



Weld County, Colorado
Section 33-T01N-R65W
Desha 4-09-1L
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	5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00	KOP Begin 10°/100' build
3	5214.74	21.47	168.04	5209.75	-38.91	8.24	10.00	39.02	Begin 21.47° tangent
4	6900.40	21.47	168.04	6778.40	-642.59	136.12	0.00	644.43	Begin 10°/100' build/turn
5	7593.03	90.24	180.12	7145.00	-1180.03	165.34	10.00	1182.22	LP Begin 90.24° lateral section
6	16925.40	90.24	180.12	7106.00	-10512.30	146.39	0.00	10513.32	PBHL/TD 16925.40 MD/7106.00 TVD

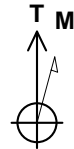
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL Desha 4-9-1L 470 FSL 610 FWL	7106.00	-10512.30	146.3914517290.00	1731108.35	39.97361433	-104.67628492	
LP Desha 4-9-1L 470 FNL 610 FWL	7145.00	-1180.03	165.3414526622.26	1731093.46	39.99924232	-104.67621711	

Desha 4-09-1L			
Surf loc: 710 FSL 450 FWL Section 33-T01N-R65W			
NAD83 Colorado - HARN			
Universal Transverse Mercator (US Survey Feet)			
Zone 13N (108 W to 102 W)			
RKB=5076+25 @ 5101.00ft			
Northing	Easting	Latitude	Longitude
14527801.68	1730923.84	40.00246287	-104.67680749

