



Well: Apache 8-14-2L
 Site: Section 04-T04N-R63W
 Project: Weld County, Colorado
 Wellbore: Original hole
 Design: plan1

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	KOP Begin 3°/100' build
3	4829.79	54.89	256.66	4562.43	-187.19	-789.62	3.00	414.70	Begin 54.89° tangent section
4	7680.03	54.89	256.66	6201.59	-725.05	-3058.48	0.00	1606.27	Begin 10°/100' build/turn
5	8471.64	90.00	179.95	6474.00	-1288.10	-3435.13	10.00	2256.17	LP Begin 90° lateral
6	18122.30	90.00	179.95	6474.00	-10938.76	-3427.03	0.00	11463.03	PBHL/TD 18122.30 MD 6474.00 TVD

DESIGN TARGET DETAILS

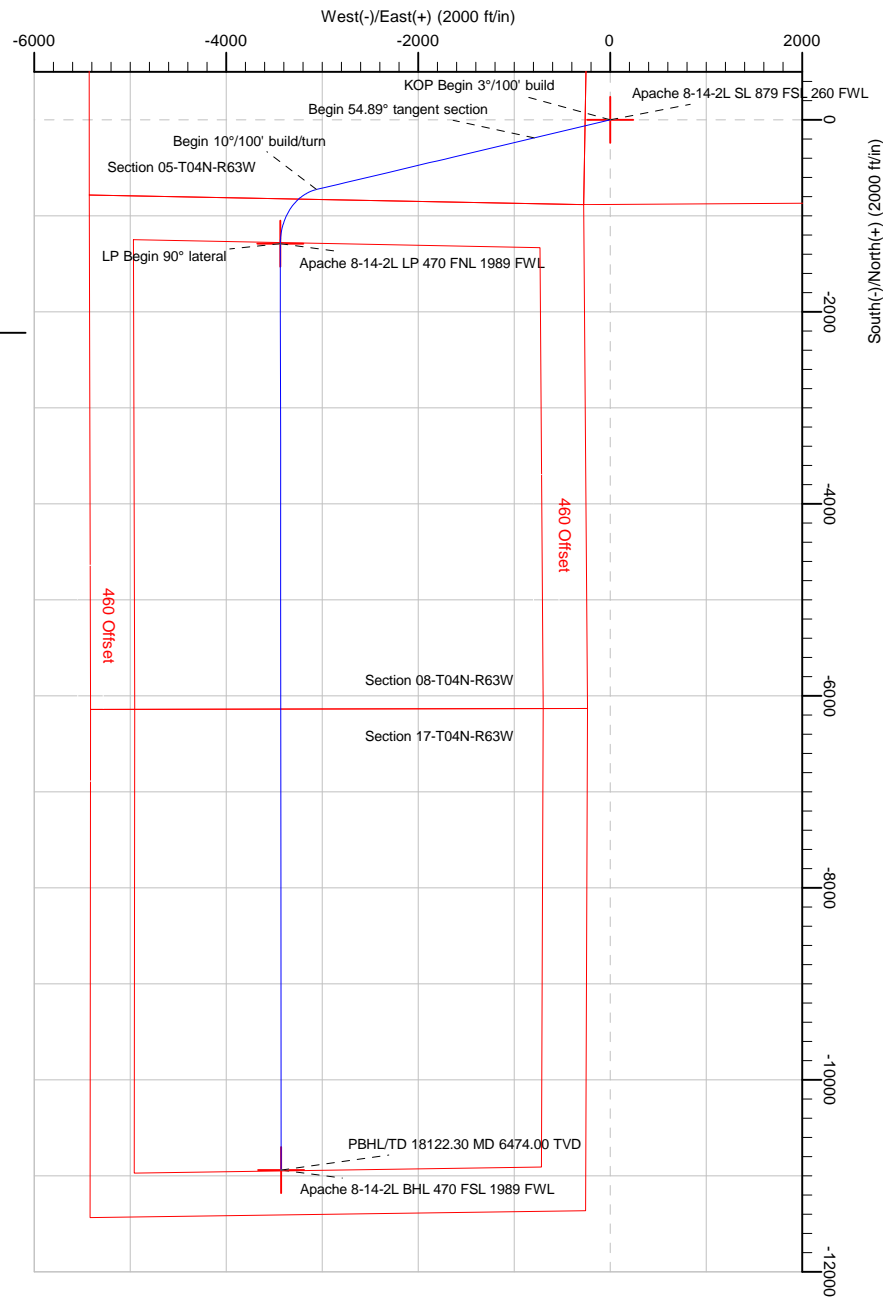
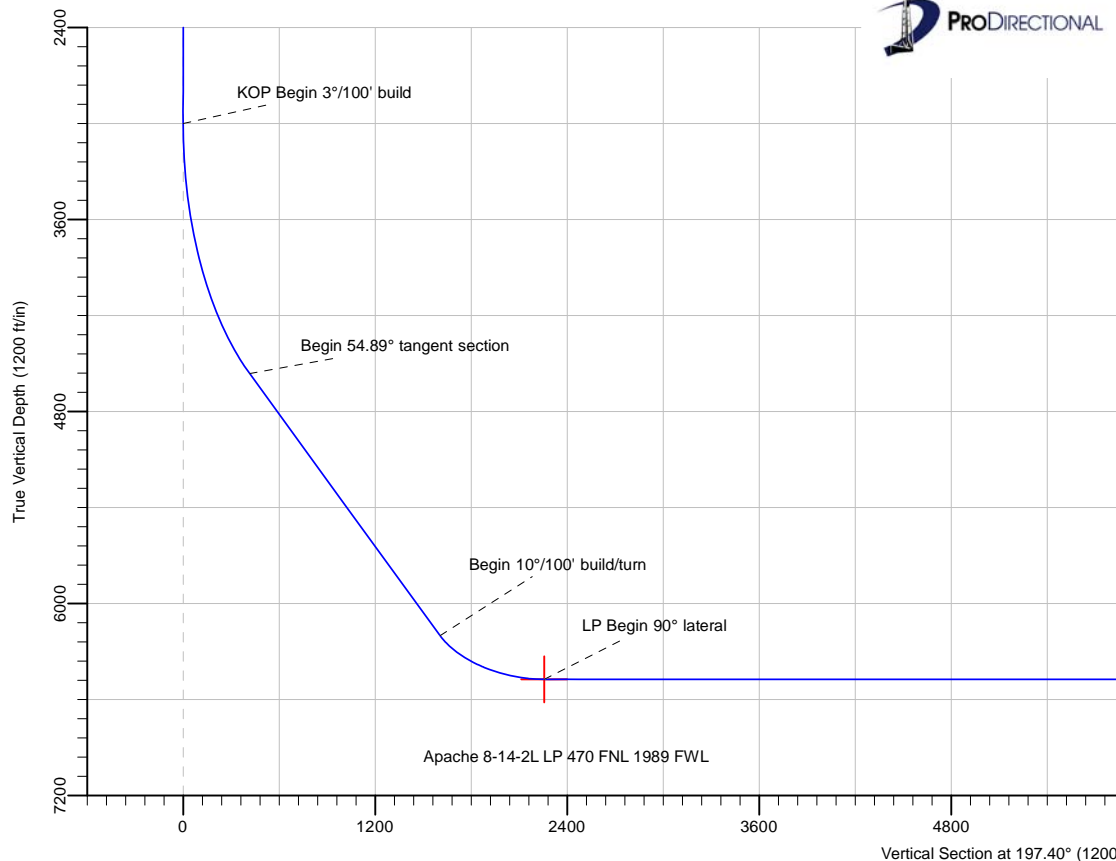
Name	TVD	+N/-S	+E/-W	Northings	Easting	Latitude	Longitude
Apache 8-14-2L SL 879 FSL 260 FWL	24.00	0.00	0.00	14649632.16	1793237.42	40.33619378	-104.45161340
Apache 8-14-2L BHL 470 FSL 1989 FWL	6474.00	-10938.76	-3427.03	14638672.40	1789878.23	40.30615567	-104.46390522
Apache 8-14-2L LP 470 FNL 1989 FWL	6474.00	-1288.10	-3435.13	14648322.80	1789810.34	40.33265604	-104.46393918



