.0)									

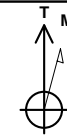
Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,070.2	1,069.0	Mahogany Bench		0.00		
1,128.2	1,126.0	Dissolution Surface		0.00		
2,429.8	2,231.0	Garden Gulch Mbr		0.00		
2,646.0	2,399.0	Wasatch		0.00		
5,786.0	4,840.0	Ft Union		0.00		
7,392.6	6,211.0	Ohio Creek		0.00		
7,583.1	6,401.0	Williams Fork		0.00		
7,583.1	6,401.0	Top of Gas		0.00		
10,692.1	9,510.0	Cameo		0.00		
11,237.1	10,055.0	Rollins		0.00		
11,381.1	10,199.0	Cozzette		0.00		
11,715.1	10,533.0	Corcoran		0.00		
11,899.1	10,717.0	Upper Sego		0.00		

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Boies Ranch B-19N FED 42C-19-2-97
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	Boies Ranch B-19N FED 42C-19-2-97 @ 6325.8usft (Est KB)
<b>Project:</b>	Rio Blanco County, Colorado	<b>MD Reference:</b>	Boies Ranch B-19N FED 42C-19-2-97 @ 6325.8usft (Est KB)
<b>Site:</b>	Boies Ranch B-19N Pad	<b>North Reference:</b>	True
<b>Well:</b>	Boies Ranch B-19N FED 42C-19-2-97	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	APD		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.1	0.1	0.0	0.0	SHL 39.857599207, -108.328625632
800.0	800.0	0.0	0.0	Start Build 3.50
1,913.7	1,829.7	221.5	289.4	Start 4555.7 hold at 1913.7 MD
4,062.3	3,500.0	1,042.7	1,362.8	Surface Casing
6,469.4	5,371.3	1,962.9	2,565.3	Start Drop -3.50
7,583.1	6,401.0	2,184.3	2,854.7	Back to Vertical
7,583.1	6,401.0	2,184.3	2,854.7	Start 4629.0 hold at 7583.1 MD
12,517.1	11,335.0	2,184.3	2,854.7	TD at 12517.1
12,517.1	11,335.0	2,184.3	2,854.7	BHL 39.8635951, -108.3184563



Well Name:Boies Ranch B-19N FED 42C-19-2-97  
Surface Location: Boies Ranch B-19N Pad  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 6304.8  
+N/-S +E/-W Northing Easting Latitude Longitude  
0.0 0.0 1203638.69 2206030.36 39.857599207 -108.328625632  
Est KB Boies Ranch B-19N FED 42C-19-2-97 @ 6325.8usft (Est KB)



Azimuths to True North  
Magnetic North: 9.77°  
Magnetic Field  
Strength: 51547.8snT  
Dip Angle: 65.80°  
Date: 8/16/2018  
Model: IGRF2015

Boies Ranch B-19N Pad  
Boies Ranch B-19N FED 42C-19-2-97  
APD

12:14, September 24 2018

#### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
B 19N FED 42C-19-2-97 TGT	6401.0	2184.3	2854.7	1205730.82	2208953.25	39.863595100	-108.318456300	Rectangle (Sides: L40.0 W100.0)

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1913.7	38.98	52.58	1829.7	221.5	289.4	3.50	52.58	364.4	
4	6469.4	38.98	52.58	5371.3	1962.9	2565.3	0.00	0.00	3230.1	
5	7583.1	0.00	0.00	6401.0	2184.3	2854.7	3.50	180.00	3594.5	B 19N FED 42C-19-2-97 TGT
6	12517.1	0.00	0.00	11335.0	2184.3	2854.7	0.00	0.00	3594.5	

#### ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL 39.857599207, -108.328625632
800.0	800.0	Start Build 3.50
1829.7	1913.7	Start 4555.7 hold at 1913.7 MD
3500.0	4062.3	Surface Casing
5371.3	6469.4	Start Drop -3.50
6401.0	7583.1	Back to Vertical
6401.0	7583.1	Start 4629.0 hold at 7583.1 MD
11335.0	12517.1	TD at 12517.1
11335.0	12517.1	BHL 39.8635951, -108.3184563

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1069.0	1070.2	Mahogany Bench	0.00	
1126.0	1128.2	Dissolution Surface	0.00	
2231.0	2429.8	Garden Gulch Mbr	0.00	
2399.0	2646.0	Wasatch	0.00	
4840.0	5786.0	Ft Union	0.00	
6211.0	7392.6	Ohio Creek	0.00	
6401.0	7583.1	Top of Gas	0.00	
6401.0	7583.1	Williams Fork	0.00	
9510.0	10692.1	Cameo	0.00	
10055.0	11237.1	Rollins	0.00	
10199.0	11381.1	Cozzette	0.00	
10533.0	11715.1	Corcoran	0.00	
10717.0	11899.1	Upper Sego	0.00	