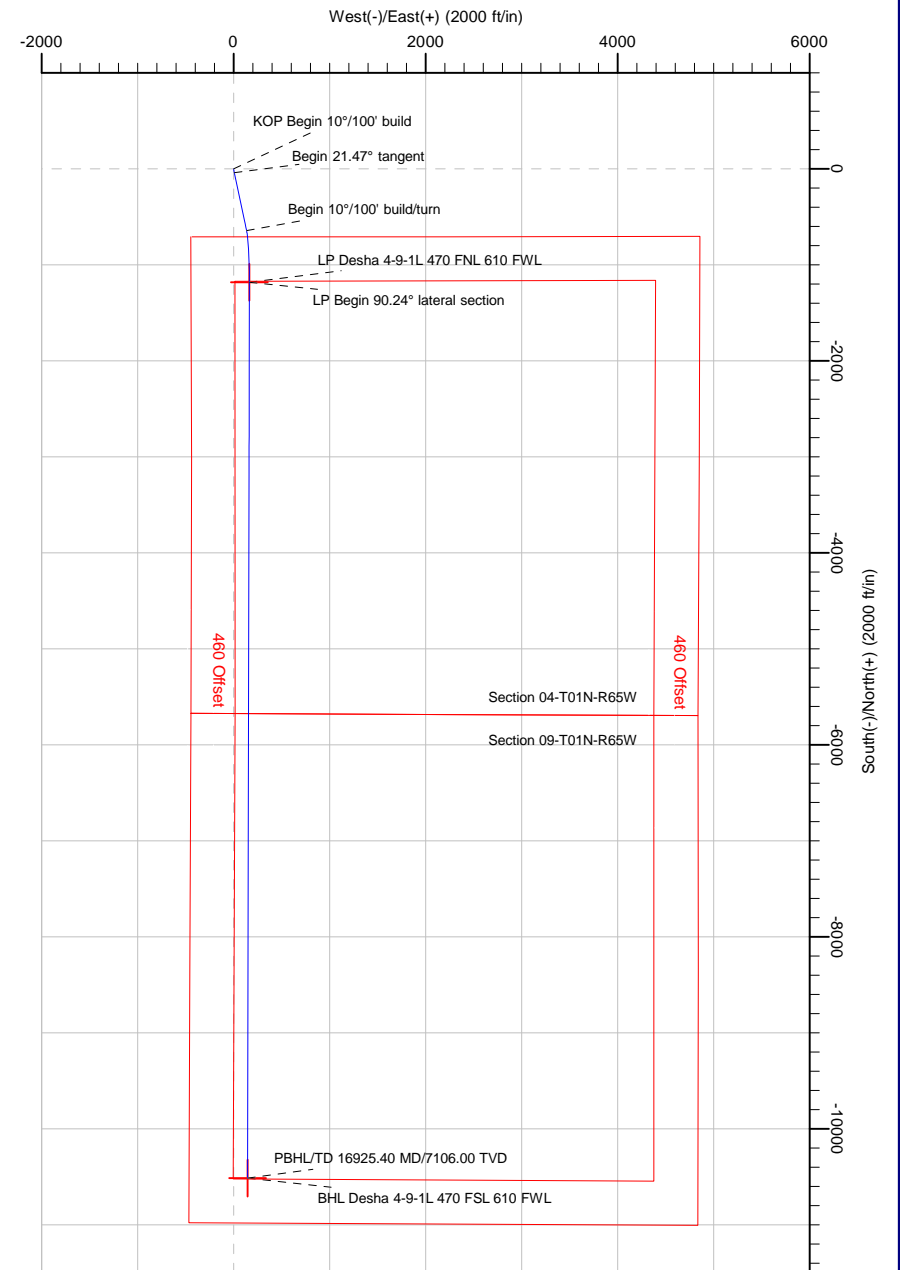
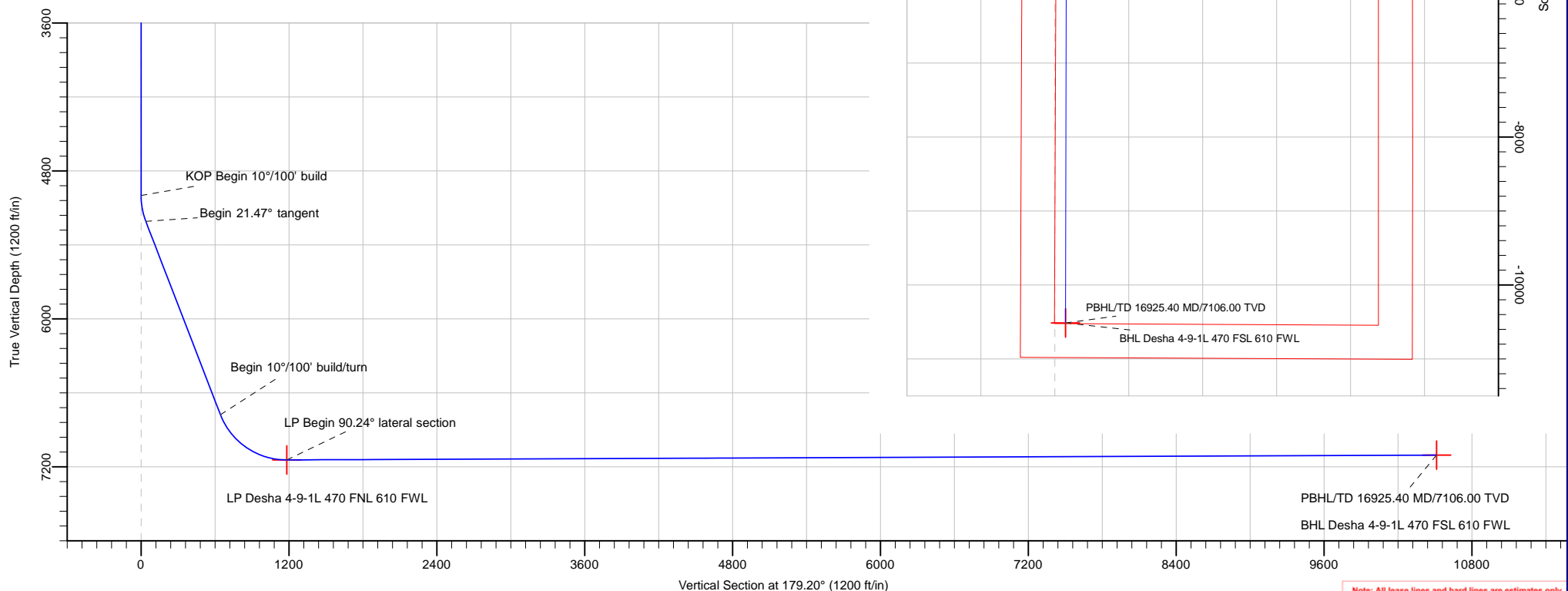
Azimuth Corrections:

To convert a Magnetic Direction to a True Direction, Add 8.28° East



Azimuths to True North
Magnetic North: 8.28°

Magnetic Field
Strength: 52144.8snT
Dip Angle: 66.45°
Date: 5/29/2017
Model: HDGM



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

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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 33-T01N-R65W			
Site Position:		Northing:	14,527,751.12 usft	Latitude:	40.00234552
From:	Map	Easting:	1,730,774.27 usft	Longitude:	-104.67734224
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.21 °

Well	Desha 4-09-1L, Surf loc: 710 FSL 450 FWL Section 33-T01N-R65W					
Well Position	+N/-S	50.02 ft	Northing:	14,527,801.68 usft	Latitude:	40.00248288
	+E/-W	149.75 ft	Easting:	1,730,923.84 usft	Longitude:	-104.67680749
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,076.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/29/2017	8.28	66.45	52,144.80000000