Azimuths to True North
 Magnetic North: 8.08°

Magnetic Field
 Strength: 52230.1snT
 Dip Angle: 66.90°
 Date: 5/25/2018
 Model: HDGM

Apache 8-14-2L Surf loc: 879 FSL 260 FWL Section 04-T04N-R63W			
NAD83 Colorado - HARN Universal Transverse Mercator (US Survey Feet) Zone 13N (108 W to 102 W) RKB=4661+24 @ 4685.00ft			
Northings	Easting	Latitude	Longitude
14649632.16	1793237.42	40.33619378	-104.45161340



PBHL/TD 18122.30 MD 6474.00 TVD
 Apache 8-14-2L BHL 470 FSL 1989 FWL

Note: All lease lines and hard lines are estimates only and are subject to customers approval.

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Project	Weld County, Colorado		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 Colorado - HARN		
Map Zone:	Zone 13N (108 W to 102 W)		

Site		Section 04-T04N-R63W			
Site Position:		Northing:	14,650,073.90 usft	Latitude:	40.33740565
From:	Map	Easting:	1,793,302.13 usft	Longitude:	-104.45137138
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.36 °

Well	Apache 8-14-2L, Surf loc: 879 FSL 260 FWL Section 04-T04N-R63W					
Well Position	+N/-S	-441.33 ft	Northing:	14,649,632.16 usft	Latitude:	40.33619378
	+E/-W	-67.45 ft	Easting:	1,793,237.42 usft	Longitude:	-104.45161341
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,661.00 ft

Wellbore	Original hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/25/2018	8.08	66.90	52,230.10000000

Design	plan1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	197.40

Plan Survey Tool Program	Date	5/25/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,122.30	plan1 (Original hole)	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,829.79	54.89	256.66	4,562.43	-187.19	-789.62	3.00	3.00	0.00	256.66	
7,680.03	54.89	256.66	6,201.59	-725.05	-3,058.48	0.00	0.00	0.00	0.00	
8,471.65	90.00	179.95	6,474.00	-1,288.10	-3,435.13	10.00	4.43	-9.69	-82.27	Apache 8-14-2L LP 4"
18,122.30	90.00	179.95	6,474.00	-10,938.76	-3,427.03	0.00	0.00	0.00	0.00	Apache 8-14-2L BHL

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Begin 3°/100' build									
3,100.00	3.00	256.66	3,099.95	-0.60	-2.55	1.34	3.00	3.00	0.00
3,200.00	6.00	256.66	3,199.63	-2.41	-10.18	5.35	3.00	3.00	0.00
3,300.00	9.00	256.66	3,298.77	-5.42	-22.88	12.02	3.00	3.00	0.00
3,400.00	12.00	256.66	3,397.08	-9.63	-40.61	21.33	3.00	3.00	0.00
3,500.00	15.00	256.66	3,494.31	-15.01	-63.32	33.26	3.00	3.00	0.00
3,600.00	18.00	256.66	3,590.18	-21.56	-90.95	47.77	3.00	3.00	0.00
3,700.00	21.00	256.66	3,684.43	-29.26	-123.43	64.82	3.00	3.00	0.00
3,800.00	24.00	256.66	3,776.81	-38.09	-160.66	84.38	3.00	3.00	0.00
3,900.00	27.00	256.66	3,867.06	-48.02	-202.55	106.38	3.00	3.00	0.00
4,000.00	30.00	256.66	3,954.93	-59.02	-248.97	130.76	3.00	3.00	0.00
4,100.00	33.00	256.66	4,040.18	-71.07	-299.81	157.45	3.00	3.00	0.00
4,200.00	36.00	256.66	4,122.59	-84.14	-354.91	186.40	3.00	3.00	0.00
4,300.00	39.00	256.66	4,201.91	-98.18	-414.14	217.50	3.00	3.00	0.00
4,400.00	42.00	256.66	4,277.95	-113.16	-477.33	250.69	3.00	3.00	0.00
4,500.00	45.00	256.66	4,350.47	-129.03	-544.30	285.86	3.00	3.00	0.00
4,600.00	48.00	256.66	4,419.30	-145.76	-614.87	322.92	3.00	3.00	0.00
4,700.00	51.00	256.66	4,484.24	-163.30	-688.85	361.78	3.00	3.00	0.00
4,800.00	54.00	256.66	4,545.11	-181.60	-766.04	402.31	3.00	3.00	0.00
4,829.79	54.89	256.66	4,562.43	-187.19	-789.62	414.70	3.00	3.00	0.00
Begin 54.89° tangent section									
4,900.00	54.89	256.66	4,602.81	-200.44	-845.51	444.05	0.00	0.00	0.00