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	179.20

Plan Survey Tool Program	Date	8/29/2017		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,925.41	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	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,214.74	21.47	168.04	5,209.75	-38.91	8.24	10.00	10.00	0.00	168.04	
6,900.40	21.47	168.04	6,778.40	-642.59	136.12	0.00	0.00	0.00	0.00	
7,593.03	90.24	180.12	7,145.00	-1,180.03	165.34	10.00	9.93	1.74	12.93	LP Desha 4-9-1L 470
16,925.41	90.24	180.12	7,106.00	-10,512.30	146.39	0.00	0.00	0.00	0.00	BHL Desha 4-9-1L 47

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Begin 10°/100' build									
5,100.00	10.00	168.04	5,099.49	-8.52	1.80	8.54	10.00	10.00	0.00
5,200.00	20.00	168.04	5,195.96	-33.80	7.16	33.90	10.00	10.00	0.00

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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)	
5,214.74	21.47	168.04	5,209.75	-38.91	8.24	39.02	10.00	10.00	0.00	
Begin 21.47° tangent										
5,300.00	21.47	168.04	5,289.09	-69.44	14.71	69.64	0.00	0.00	0.00	
5,400.00	21.47	168.04	5,382.15	-105.26	22.30	105.56	0.00	0.00	0.00	
5,500.00	21.47	168.04	5,475.21	-141.07	29.88	141.47	0.00	0.00	0.00	
5,600.00	21.47	168.04	5,568.27	-176.88	37.47	177.39	0.00	0.00	0.00	
5,700.00	21.47	168.04	5,661.32	-212.69	45.06	213.30	0.00	0.00	0.00	
5,800.00	21.47	168.04	5,754.38	-248.51	52.64	249.22	0.00	0.00	0.00	
5,900.00	21.47	168.04	5,847.44	-284.32	60.23	285.13	0.00	0.00	0.00	
6,000.00	21.47	168.04	5,940.50	-320.13	67.82	321.05	0.00	0.00	0.00	
6,100.00	21.47	168.04	6,033.56	-355.95	75.40	356.96	0.00	0.00	0.00	
6,200.00	21.47	168.04	6,126.62	-391.76	82.99	392.88	0.00	0.00	0.00	
6,300.00	21.47	168.04	6,219.67	-427.57	90.58	428.79	0.00	0.00	0.00	
6,400.00	21.47	168.04	6,312.73	-463.38	98.16	464.71	0.00	0.00	0.00	
6,500.00	21.47	168.04	6,405.79	-499.20	105.75	500.62	0.00	0.00	0.00	
6,600.00	21.47	168.04	6,498.85	-535.01	113.33	536.54	0.00	0.00	0.00	
6,700.00	21.47	168.04	6,591.91	-570.82	120.92	572.45	0.00	0.00	0.00	
6,800.00	21.47	168.04	6,684.97	-606.64	128.51	608.37	0.00	0.00	0.00	
6,900.00	21.47	168.04	6,778.03	-642.45	136.09	644.28	0.00	0.00	0.00	
6,900.40	21.47	168.04	6,778.40	-642.59	136.12	644.43	0.00	0.00	0.00	
Begin 10°/100' build/turn										
7,000.00	31.26	172.32	6,867.54	-686.14	143.38	688.07	10.00	9.82	4.29	
7,100.00	41.16	174.70	6,948.13	-744.77	149.90	746.79	10.00	9.90	2.39	
7,200.00	51.09	176.29	7,017.35	-816.55	155.47	818.63	10.00	9.93	1.59	
7,300.00	61.04	177.49	7,073.10	-899.29	159.91	901.43	10.00	9.95	1.20	
7,400.00	71.00	178.48	7,113.69	-990.49	163.09	992.67	10.00	9.96	0.98	
7,500.00	80.97	179.35	7,137.88	-1,087.37	164.91	1,089.56	10.00	9.96	0.87	
7,593.03	90.24	180.12	7,145.00	-1,180.03	165.34	1,182.22	10.00	9.97	0.83	
LP Begin 90.24° lateral section										
7,600.00	90.24	180.12	7,144.97	-1,187.00	165.33	1,189.18	0.00	0.00	0.00	
7,700.00	90.24	180.12	7,144.55	-1,287.00	165.13	1,289.17	0.00	0.00	0.00	
7,800.00	90.24	180.12	7,144.14	-1,386.99	164.92	1,389.16	0.00	0.00	0.00	
7,900.00	90.24	180.12	7,143.72	-1,486.99	164.72	1,489.14	0.00	0.00	0.00	
8,000.00	90.24	180.12	7,143.30	-1,586.99	164.52	1,589.13	0.00	0.00	0.00	
8,100.00	90.24	180.12	7,142.88	-1,686.99	164.31	1,689.12	0.00	0.00	0.00	
8,200.00	90.24	180.12	7,142.46	-1,786.99	164.11	1,789.10	0.00	0.00	0.00	
8,300.00	90.24	180.12	7,142.05	-1,886.99	163.91	1,889.09	0.00	0.00	0.00	
8,400.00	90.24	180.12	7,141.63	-1,986.99	163.70	1,989.08	0.00	0.00	0.00	
8,500.00	90.24	180.12	7,141.21	-2,086.99	163.50	2,089.06	0.00	0.00	0.00	
8,600.00	90.24	180.12	7,140.79	-2,186.99	163.30	2,189.05	0.00	0.00	0.00	
8,700.00	90.24	180.12	7,140.37	-2,286.99	163.09	2,289.03	0.00	0.00	0.00	
8,800.00	90.24	180.12	7,139.96	-2,386.98	162.89	2,389.02	0.00	0.00	0.00	
8,900.00	90.24	180.12	7,139.54	-2,486.98	162.69	2,489.01	0.00	0.00	0.00	
9,000.00	90.24	180.12	7,139.12	-2,586.98	162.49	2,588.99	0.00	0.00	0.00	
9,100.00	90.24	180.12	7,138.70	-2,686.98	162.28	2,688.98	0.00	0.00	0.00	
9,200.00	90.24	180.12	7,138.28	-2,786.98	162.08	2,788.97	0.00	0.00	0.00	
9,300.00	90.24	180.12	7,137.87	-2,886.98	161.88	2,888.95	0.00	0.00	0.00	
9,400.00	90.24	180.12	7,137.45	-2,986.98	161.67	2,988.94	0.00	0.00	0.00	
9,500.00	90.24	180.12	7,137.03	-3,086.98	161.47	3,088.93	0.00	0.00	0.00	
9,600.00	90.24	180.12	7,136.61	-3,186.98	161.27	3,188.91	0.00	0.00	0.00	
9,700.00	90.24	180.12	7,136.20	-3,286.97	161.06	3,288.90	0.00	0.00	0.00	
9,800.00	90.24	180.12	7,135.78	-3,386.97	160.86	3,388.88	0.00	0.00	0.00	
9,900.00	90.24	180.12	7,135.36	-3,486.97	160.66	3,488.87	0.00	0.00	0.00	

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Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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	90.24	180.12	7,134.94	-3,586.97	160.45	3,588.86	0.00	0.00	0.00
10,100.00	90.24	180.12	7,134.52	-3,686.97	160.25	3,688.84	0.00	0.00	0.00
10,200.00	90.24	180.12	7,134.11	-3,786.97	160.05	3,788.83	0.00	0.00	0.00
10,300.00	90.24	180.12	7,133.69	-3,886.97	159.85	3,888.82	0.00	0.00	0.00
10,400.00	90.24	180.12	7,133.27	-3,986.97	159.64	3,988.80	0.00	0.00	0.00
10,500.00	90.24	180.12	7,132.85	-4,086.97	159.44	4,088.79	0.00	0.00	0.00
10,600.00	90.24	180.12	7,132.43	-4,186.96	159.24	4,188.78	0.00	0.00	0.00
10,700.00	90.24	180.12	7,132.02	-4,286.96	159.03	4,288.76	0.00	0.00	0.00
10,800.00	90.24	180.12	7,131.60	-4,386.96	158.83	4,388.75	0.00	0.00	0.00
10,900.00	90.24	180.12	7,131.18	-4,486.96	158.63	4,488.74	0.00	0.00	0.00
11,000.00	90.24	180.12	7,130.76	-4,586.96	158.42	4,588.72	0.00	0.00	0.00
11,100.00	90.24	180.12	7,130.34	-4,686.96	158.22	4,688.71	0.00	0.00	0.00
11,200.00	90.24	180.12	7,129.93	-4,786.96	158.02	4,788.69	0.00	0.00	0.00
11,300.00	90.24	180.12	7,129.51	-4,886.96	157.81	4,888.68	0.00	0.00	0.00
11,400.00	90.24	180.12	7,129.09	-4,986.96	157.61	4,988.67	0.00	0.00	0.00
11,500.00	90.24	180.12	7,128.67	-5,086.95	157.41	5,088.65	0.00	0.00	0.00
11,600.00	90.24	180.12	7,128.26	-5,186.95	157.21	5,188.64	0.00	0.00	0.00
11,700.00	90.24	180.12	7,127.84	-5,286.95	157.00	5,288.63	0.00	0.00	0.00
11,800.00	90.24	180.12	7,127.42	-5,386.95	156.80	5,388.61	0.00	0.00	0.00
11,900.00	90.24	180.12	7,127.00	-5,486.95	156.60	5,488.60	0.00	0.00	0.00
12,000.00	90.24	180.12	7,126.58	-5,586.95	156.39	5,588.59	0.00	0.00	0.00
12,100.00	90.24	180.12	7,126.17	-5,686.95	156.19	5,688.57	0.00	0.00	0.00
12,200.00	90.24	180.12	7,125.75	-5,786.95	155.99	5,788.56	0.00	0.00	0.00
12,300.00	90.24	180.12	7,125.33	-5,886.95	155.78	5,888.54	0.00	0.00	0.00
12,400.00	90.24	180.12	7,124.91	-5,986.95	155.58	5,988.53	0.00	0.00	0.00
12,500.00	90.24	180.12	7,124.49	-6,086.94	155.38	6,088.52	0.00	0.00	0.00
12,600.00	90.24	180.12	7,124.08	-6,186.94	155.17	6,188.50	0.00	0.00	0.00
12,700.00	90.24	180.12	7,123.66	-6,286.94	154.97	6,288.49	0.00	0.00	0.00
12,800.00	90.24	180.12	7,123.24	-6,386.94	154.77	6,388.48	0.00	0.00	0.00
12,900.00	90.24	180.12	7,122.82	-6,486.94	154.57	6,488.46	0.00	0.00	0.00
13,000.00	90.24	180.12	7,122.40	-6,586.94	154.36	6,588.45	0.00	0.00	0.00
13,100.00	90.24	180.12	7,121.99	-6,686.94	154.16	6,688.44	0.00	0.00	0.00
13,200.00	90.24	180.12	7,121.57	-6,786.94	153.96	6,788.42	0.00	0.00	0.00
13,300.00	90.24	180.12	7,121.15	-6,886.94	153.75	6,888.41	0.00	0.00	0.00
13,400.00	90.24	180.12	7,120.73	-6,986.93	153.55	6,988.40	0.00	0.00	0.00
13,500.00	90.24	180.12	7,120.31	-7,086.93	153.35	7,088.38	0.00	0.00	0.00
13,600.00	90.24	180.12	7,119.90	-7,186.93	153.14	7,188.37	0.00	0.00	0.00
13,700.00	90.24	180.12	7,119.48	-7,286.93	152.94	7,288.35	0.00	0.00	0.00
13,800.00	90.24	180.12	7,119.06	-7,386.93	152.74	7,388.34	0.00	0.00	0.00
13,900.00	90.24	180.12	7,118.64	-7,486.93	152.53	7,488.33	0.00	0.00	0.00
14,000.00	90.24	180.12	7,118.23	-7,586.93	152.33	7,588.31	0.00	0.00	0.00
14,100.00	90.24	180.12	7,117.81	-7,686.93	152.13	7,688.30	0.00	0.00	0.00
14,200.00	90.24	180.12	7,117.39	-7,786.93	151.93	7,788.29	0.00	0.00	0.00
14,300.00	90.24	180.12	7,116.97	-7,886.92	151.72	7,888.27	0.00	0.00	0.00
14,400.00	90.24	180.12	7,116.55	-7,986.92	151.52	7,988.26	0.00	0.00	0.00
14,500.00	90.24	180.12	7,116.14	-8,086.92	151.32	8,088.25	0.00	0.00	0.00
14,600.00	90.24	180.12	7,115.72	-8,186.92	151.11	8,188.23	0.00	0.00	0.00
14,700.00	90.24	180.12	7,115.30	-8,286.92	150.91	8,288.22	0.00	0.00	0.00
14,800.00	90.24	180.12	7,114.88	-8,386.92	150.71	8,388.20	0.00	0.00	0.00
14,900.00	90.24	180.12	7,114.46	-8,486.92	150.50	8,488.19	0.00	0.00	0.00
15,000.00	90.24	180.12	7,114.05	-8,586.92	150.30	8,588.18	0.00	0.00	0.00
15,100.00	90.24	180.12	7,113.63	-8,686.92	150.10	8,688.16	0.00	0.00	0.00
15,200.00	90.24	180.12	7,113.21	-8,786.92	149.89	8,788.15	0.00	0.00	0.00
15,300.00	90.24	180.12	7,112.79	-8,886.91	149.69	8,888.14	0.00	0.00	0.00