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Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,000.00	54.89	256.66	4,660.32	-219.31	-925.11	485.86	0.00	0.00	0.00
5,100.00	54.89	256.66	4,717.83	-238.18	-1,004.72	527.66	0.00	0.00	0.00
5,200.00	54.89	256.66	4,775.34	-257.05	-1,084.32	569.47	0.00	0.00	0.00
5,300.00	54.89	256.66	4,832.85	-275.92	-1,163.92	611.27	0.00	0.00	0.00
5,400.00	54.89	256.66	4,890.36	-294.79	-1,243.52	653.08	0.00	0.00	0.00
5,500.00	54.89	256.66	4,947.87	-313.66	-1,323.13	694.89	0.00	0.00	0.00
5,600.00	54.89	256.66	5,005.38	-332.53	-1,402.73	736.69	0.00	0.00	0.00
5,700.00	54.89	256.66	5,062.89	-351.41	-1,482.33	778.50	0.00	0.00	0.00
5,800.00	54.89	256.66	5,120.40	-370.28	-1,561.93	820.30	0.00	0.00	0.00
5,900.00	54.89	256.66	5,177.90	-389.15	-1,641.54	862.11	0.00	0.00	0.00
6,000.00	54.89	256.66	5,235.41	-408.02	-1,721.14	903.92	0.00	0.00	0.00
6,100.00	54.89	256.66	5,292.92	-426.89	-1,800.74	945.72	0.00	0.00	0.00
6,200.00	54.89	256.66	5,350.43	-445.76	-1,880.34	987.53	0.00	0.00	0.00
6,300.00	54.89	256.66	5,407.94	-464.63	-1,959.94	1,029.33	0.00	0.00	0.00
6,400.00	54.89	256.66	5,465.45	-483.50	-2,039.55	1,071.14	0.00	0.00	0.00
6,500.00	54.89	256.66	5,522.96	-502.37	-2,119.15	1,112.94	0.00	0.00	0.00
6,600.00	54.89	256.66	5,580.47	-521.24	-2,198.75	1,154.75	0.00	0.00	0.00
6,700.00	54.89	256.66	5,637.98	-540.11	-2,278.35	1,196.56	0.00	0.00	0.00
6,800.00	54.89	256.66	5,695.49	-558.98	-2,357.96	1,238.36	0.00	0.00	0.00
6,900.00	54.89	256.66	5,753.00	-577.85	-2,437.56	1,280.17	0.00	0.00	0.00
7,000.00	54.89	256.66	5,810.51	-596.72	-2,517.16	1,321.97	0.00	0.00	0.00
7,100.00	54.89	256.66	5,868.02	-615.60	-2,596.76	1,363.78	0.00	0.00	0.00
7,200.00	54.89	256.66	5,925.53	-634.47	-2,676.37	1,405.59	0.00	0.00	0.00
7,300.00	54.89	256.66	5,983.04	-653.34	-2,755.97	1,447.39	0.00	0.00	0.00
7,400.00	54.89	256.66	6,040.55	-672.21	-2,835.57	1,489.20	0.00	0.00	0.00
7,500.00	54.89	256.66	6,098.06	-691.08	-2,915.17	1,531.00	0.00	0.00	0.00
7,600.00	54.89	256.66	6,155.57	-709.95	-2,994.77	1,572.81	0.00	0.00	0.00
7,680.03	54.89	256.66	6,201.59	-725.05	-3,058.48	1,606.27	0.00	0.00	0.00
Begin 10°/100' build/turn									
7,700.00	55.19	254.25	6,213.04	-729.16	-3,074.32	1,614.92	10.00	1.47	-12.07
7,800.00	57.34	242.50	6,268.71	-759.82	-3,151.37	1,667.21	10.00	2.15	-11.75
7,900.00	60.53	231.43	6,320.42	-806.51	-3,222.92	1,733.16	10.00	3.19	-11.07
8,000.00	64.57	221.12	6,366.61	-867.83	-3,286.81	1,810.77	10.00	4.04	-10.31
8,100.00	69.28	211.52	6,405.86	-941.90	-3,341.09	1,897.69	10.00	4.71	-9.59
8,200.00	74.49	202.54	6,437.00	-1,026.48	-3,384.12	1,991.26	10.00	5.21	-8.99
8,300.00	80.05	194.01	6,459.06	-1,119.00	-3,414.59	2,088.66	10.00	5.55	-8.53
8,400.00	85.81	185.77	6,471.38	-1,216.64	-3,431.57	2,186.91	10.00	5.76	-8.24
8,471.65	90.00	179.95	6,474.00	-1,288.10	-3,435.13	2,256.17	10.00	5.85	-8.12
LP Begin 90° lateral									
8,500.00	90.00	179.95	6,474.00	-1,316.46	-3,435.11	2,283.23	0.00	0.00	0.00
8,600.00	90.00	179.95	6,474.00	-1,416.46	-3,435.03	2,378.63	0.00	0.00	0.00
8,700.00	90.00	179.95	6,474.00	-1,516.46	-3,434.94	2,474.03	0.00	0.00	0.00
8,800.00	90.00	179.95	6,474.00	-1,616.46	-3,434.86	2,569.43	0.00	0.00	0.00
8,900.00	90.00	179.95	6,474.00	-1,716.46	-3,434.77	2,664.83	0.00	0.00	0.00
9,000.00	90.00	179.95	6,474.00	-1,816.46	-3,434.69	2,760.23	0.00	0.00	0.00
9,100.00	90.00	179.95	6,474.00	-1,916.46	-3,434.61	2,855.63	0.00	0.00	0.00
9,200.00	90.00	179.95	6,474.00	-2,016.46	-3,434.52	2,951.03	0.00	0.00	0.00
9,300.00	90.00	179.95	6,474.00	-2,116.46	-3,434.44	3,046.44	0.00	0.00	0.00
9,400.00	90.00	179.95	6,474.00	-2,216.46	-3,434.35	3,141.84	0.00	0.00	0.00
9,500.00	90.00	179.95	6,474.00	-2,316.46	-3,434.27	3,237.24	0.00	0.00	0.00
9,600.00	90.00	179.95	6,474.00	-2,416.46	-3,434.19	3,332.64	0.00	0.00	0.00
9,700.00	90.00	179.95	6,474.00	-2,516.46	-3,434.10	3,428.04	0.00	0.00	0.00
9,800.00	90.00	179.95	6,474.00	-2,616.46	-3,434.02	3,523.44	0.00	0.00	0.00
9,900.00	90.00	179.95	6,474.00	-2,716.46	-3,433.93	3,618.84	0.00	0.00	0.00

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Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
10,000.00	90.00	179.95	6,474.00	-2,816.46	-3,433.85	3,714.24	0.00	0.00	0.00	
10,100.00	90.00	179.95	6,474.00	-2,916.46	-3,433.77	3,809.65	0.00	0.00	0.00	
10,200.00	90.00	179.95	6,474.00	-3,016.46	-3,433.68	3,905.05	0.00	0.00	0.00	
10,300.00	90.00	179.95	6,474.00	-3,116.46	-3,433.60	4,000.45	0.00	0.00	0.00	
10,400.00	90.00	179.95	6,474.00	-3,216.46	-3,433.52	4,095.85	0.00	0.00	0.00	
10,500.00	90.00	179.95	6,474.00	-3,316.46	-3,433.43	4,191.25	0.00	0.00	0.00	
10,600.00	90.00	179.95	6,474.00	-3,416.46	-3,433.35	4,286.65	0.00	0.00	0.00	
10,700.00	90.00	179.95	6,474.00	-3,516.46	-3,433.26	4,382.05	0.00	0.00	0.00	
10,800.00	90.00	179.95	6,474.00	-3,616.46	-3,433.18	4,477.46	0.00	0.00	0.00	
10,900.00	90.00	179.95	6,474.00	-3,716.46	-3,433.10	4,572.86	0.00	0.00	0.00	
11,000.00	90.00	179.95	6,474.00	-3,816.46	-3,433.01	4,668.26	0.00	0.00	0.00	
11,100.00	90.00	179.95	6,474.00	-3,916.46	-3,432.93	4,763.66	0.00	0.00	0.00	
11,200.00	90.00	179.95	6,474.00	-4,016.46	-3,432.84	4,859.06	0.00	0.00	0.00	
11,300.00	90.00	179.95	6,474.00	-4,116.46	-3,432.76	4,954.46	0.00	0.00	0.00	
11,400.00	90.00	179.95	6,474.00	-4,216.46	-3,432.68	5,049.86	0.00	0.00	0.00	
11,500.00	90.00	179.95	6,474.00	-4,316.46	-3,432.59	5,145.26	0.00	0.00	0.00	
11,600.00	90.00	179.95	6,474.00	-4,416.46	-3,432.51	5,240.67	0.00	0.00	0.00	
11,700.00	90.00	179.95	6,474.00	-4,516.46	-3,432.42	5,336.07	0.00	0.00	0.00	
11,800.00	90.00	179.95	6,474.00	-4,616.46	-3,432.34	5,431.47	0.00	0.00	0.00	
11,900.00	90.00	179.95	6,474.00	-4,716.46	-3,432.26	5,526.87	0.00	0.00	0.00	
12,000.00	90.00	179.95	6,474.00	-4,816.46	-3,432.17	5,622.27	0.00	0.00	0.00	
12,100.00	90.00	179.95	6,474.00	-4,916.46	-3,432.09	5,717.67	0.00	0.00	0.00	
12,200.00	90.00	179.95	6,474.00	-5,016.46	-3,432.00	5,813.07	0.00	0.00	0.00	
12,300.00	90.00	179.95	6,474.00	-5,116.46	-3,431.92	5,908.48	0.00	0.00	0.00	
12,400.00	90.00	179.95	6,474.00	-5,216.46	-3,431.84	6,003.88	0.00	0.00	0.00	
12,500.00	90.00	179.95	6,474.00	-5,316.46	-3,431.75	6,099.28	0.00	0.00	0.00	
12,600.00	90.00	179.95	6,474.00	-5,416.46	-3,431.67	6,194.68	0.00	0.00	0.00	
12,700.00	90.00	179.95	6,474.00	-5,516.46	-3,431.58	6,290.08	0.00	0.00	0.00	
12,800.00	90.00	179.95	6,474.00	-5,616.46	-3,431.50	6,385.48	0.00	0.00	0.00	
12,900.00	90.00	179.95	6,474.00	-5,716.46	-3,431.42	6,480.88	0.00	0.00	0.00	
13,000.00	90.00	179.95	6,474.00	-5,816.46	-3,431.33	6,576.28	0.00	0.00	0.00	
13,100.00	90.00	179.95	6,474.00	-5,916.46	-3,431.25	6,671.69	0.00	0.00	0.00	
13,200.00	90.00	179.95	6,474.00	-6,016.46	-3,431.17	6,767.09	0.00	0.00	0.00	
13,300.00	90.00	179.95	6,474.00	-6,116.46	-3,431.08	6,862.49	0.00	0.00	0.00	
13,400.00	90.00	179.95	6,474.00	-6,216.46	-3,431.00	6,957.89	0.00	0.00	0.00	
13,500.00	90.00	179.95	6,474.00	-6,316.46	-3,430.91	7,053.29	0.00	0.00	0.00	
13,600.00	90.00	179.95	6,474.00	-6,416.46	-3,430.83	7,148.69	0.00	0.00	0.00	
13,700.00	90.00	179.95	6,474.00	-6,516.46	-3,430.75	7,244.09	0.00	0.00	0.00	
13,800.00	90.00	179.95	6,474.00	-6,616.46	-3,430.66	7,339.49	0.00	0.00	0.00	
13,900.00	90.00	179.95	6,474.00	-6,716.46	-3,430.58	7,434.90	0.00	0.00	0.00	
14,000.00	90.00	179.95	6,474.00	-6,816.46	-3,430.49	7,530.30	0.00	0.00	0.00	
14,100.00	90.00	179.95	6,474.00	-6,916.46	-3,430.41	7,625.70	0.00	0.00	0.00	
14,200.00	90.00	179.95	6,474.00	-7,016.46	-3,430.33	7,721.10	0.00	0.00	0.00	
14,300.00	90.00	179.95	6,474.00	-7,116.46	-3,430.24	7,816.50	0.00	0.00	0.00	
14,400.00	90.00	179.95	6,474.00	-7,216.46	-3,430.16	7,911.90	0.00	0.00	0.00	
14,500.00	90.00	179.95	6,474.00	-7,316.46	-3,430.07	8,007.30	0.00	0.00	0.00	
14,600.00	90.00	179.95	6,474.00	-7,416.46	-3,429.99	8,102.71	0.00	0.00	0.00	
14,700.00	90.00	179.95	6,474.00	-7,516.46	-3,429.91	8,198.11	0.00	0.00	0.00	
14,800.00	90.00	179.95	6,474.00	-7,616.46	-3,429.82	8,293.51	0.00	0.00	0.00	
14,900.00	90.00	179.95	6,474.00	-7,716.46	-3,429.74	8,388.91	0.00	0.00	0.00	
15,000.00	90.00	179.95	6,474.00	-7,816.46	-3,429.65	8,484.31	0.00	0.00	0.00	
15,100.00	90.00	179.95	6,474.00	-7,916.46	-3,429.57	8,579.71	0.00	0.00	0.00	
15,200.00	90.00	179.95	6,474.00	-8,016.46	-3,429.49	8,675.11	0.00	0.00	0.00	
15,300.00	90.00	179.95	6,474.00	-8,116.46	-3,429.40	8,770.51	0.00	0.00	0.00	

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,400.00	90.00	179.95	6,474.00	-8,216.46	-3,429.32	8,865.92	0.00	0.00	0.00
15,500.00	90.00	179.95	6,474.00	-8,316.46	-3,429.24	8,961.32	0.00	0.00	0.00
15,600.00	90.00	179.95	6,474.00	-8,416.46	-3,429.15	9,056.72	0.00	0.00	0.00
15,700.00	90.00	179.95	6,474.00	-8,516.46	-3,429.07	9,152.12	0.00	0.00	0.00
15,800.00	90.00	179.95	6,474.00	-8,616.46	-3,428.98	9,247.52	0.00	0.00	0.00
15,900.00	90.00	179.95	6,474.00	-8,716.46	-3,428.90	9,342.92	0.00	0.00	0.00
16,000.00	90.00	179.95	6,474.00	-8,816.46	-3,428.82	9,438.32	0.00	0.00	0.00
16,100.00	90.00	179.95	6,474.00	-8,916.46	-3,428.73	9,533.73	0.00	0.00	0.00
16,200.00	90.00	179.95	6,474.00	-9,016.46	-3,428.65	9,629.13	0.00	0.00	0.00
16,300.00	90.00	179.95	6,474.00	-9,116.46	-3,428.56	9,724.53	0.00	0.00	0.00
16,400.00	90.00	179.95	6,474.00	-9,216.46	-3,428.48	9,819.93	0.00	0.00	0.00
16,500.00	90.00	179.95	6,474.00	-9,316.46	-3,428.40	9,915.33	0.00	0.00	0.00
16,600.00	90.00	179.95	6,474.00	-9,416.46	-3,428.31	10,010.73	0.00	0.00	0.00
16,700.00	90.00	179.95	6,474.00	-9,516.46	-3,428.23	10,106.13	0.00	0.00	0.00
16,800.00	90.00	179.95	6,474.00	-9,616.46	-3,428.14	10,201.53	0.00	0.00	0.00
16,900.00	90.00	179.95	6,474.00	-9,716.46	-3,428.06	10,296.94	0.00	0.00	0.00
17,000.00	90.00	179.95	6,474.00	-9,816.46	-3,427.98	10,392.34	0.00	0.00	0.00
17,100.00	90.00	179.95	6,474.00	-9,916.46	-3,427.89	10,487.74	0.00	0.00	0.00
17,200.00	90.00	179.95	6,474.00	-10,016.46	-3,427.81	10,583.14	0.00	0.00	0.00
17,300.00	90.00	179.95	6,474.00	-10,116.46	-3,427.72	10,678.54	0.00	0.00	0.00
17,400.00	90.00	179.95	6,474.00	-10,216.46	-3,427.64	10,773.94	0.00	0.00	0.00
17,500.00	90.00	179.95	6,474.00	-10,316.46	-3,427.56	10,869.34	0.00	0.00	0.00
17,600.00	90.00	179.95	6,474.00	-10,416.46	-3,427.47	10,964.74	0.00	0.00	0.00
17,700.00	90.00	179.95	6,474.00	-10,516.46	-3,427.39	11,060.15	0.00	0.00	0.00
17,800.00	90.00	179.95	6,474.00	-10,616.46	-3,427.30	11,155.55	0.00	0.00	0.00
17,900.00	90.00	179.95	6,474.00	-10,716.46	-3,427.22	11,250.95	0.00	0.00	0.00
18,000.00	90.00	179.95	6,474.00	-10,816.46	-3,427.14	11,346.35	0.00	0.00	0.00
18,100.00	90.00	179.95	6,474.00	-10,916.46	-3,427.05	11,441.75	0.00	0.00	0.00
18,122.30	90.00	179.95	6,474.00	-10,938.76	-3,427.03	11,463.03	0.00	0.00	0.00
PBHL/TD 18122.30 MD 6474.00 TVD									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Apache 8-14-2L SL 879 - plan hits target center - Point	0.00	0.00	24.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
Apache 8-14-2L BHL 471 - plan hits target center - Point	0.00	0.00	6,474.00	-10,938.76	-3,427.03	14,638,672.40	1,789,878.23	40.30615568	-104.46390523
Apache 8-14-2L LP 470 - plan hits target center - Point	0.00	0.00	6,474.00	-1,288.10	-3,435.13	14,648,322.80	1,789,810.34	40.33265603	-104.46393918