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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	90.24	180.12	7,112.37	-8,986.91	149.49	8,988.12	0.00	0.00	0.00
15,500.00	90.24	180.12	7,111.96	-9,086.91	149.29	9,088.11	0.00	0.00	0.00
15,600.00	90.24	180.12	7,111.54	-9,186.91	149.08	9,188.10	0.00	0.00	0.00
15,700.00	90.24	180.12	7,111.12	-9,286.91	148.88	9,288.08	0.00	0.00	0.00
15,800.00	90.24	180.12	7,110.70	-9,386.91	148.68	9,388.07	0.00	0.00	0.00
15,900.00	90.24	180.12	7,110.29	-9,486.91	148.47	9,488.06	0.00	0.00	0.00
16,000.00	90.24	180.12	7,109.87	-9,586.91	148.27	9,588.04	0.00	0.00	0.00
16,100.00	90.24	180.12	7,109.45	-9,686.91	148.07	9,688.03	0.00	0.00	0.00
16,200.00	90.24	180.12	7,109.03	-9,786.90	147.86	9,788.01	0.00	0.00	0.00
16,300.00	90.24	180.12	7,108.61	-9,886.90	147.66	9,888.00	0.00	0.00	0.00
16,400.00	90.24	180.12	7,108.20	-9,986.90	147.46	9,987.99	0.00	0.00	0.00
16,500.00	90.24	180.12	7,107.78	-10,086.90	147.26	10,087.97	0.00	0.00	0.00
16,600.00	90.24	180.12	7,107.36	-10,186.90	147.05	10,187.96	0.00	0.00	0.00
16,700.00	90.24	180.12	7,106.94	-10,286.90	146.85	10,287.95	0.00	0.00	0.00
16,800.00	90.24	180.12	7,106.52	-10,386.90	146.65	10,387.93	0.00	0.00	0.00
16,900.00	90.24	180.12	7,106.11	-10,486.90	146.44	10,487.92	0.00	0.00	0.00
16,925.41	90.24	180.12	7,106.00	-10,512.30	146.39	10,513.32	0.00	0.00	0.00
PBHL/TD 16925.40 MD/7106.00 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
BHL Desha 4-9-1L 470 F - plan hits target center - Point	0.00	0.00	7,106.00	-10,512.30	146.39	14,517,290.00	1,731,108.35	39.97361433	-104.67628492
LP Desha 4-9-1L 470 F - plan hits target center - Point	0.00	0.00	7,145.00	-1,180.03	165.34	14,526,622.26	1,731,093.46	39.99924232	-104.67621710