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
3,000.00	3,000.00	0.00	0.00	KOP Begin 3°/100' build	
4,829.79	4,562.43	-187.19	-789.62	Begin 54.89° tangent section	
7,680.03	6,201.59	-725.05	-3,058.48	Begin 10°/100' build/turn	
8,471.65	6,474.00	-1,288.10	-3,435.13	LP Begin 90° lateral	
18,122.30	6,474.00	-10,938.76	-3,427.03	PBHL/TD 18122.30 MD 6474.00 TVD	

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Project	Weld County, Colorado		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 Colorado - HARN		
Map Zone:	Zone 13N (108 W to 102 W)		

Site		Section 04-T04N-R63W			
Site Position:		Northing:	14,650,073.90 usft	Latitude:	40.33740565
From:	Map	Easting:	1,793,302.13 usft	Longitude:	-104.45137138
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.36 °

Well	Apache 8-14-2L, Surf loc: 879 FSL 260 FWL Section 04-T04N-R63W					
Well Position	+N/-S	0.00 ft	Northing:	14,649,632.16 usft	Latitude:	40.33619378
	+E/-W	0.00 ft	Easting:	1,793,237.42 usft	Longitude:	-104.45161341
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,661.00 ft

Wellbore	Original hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/25/2018	8.08	66.90	52,230.10000000

Design	plan1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	197.40

Plan Survey Tool Program	Date	5/25/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,122.30 plan1 (Original hole)		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,829.79	54.89	256.66	4,562.43	-187.19	-789.62	3.00	3.00	0.00	256.66	
7,680.03	54.89	256.66	6,201.59	-725.05	-3,058.48	0.00	0.00	0.00	0.00	
8,471.65	90.00	179.95	6,474.00	-1,288.10	-3,435.13	10.00	4.43	-9.69	-82.27	Apache 8-14-2L LP 4"
18,122.30	90.00	179.95	6,474.00	-10,938.76	-3,427.03	0.00	0.00	0.00	0.00	Apache 8-14-2L BHL

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
100.00	0.00	0.00	100.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
200.00	0.00	0.00	200.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
300.00	0.00	0.00	300.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
400.00	0.00	0.00	400.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
500.00	0.00	0.00	500.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
600.00	0.00	0.00	600.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
700.00	0.00	0.00	700.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
800.00	0.00	0.00	800.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
900.00	0.00	0.00	900.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
KOP Begin 3°/100' build									
3,100.00	3.00	256.66	3,099.95	-0.60	-2.55	14,649,631.54	1,793,234.88	40.33619212	-104.45162255
3,200.00	6.00	256.66	3,199.63	-2.41	-10.18	14,649,629.68	1,793,227.25	40.33618715	-104.45164994
3,300.00	9.00	256.66	3,298.77	-5.42	-22.88	14,649,626.59	1,793,214.57	40.33617888	-104.45169551
3,400.00	12.00	256.66	3,397.08	-9.63	-40.61	14,649,622.28	1,793,196.87	40.33616734	-104.45175913
3,500.00	15.00	256.66	3,494.31	-15.01	-63.32	14,649,616.75	1,793,174.19	40.33615255	-104.45184063
3,600.00	18.00	256.66	3,590.18	-21.56	-90.95	14,649,610.03	1,793,146.60	40.33613457	-104.45193978
3,700.00	21.00	256.66	3,684.43	-29.26	-123.43	14,649,602.13	1,793,114.17	40.33611343	-104.45205632
3,800.00	24.00	256.66	3,776.81	-38.09	-160.66	14,649,593.08	1,793,077.00	40.33608919	-104.45218992
3,900.00	27.00	256.66	3,867.06	-48.02	-202.55	14,649,582.89	1,793,035.17	40.33606192	-104.45234022
4,000.00	30.00	256.66	3,954.93	-59.02	-248.97	14,649,571.59	1,792,988.82	40.33603170	-104.45250680
4,100.00	33.00	256.66	4,040.18	-71.07	-299.81	14,649,559.23	1,792,938.06	40.33598861	-104.45268921
4,200.00	36.00	256.66	4,122.59	-84.14	-354.91	14,649,545.82	1,792,883.03	40.33596273	-104.45288695
4,300.00	39.00	256.66	4,201.91	-98.18	-414.14	14,649,531.42	1,792,823.90	40.33592417	-104.45309948
4,400.00	42.00	256.66	4,277.95	-113.16	-477.33	14,649,516.05	1,792,760.80	40.33588304	-104.45332621
4,500.00	45.00	256.66	4,350.47	-129.03	-544.30	14,649,499.75	1,792,693.93	40.33583944	-104.45356653
4,600.00	48.00	256.66	4,419.30	-145.76	-614.87	14,649,482.59	1,792,623.46	40.33579349	-104.45381976
4,700.00	51.00	256.66	4,484.24	-163.30	-688.85	14,649,464.59	1,792,549.59	40.33574533	-104.45408523
4,800.00	54.00	256.66	4,545.11	-181.60	-766.04	14,649,445.82	1,792,472.52	40.33569508	-104.45436220
4,829.79	54.89	256.66	4,562.43	-187.19	-789.62	14,649,440.08	1,792,448.98	40.33567973	-104.45444681
Begin 54.89° tangent section									
4,900.00	54.89	256.66	4,602.81	-200.44	-845.51	14,649,426.48	1,792,393.17	40.33564334	-104.45464737
5,000.00	54.89	256.66	4,660.32	-219.31	-925.11	14,649,407.12	1,792,313.68	40.33559151	-104.45493300

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,100.00	54.89	256.66	4,717.83	-238.18	-1,004.72	14,649,387.76	1,792,234.20	40.33553968	-104.45521863
5,200.00	54.89	256.66	4,775.34	-257.05	-1,084.32	14,649,368.39	1,792,154.72	40.33548786	-104.45550427
5,300.00	54.89	256.66	4,832.85	-275.92	-1,163.92	14,649,349.03	1,792,075.23	40.33543603	-104.45578990
5,400.00	54.89	256.66	4,890.36	-294.79	-1,243.52	14,649,329.67	1,791,995.75	40.33538420	-104.45607554
5,500.00	54.89	256.66	4,947.87	-313.66	-1,323.13	14,649,310.30	1,791,916.27	40.33533237	-104.45636117
5,600.00	54.89	256.66	5,005.38	-332.53	-1,402.73	14,649,290.94	1,791,836.78	40.33528054	-104.45664680
5,700.00	54.89	256.66	5,062.89	-351.41	-1,482.33	14,649,271.58	1,791,757.30	40.33522871	-104.45693243
5,800.00	54.89	256.66	5,120.40	-370.28	-1,561.93	14,649,252.21	1,791,677.81	40.33517688	-104.45721807
5,900.00	54.89	256.66	5,177.90	-389.15	-1,641.54	14,649,232.85	1,791,598.33	40.33512504	-104.45750370
6,000.00	54.89	256.66	5,235.41	-408.02	-1,721.14	14,649,213.49	1,791,518.85	40.33507321	-104.45778933
6,100.00	54.89	256.66	5,292.92	-426.89	-1,800.74	14,649,194.12	1,791,439.36	40.33502138	-104.45807496
6,200.00	54.89	256.66	5,350.43	-445.76	-1,880.34	14,649,174.76	1,791,359.88	40.33496954	-104.45836059
6,300.00	54.89	256.66	5,407.94	-464.63	-1,959.94	14,649,155.39	1,791,280.40	40.33491771	-104.45864622
6,400.00	54.89	256.66	5,465.45	-483.50	-2,039.55	14,649,136.03	1,791,200.91	40.33486587	-104.45893185
6,500.00	54.89	256.66	5,522.96	-502.37	-2,119.15	14,649,116.67	1,791,121.43	40.33481403	-104.45921747
6,600.00	54.89	256.66	5,580.47	-521.24	-2,198.75	14,649,097.30	1,791,041.94	40.33476220	-104.45950310
6,700.00	54.89	256.66	5,637.98	-540.11	-2,278.35	14,649,077.94	1,790,962.46	40.33471036	-104.45978873
6,800.00	54.89	256.66	5,695.49	-558.98	-2,357.96	14,649,058.58	1,790,882.98	40.33465852	-104.46007436
6,900.00	54.89	256.66	5,753.00	-577.85	-2,437.56	14,649,039.21	1,790,803.49	40.33460668	-104.46035998
7,000.00	54.89	256.66	5,810.51	-596.72	-2,517.16	14,649,019.85	1,790,724.01	40.33455484	-104.46064561
7,100.00	54.89	256.66	5,868.02	-615.60	-2,596.76	14,649,000.49	1,790,644.53	40.33450300	-104.46093124
7,200.00	54.89	256.66	5,925.53	-634.47	-2,676.37	14,648,981.12	1,790,565.04	40.33445116	-104.46121686
7,300.00	54.89	256.66	5,983.04	-653.34	-2,755.97	14,648,961.76	1,790,485.56	40.33439931	-104.46150249
7,400.00	54.89	256.66	6,040.55	-672.21	-2,835.57	14,648,942.40	1,790,406.07	40.33434747	-104.46178811
7,500.00	54.89	256.66	6,098.06	-691.08	-2,915.17	14,648,923.03	1,790,326.59	40.33429563	-104.46207374
7,600.00	54.89	256.66	6,155.57	-709.95	-2,994.77	14,648,903.67	1,790,247.11	40.33424378	-104.46235936
7,680.03	54.89	256.66	6,201.59	-725.05	-3,058.48	14,648,888.17	1,790,183.50	40.33420229	-104.46258794
Begin 10°/100' build/turn									
7,700.00	55.19	254.25	6,213.04	-729.16	-3,074.32	14,648,883.96	1,790,167.68	40.33419100	-104.46264478
7,800.00	57.34	242.50	6,268.71	-759.82	-3,151.37	14,648,852.83	1,790,090.83	40.33410680	-104.46292122
7,900.00	60.53	231.43	6,320.42	-806.51	-3,222.92	14,648,805.70	1,790,019.57	40.33397855	-104.46317795
8,000.00	64.57	221.12	6,366.61	-867.83	-3,286.81	14,648,743.99	1,789,956.06	40.33381016	-104.46340717
8,100.00	69.28	211.52	6,405.86	-941.90	-3,341.09	14,648,669.58	1,789,902.23	40.33360674	-104.46360192
8,200.00	74.49	202.54	6,437.00	-1,026.48	-3,384.12	14,648,584.73	1,789,859.73	40.33337446	-104.46375627
8,300.00	80.05	194.01	6,459.06	-1,119.00	-3,414.59	14,648,492.03	1,789,829.84	40.33312040	-104.46386555
8,400.00	85.81	185.77	6,471.38	-1,216.64	-3,431.57	14,648,394.28	1,789,813.46	40.33285226	-104.46392642
8,471.65	90.00	179.95	6,474.00	-1,288.10	-3,435.13	14,648,322.80	1,789,810.34	40.33265603	-104.46393918
LP Begin 90° lateral									
8,500.00	90.00	179.95	6,474.00	-1,316.46	-3,435.11	14,648,294.44	1,789,810.54	40.33257817	-104.46393908
8,600.00	90.00	179.95	6,474.00	-1,416.46	-3,435.03	14,648,194.45	1,789,811.24	40.33230358	-104.46393873
8,700.00	90.00	179.95	6,474.00	-1,516.46	-3,434.94	14,648,094.45	1,789,811.95	40.33202898	-104.46393838
8,800.00	90.00	179.95	6,474.00	-1,616.46	-3,434.86	14,647,994.45	1,789,812.65	40.33175438	-104.46393803
8,900.00	90.00	179.95	6,474.00	-1,716.46	-3,434.77	14,647,894.45	1,789,813.35	40.33147979	-104.46393768
9,000.00	90.00	179.95	6,474.00	-1,816.46	-3,434.69	14,647,794.46	1,789,814.06	40.33120519	-104.46393732
9,100.00	90.00	179.95	6,474.00	-1,916.46	-3,434.61	14,647,694.46	1,789,814.76	40.33093060	-104.46393697
9,200.00	90.00	179.95	6,474.00	-2,016.46	-3,434.52	14,647,594.46	1,789,815.46	40.33065600	-104.46393662
9,300.00	90.00	179.95	6,474.00	-2,116.46	-3,434.44	14,647,494.46	1,789,816.17	40.33038140	-104.46393627
9,400.00	90.00	179.95	6,474.00	-2,216.46	-3,434.35	14,647,394.47	1,789,816.87	40.33010681	-104.46393592
9,500.00	90.00	179.95	6,474.00	-2,316.46	-3,434.27	14,647,294.47	1,789,817.57	40.32983221	-104.46393557
9,600.00	90.00	179.95	6,474.00	-2,416.46	-3,434.19	14,647,194.47	1,789,818.28	40.32955762	-104.46393522
9,700.00	90.00	179.95	6,474.00	-2,516.46	-3,434.10	14,647,094.48	1,789,818.98	40.32928302	-104.46393486
9,800.00	90.00	179.95	6,474.00	-2,616.46	-3,434.02	14,646,994.48	1,789,819.68	40.32900842	-104.46393451
9,900.00	90.00	179.95	6,474.00	-2,716.46	-3,433.93	14,646,894.48	1,789,820.39	40.32873383	-104.46393416
10,000.00	90.00	179.95	6,474.00	-2,816.46	-3,433.85	14,646,794.48	1,789,821.09	40.32845923	-104.46393381