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,000.00	5,000.00	0.00	0.00	KOP Begin 10°/100' build
5,214.74	5,209.75	-38.91	8.24	Begin 21.47° tangent
6,900.40	6,778.40	-642.59	136.12	Begin 10°/100' build/turn
7,593.03	7,145.00	-1,180.03	165.34	LP Begin 90.24° lateral section
16,925.41	7,106.00	-10,512.30	146.39	PBHL/TD 16925.40 MD/7106.00 TVD

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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 33-T01N-R65W			
Site Position:		Northing:	14,527,751.12 usft	Latitude:	40.00234552
From:	Map	Easting:	1,730,774.27 usft	Longitude:	-104.67734224
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.21 °

Well	Desha 4-09-1L, Surf loc: 710 FSL 450 FWL Section 33-T01N-R65W					
Well Position	+N/-S	0.00 ft	Northing:	14,527,801.68 usft	Latitude:	40.00248288
	+E/-W	0.00 ft	Easting:	1,730,923.84 usft	Longitude:	-104.67680749
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,076.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/29/2017	8.28	66.45	52,144.80000000

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	179.20

Plan Survey Tool Program	Date	8/29/2017		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,925.41 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	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,214.74	21.47	168.04	5,209.75	-38.91	8.24	10.00	10.00	0.00	168.04	
6,900.40	21.47	168.04	6,778.40	-642.59	136.12	0.00	0.00	0.00	0.00	
7,593.03	90.24	180.12	7,145.00	-1,180.03	165.34	10.00	9.93	1.74	12.93	LP Desha 4-9-1L 470
16,925.41	90.24	180.12	7,106.00	-10,512.30	146.39	0.00	0.00	0.00	0.00	BHL Desha 4-9-1L 47

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
100.00	0.00	0.00	100.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
200.00	0.00	0.00	200.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
300.00	0.00	0.00	300.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
400.00	0.00	0.00	400.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
500.00	0.00	0.00	500.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
600.00	0.00	0.00	600.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
700.00	0.00	0.00	700.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
800.00	0.00	0.00	800.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
900.00	0.00	0.00	900.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,200.00	0.00	0.00	3,200.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,300.00	0.00	0.00	3,300.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,400.00	0.00	0.00	3,400.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,500.00	0.00	0.00	3,500.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,600.00	0.00	0.00	3,600.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,700.00	0.00	0.00	3,700.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,800.00	0.00	0.00	3,800.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
3,900.00	0.00	0.00	3,900.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,000.00	0.00	0.00	4,000.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,100.00	0.00	0.00	4,100.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,200.00	0.00	0.00	4,200.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,300.00	0.00	0.00	4,300.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,400.00	0.00	0.00	4,400.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,500.00	0.00	0.00	4,500.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,600.00	0.00	0.00	4,600.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,700.00	0.00	0.00	4,700.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,800.00	0.00	0.00	4,800.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
4,900.00	0.00	0.00	4,900.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
5,000.00	0.00	0.00	5,000.00	0.00	0.00	14,527,801.68	1,730,923.84	40.00248288	-104.67680749
KOP Begin 10°/100' build									
5,100.00	10.00	168.04	5,099.49	-8.52	1.80	14,527,793.18	1,730,925.67	40.00245949	-104.67680105
5,200.00	20.00	168.04	5,195.96	-33.80	7.16	14,527,767.91	1,730,931.12	40.00239005	-104.67678192