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,100.00	90.00	179.95	6,474.00	-2,916.46	-3,433.77	14,646,694.49	1,789,821.80	40.32818464	-104.46393346
10,200.00	90.00	179.95	6,474.00	-3,016.46	-3,433.68	14,646,594.49	1,789,822.50	40.32791004	-104.46393311
10,300.00	90.00	179.95	6,474.00	-3,116.46	-3,433.60	14,646,494.49	1,789,823.20	40.32763544	-104.46393275
10,400.00	90.00	179.95	6,474.00	-3,216.46	-3,433.52	14,646,394.49	1,789,823.91	40.32736085	-104.46393240
10,500.00	90.00	179.95	6,474.00	-3,316.46	-3,433.43	14,646,294.50	1,789,824.61	40.32708625	-104.46393205
10,600.00	90.00	179.95	6,474.00	-3,416.46	-3,433.35	14,646,194.50	1,789,825.31	40.32681166	-104.46393170
10,700.00	90.00	179.95	6,474.00	-3,516.46	-3,433.26	14,646,094.50	1,789,826.02	40.32653706	-104.46393135
10,800.00	90.00	179.95	6,474.00	-3,616.46	-3,433.18	14,645,994.50	1,789,826.72	40.32626246	-104.46393100
10,900.00	90.00	179.95	6,474.00	-3,716.46	-3,433.10	14,645,894.51	1,789,827.42	40.32598787	-104.46393065
11,000.00	90.00	179.95	6,474.00	-3,816.46	-3,433.01	14,645,794.51	1,789,828.13	40.32571327	-104.46393029
11,100.00	90.00	179.95	6,474.00	-3,916.46	-3,432.93	14,645,694.51	1,789,828.83	40.32543868	-104.46392994
11,200.00	90.00	179.95	6,474.00	-4,016.46	-3,432.84	14,645,594.52	1,789,829.53	40.32516408	-104.46392959
11,300.00	90.00	179.95	6,474.00	-4,116.46	-3,432.76	14,645,494.52	1,789,830.24	40.32488948	-104.46392924
11,400.00	90.00	179.95	6,474.00	-4,216.46	-3,432.68	14,645,394.52	1,789,830.94	40.32461489	-104.46392889
11,500.00	90.00	179.95	6,474.00	-4,316.46	-3,432.59	14,645,294.52	1,789,831.64	40.32434029	-104.46392854
11,600.00	90.00	179.95	6,474.00	-4,416.46	-3,432.51	14,645,194.53	1,789,832.35	40.32406569	-104.46392818
11,700.00	90.00	179.95	6,474.00	-4,516.46	-3,432.42	14,645,094.53	1,789,833.05	40.32379110	-104.46392783
11,800.00	90.00	179.95	6,474.00	-4,616.46	-3,432.34	14,644,994.53	1,789,833.75	40.32351650	-104.46392748
11,900.00	90.00	179.95	6,474.00	-4,716.46	-3,432.26	14,644,894.53	1,789,834.46	40.32324191	-104.46392713
12,000.00	90.00	179.95	6,474.00	-4,816.46	-3,432.17	14,644,794.54	1,789,835.16	40.32296731	-104.46392678
12,100.00	90.00	179.95	6,474.00	-4,916.46	-3,432.09	14,644,694.54	1,789,835.86	40.32269271	-104.46392643
12,200.00	90.00	179.95	6,474.00	-5,016.46	-3,432.00	14,644,594.54	1,789,836.57	40.32241812	-104.46392607
12,300.00	90.00	179.95	6,474.00	-5,116.46	-3,431.92	14,644,494.54	1,789,837.27	40.32214352	-104.46392572
12,400.00	90.00	179.95	6,474.00	-5,216.46	-3,431.84	14,644,394.55	1,789,837.98	40.32186892	-104.46392537
12,500.00	90.00	179.95	6,474.00	-5,316.46	-3,431.75	14,644,294.55	1,789,838.68	40.32159433	-104.46392502
12,600.00	90.00	179.95	6,474.00	-5,416.46	-3,431.67	14,644,194.55	1,789,839.38	40.32131973	-104.46392467
12,700.00	90.00	179.95	6,474.00	-5,516.46	-3,431.58	14,644,094.56	1,789,840.09	40.32104513	-104.46392431
12,800.00	90.00	179.95	6,474.00	-5,616.46	-3,431.50	14,643,994.56	1,789,840.79	40.32077054	-104.46392396
12,900.00	90.00	179.95	6,474.00	-5,716.46	-3,431.42	14,643,894.56	1,789,841.49	40.32049594	-104.46392361
13,000.00	90.00	179.95	6,474.00	-5,816.46	-3,431.33	14,643,794.56	1,789,842.20	40.32022135	-104.46392326
13,100.00	90.00	179.95	6,474.00	-5,916.46	-3,431.25	14,643,694.57	1,789,842.90	40.31994675	-104.46392291
13,200.00	90.00	179.95	6,474.00	-6,016.46	-3,431.17	14,643,594.57	1,789,843.60	40.31967215	-104.46392256
13,300.00	90.00	179.95	6,474.00	-6,116.46	-3,431.08	14,643,494.57	1,789,844.31	40.31939756	-104.46392220
13,400.00	90.00	179.95	6,474.00	-6,216.46	-3,431.00	14,643,394.57	1,789,845.01	40.31912296	-104.46392185
13,500.00	90.00	179.95	6,474.00	-6,316.46	-3,430.91	14,643,294.58	1,789,845.71	40.31884836	-104.46392150
13,600.00	90.00	179.95	6,474.00	-6,416.46	-3,430.83	14,643,194.58	1,789,846.42	40.31857377	-104.46392115
13,700.00	90.00	179.95	6,474.00	-6,516.46	-3,430.75	14,643,094.58	1,789,847.12	40.31829917	-104.46392080
13,800.00	90.00	179.95	6,474.00	-6,616.46	-3,430.66	14,642,994.58	1,789,847.82	40.31802457	-104.46392044
13,900.00	90.00	179.95	6,474.00	-6,716.46	-3,430.58	14,642,894.59	1,789,848.53	40.31774998	-104.46392009
14,000.00	90.00	179.95	6,474.00	-6,816.46	-3,430.49	14,642,794.59	1,789,849.23	40.31747538	-104.46391974
14,100.00	90.00	179.95	6,474.00	-6,916.46	-3,430.41	14,642,694.59	1,789,849.93	40.31720078	-104.46391939
14,200.00	90.00	179.95	6,474.00	-7,016.46	-3,430.33	14,642,594.60	1,789,850.64	40.31692619	-104.46391904
14,300.00	90.00	179.95	6,474.00	-7,116.46	-3,430.24	14,642,494.60	1,789,851.34	40.31665159	-104.46391868
14,400.00	90.00	179.95	6,474.00	-7,216.46	-3,430.16	14,642,394.60	1,789,852.04	40.31637699	-104.46391833
14,500.00	90.00	179.95	6,474.00	-7,316.46	-3,430.07	14,642,294.60	1,789,852.75	40.31610240	-104.46391798
14,600.00	90.00	179.95	6,474.00	-7,416.46	-3,429.99	14,642,194.61	1,789,853.45	40.31582780	-104.46391763
14,700.00	90.00	179.95	6,474.00	-7,516.46	-3,429.91	14,642,094.61	1,789,854.15	40.31555320	-104.46391728
14,800.00	90.00	179.95	6,474.00	-7,616.46	-3,429.82	14,641,994.61	1,789,854.86	40.31527861	-104.46391693
14,900.00	90.00	179.95	6,474.00	-7,716.46	-3,429.74	14,641,894.61	1,789,855.56	40.31500401	-104.46391657
15,000.00	90.00	179.95	6,474.00	-7,816.46	-3,429.65	14,641,794.62	1,789,856.27	40.31472941	-104.46391622
15,100.00	90.00	179.95	6,474.00	-7,916.46	-3,429.57	14,641,694.62	1,789,856.97	40.31445482	-104.46391587
15,200.00	90.00	179.95	6,474.00	-8,016.46	-3,429.49	14,641,594.62	1,789,857.67	40.31418022	-104.46391552
15,300.00	90.00	179.95	6,474.00	-8,116.46	-3,429.40	14,641,494.62	1,789,858.38	40.31390562	-104.46391517
15,400.00	90.00	179.95	6,474.00	-8,216.46	-3,429.32	14,641,394.63	1,789,859.08	40.31363103	-104.46391481
15,500.00	90.00	179.95	6,474.00	-8,316.46	-3,429.24	14,641,294.63	1,789,859.78	40.31335643	-104.46391446