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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	
5,214.74	21.47	168.04	5,209.75	-38.91	8.24	14,527,762.81	1,730,932.22	40.00237603	-104.67677806	
Begin 21.47° tangent										
5,300.00	21.47	168.04	5,289.09	-69.44	14.71	14,527,732.30	1,730,938.80	40.00229217	-104.67675496	
5,400.00	21.47	168.04	5,382.15	-105.26	22.30	14,527,696.51	1,730,946.52	40.00219383	-104.67672787	
5,500.00	21.47	168.04	5,475.21	-141.07	29.88	14,527,660.73	1,730,954.23	40.00209548	-104.67670078	
5,600.00	21.47	168.04	5,568.27	-176.88	37.47	14,527,624.94	1,730,961.95	40.00199713	-104.67667369	
5,700.00	21.47	168.04	5,661.32	-212.69	45.06	14,527,589.16	1,730,969.67	40.00189878	-104.67664660	
5,800.00	21.47	168.04	5,754.38	-248.51	52.64	14,527,553.37	1,730,977.38	40.00180043	-104.67661951	
5,900.00	21.47	168.04	5,847.44	-284.32	60.23	14,527,517.59	1,730,985.10	40.00170209	-104.67659242	
6,000.00	21.47	168.04	5,940.50	-320.13	67.82	14,527,481.80	1,730,992.81	40.00160374	-104.67656533	
6,100.00	21.47	168.04	6,033.56	-355.95	75.40	14,527,446.01	1,731,000.53	40.00150539	-104.67653824	
6,200.00	21.47	168.04	6,126.62	-391.76	82.99	14,527,410.23	1,731,008.25	40.00140704	-104.67651115	
6,300.00	21.47	168.04	6,219.67	-427.57	90.58	14,527,374.44	1,731,015.96	40.00130869	-104.67648406	
6,400.00	21.47	168.04	6,312.73	-463.38	98.16	14,527,338.66	1,731,023.68	40.00121035	-104.67645697	
6,500.00	21.47	168.04	6,405.79	-499.20	105.75	14,527,302.87	1,731,031.40	40.00111200	-104.67642989	
6,600.00	21.47	168.04	6,498.85	-535.01	113.33	14,527,267.09	1,731,039.11	40.00101365	-104.67640280	
6,700.00	21.47	168.04	6,591.91	-570.82	120.92	14,527,231.30	1,731,046.83	40.00091530	-104.67637571	
6,800.00	21.47	168.04	6,684.97	-606.64	128.51	14,527,195.52	1,731,054.54	40.00081695	-104.67634862	
6,900.00	21.47	168.04	6,778.03	-642.45	136.09	14,527,159.73	1,731,062.26	40.00071861	-104.67632153	
6,900.40	21.47	168.04	6,778.40	-642.59	136.12	14,527,159.59	1,731,062.29	40.00071821	-104.67632142	
Begin 10°/100' build/turn										
7,000.00	31.26	172.32	6,867.54	-686.14	143.38	14,527,116.07	1,731,069.70	40.00059861	-104.67629553	
7,100.00	41.16	174.70	6,948.13	-744.77	149.90	14,527,057.46	1,731,076.44	40.00043761	-104.67627224	
7,200.00	51.09	176.29	7,017.35	-816.55	155.47	14,526,985.71	1,731,082.26	40.00024051	-104.67625236	
7,300.00	61.04	177.49	7,073.10	-899.29	159.91	14,526,902.98	1,731,087.01	40.00001328	-104.67623650	
7,400.00	71.00	178.48	7,113.69	-990.49	163.09	14,526,811.79	1,731,090.52	39.99976283	-104.67622514	
7,500.00	80.97	179.35	7,137.88	-1,087.37	164.91	14,526,714.92	1,731,092.69	39.99949677	-104.67621863	
7,593.03	90.24	180.12	7,145.00	-1,180.03	165.34	14,526,622.26	1,731,093.46	39.99924232	-104.67621710	
LP Begin 90.24° lateral section										
7,600.00	90.24	180.12	7,144.97	-1,187.00	165.33	14,526,615.30	1,731,093.47	39.99922319	-104.67621715	
7,700.00	90.24	180.12	7,144.55	-1,287.00	165.13	14,526,515.30	1,731,093.63	39.99894858	-104.67621788	
7,800.00	90.24	180.12	7,144.14	-1,386.99	164.92	14,526,415.30	1,731,093.79	39.99867396	-104.67621861	
7,900.00	90.24	180.12	7,143.72	-1,486.99	164.72	14,526,315.30	1,731,093.95	39.99839935	-104.67621933	
8,000.00	90.24	180.12	7,143.30	-1,586.99	164.52	14,526,215.30	1,731,094.11	39.99812474	-104.67622006	
8,100.00	90.24	180.12	7,142.88	-1,686.99	164.31	14,526,115.30	1,731,094.27	39.99785012	-104.67622079	
8,200.00	90.24	180.12	7,142.46	-1,786.99	164.11	14,526,015.30	1,731,094.43	39.99757551	-104.67622152	
8,300.00	90.24	180.12	7,142.05	-1,886.99	163.91	14,525,915.31	1,731,094.59	39.99730090	-104.67622224	
8,400.00	90.24	180.12	7,141.63	-1,986.99	163.70	14,525,815.31	1,731,094.75	39.99702628	-104.67622297	
8,500.00	90.24	180.12	7,141.21	-2,086.99	163.50	14,525,715.31	1,731,094.91	39.99675167	-104.67622370	
8,600.00	90.24	180.12	7,140.79	-2,186.99	163.30	14,525,615.31	1,731,095.07	39.99647706	-104.67622442	
8,700.00	90.24	180.12	7,140.37	-2,286.99	163.09	14,525,515.31	1,731,095.22	39.99620244	-104.67622515	
8,800.00	90.24	180.12	7,139.96	-2,386.98	162.89	14,525,415.31	1,731,095.38	39.99592783	-104.67622588	
8,900.00	90.24	180.12	7,139.54	-2,486.98	162.69	14,525,315.31	1,731,095.54	39.99565321	-104.67622661	
9,000.00	90.24	180.12	7,139.12	-2,586.98	162.49	14,525,215.31	1,731,095.70	39.99537860	-104.67622733	
9,100.00	90.24	180.12	7,138.70	-2,686.98	162.28	14,525,115.32	1,731,095.86	39.99510399	-104.67622806	
9,200.00	90.24	180.12	7,138.28	-2,786.98	162.08	14,525,015.32	1,731,096.02	39.99482937	-104.67622879	
9,300.00	90.24	180.12	7,137.87	-2,886.98	161.88	14,524,915.32	1,731,096.18	39.99455476	-104.67622951	
9,400.00	90.24	180.12	7,137.45	-2,986.98	161.67	14,524,815.32	1,731,096.34	39.99428015	-104.67623024	
9,500.00	90.24	180.12	7,137.03	-3,086.98	161.47	14,524,715.32	1,731,096.50	39.99400553	-104.67623097	
9,600.00	90.24	180.12	7,136.61	-3,186.98	161.27	14,524,615.32	1,731,096.66	39.99373092	-104.67623170	
9,700.00	90.24	180.12	7,136.20	-3,286.97	161.06	14,524,515.32	1,731,096.82	39.99345631	-104.67623242	
9,800.00	90.24	180.12	7,135.78	-3,386.97	160.86	14,524,415.32	1,731,096.98	39.99318169	-104.67623315	
9,900.00	90.24	180.12	7,135.36	-3,486.97	160.66	14,524,315.32	1,731,097.14	39.99290708	-104.67623388	
10,000.00	90.24	180.12	7,134.94	-3,586.97	160.45	14,524,215.33	1,731,097.30	39.99263247	-104.67623460	