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,600.00	90.00	179.95	6,474.00	-8,416.46	-3,429.15	14,641,194.63	1,789,860.49	40.31308183	-104.46391411
15,700.00	90.00	179.95	6,474.00	-8,516.46	-3,429.07	14,641,094.64	1,789,861.19	40.31280725	-104.46391376
15,800.00	90.00	179.95	6,474.00	-8,616.46	-3,428.98	14,640,994.64	1,789,861.89	40.31253265	-104.46391341
15,900.00	90.00	179.95	6,474.00	-8,716.46	-3,428.90	14,640,894.64	1,789,862.60	40.31225805	-104.46391305
16,000.00	90.00	179.95	6,474.00	-8,816.46	-3,428.82	14,640,794.64	1,789,863.30	40.31198346	-104.46391270
16,100.00	90.00	179.95	6,474.00	-8,916.46	-3,428.73	14,640,694.65	1,789,864.00	40.31170886	-104.46391235
16,200.00	90.00	179.95	6,474.00	-9,016.46	-3,428.65	14,640,594.65	1,789,864.71	40.31143426	-104.46391200
16,300.00	90.00	179.95	6,474.00	-9,116.46	-3,428.56	14,640,494.65	1,789,865.41	40.31115967	-104.46391164
16,400.00	90.00	179.95	6,474.00	-9,216.46	-3,428.48	14,640,394.65	1,789,866.11	40.31088507	-104.46391129
16,500.00	90.00	179.95	6,474.00	-9,316.46	-3,428.40	14,640,294.66	1,789,866.82	40.31061047	-104.46391094
16,600.00	90.00	179.95	6,474.00	-9,416.46	-3,428.31	14,640,194.66	1,789,867.52	40.31033588	-104.46391059
16,700.00	90.00	179.95	6,474.00	-9,516.46	-3,428.23	14,640,094.66	1,789,868.22	40.31006128	-104.46391024
16,800.00	90.00	179.95	6,474.00	-9,616.46	-3,428.14	14,639,994.66	1,789,868.93	40.30978668	-104.46390988
16,900.00	90.00	179.95	6,474.00	-9,716.46	-3,428.06	14,639,894.67	1,789,869.63	40.30951209	-104.46390953
17,000.00	90.00	179.95	6,474.00	-9,816.46	-3,427.98	14,639,794.67	1,789,870.33	40.30923749	-104.46390918
17,100.00	90.00	179.95	6,474.00	-9,916.46	-3,427.89	14,639,694.67	1,789,871.04	40.30896289	-104.46390883
17,200.00	90.00	179.95	6,474.00	-10,016.46	-3,427.81	14,639,594.68	1,789,871.74	40.30868829	-104.46390848
17,300.00	90.00	179.95	6,474.00	-10,116.46	-3,427.72	14,639,494.68	1,789,872.45	40.30841370	-104.46390812
17,400.00	90.00	179.95	6,474.00	-10,216.46	-3,427.64	14,639,394.68	1,789,873.15	40.30813910	-104.46390777
17,500.00	90.00	179.95	6,474.00	-10,316.46	-3,427.56	14,639,294.68	1,789,873.85	40.30786450	-104.46390742
17,600.00	90.00	179.95	6,474.00	-10,416.46	-3,427.47	14,639,194.69	1,789,874.56	40.30758991	-104.46390707
17,700.00	90.00	179.95	6,474.00	-10,516.46	-3,427.39	14,639,094.69	1,789,875.26	40.30731531	-104.46390671
17,800.00	90.00	179.95	6,474.00	-10,616.46	-3,427.30	14,638,994.69	1,789,875.96	40.30704071	-104.46390636
17,900.00	90.00	179.95	6,474.00	-10,716.46	-3,427.22	14,638,894.69	1,789,876.67	40.30676612	-104.46390601
18,000.00	90.00	179.95	6,474.00	-10,816.46	-3,427.14	14,638,794.70	1,789,877.37	40.30649152	-104.46390566
18,100.00	90.00	179.95	6,474.00	-10,916.46	-3,427.05	14,638,694.70	1,789,878.07	40.30621692	-104.46390530
18,122.30	90.00	179.95	6,474.00	-10,938.76	-3,427.03	14,638,672.40	1,789,878.23	40.30615568	-104.46390523
PBHL/TD 18122.30 MD 6474.00 TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Apache 8-14-2L SL 879 - hit/miss target - Shape - Point	0.00	0.00	24.00	0.00	0.00	14,649,632.16	1,793,237.42	40.33619378	-104.45161341
Apache 8-14-2L BHL 471 - plan hits target center - Point	0.00	0.00	6,474.00	-10,938.76	-3,427.03	14,638,672.40	1,789,878.23	40.30615568	-104.46390523
Apache 8-14-2L LP 470 - plan hits target center - Point	0.00	0.00	6,474.00	-1,288.10	-3,435.13	14,648,322.80	1,789,810.34	40.33265603	-104.46393918

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Apache 8-14-2L
Company:	Confluence Resources	TVD Reference:	RKB=4661+24 @ 4685.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=4661+24 @ 4685.00ft
Site:	Section 04-T04N-R63W	North Reference:	True
Well:	Apache 8-14-2L	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original hole		
Design:	plan1		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,000.00	3,000.00	0.00	0.00	KOP Begin 3°/100' build
4,829.79	4,562.43	-187.19	-789.62	Begin 54.89° tangent section
7,680.03	6,201.59	-725.05	-3,058.48	Begin 10°/100' build/turn
8,471.65	6,474.00	-1,288.10	-3,435.13	LP Begin 90° lateral
18,122.30	6,474.00	-10,938.76	-3,427.03	PBHL/TD 18122.30 MD 6474.00 TVD