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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	90.24	180.12	7,134.52	-3,686.97	160.25	14,524,115.33	1,731,097.46	39.99235785	-104.67623533
10,200.00	90.24	180.12	7,134.11	-3,786.97	160.05	14,524,015.33	1,731,097.62	39.99208324	-104.67623606
10,300.00	90.24	180.12	7,133.69	-3,886.97	159.85	14,523,915.33	1,731,097.78	39.99180863	-104.67623678
10,400.00	90.24	180.12	7,133.27	-3,986.97	159.64	14,523,815.33	1,731,097.94	39.99153401	-104.67623751
10,500.00	90.24	180.12	7,132.85	-4,086.97	159.44	14,523,715.33	1,731,098.10	39.99125940	-104.67623824
10,600.00	90.24	180.12	7,132.43	-4,186.96	159.24	14,523,615.33	1,731,098.26	39.99098478	-104.67623897
10,700.00	90.24	180.12	7,132.02	-4,286.96	159.03	14,523,515.33	1,731,098.42	39.99071017	-104.67623969
10,800.00	90.24	180.12	7,131.60	-4,386.96	158.83	14,523,415.34	1,731,098.58	39.99043556	-104.67624042
10,900.00	90.24	180.12	7,131.18	-4,486.96	158.63	14,523,315.34	1,731,098.74	39.99016094	-104.67624115
11,000.00	90.24	180.12	7,130.76	-4,586.96	158.42	14,523,215.34	1,731,098.89	39.98988633	-104.67624187
11,100.00	90.24	180.12	7,130.34	-4,686.96	158.22	14,523,115.34	1,731,099.05	39.98961172	-104.67624260
11,200.00	90.24	180.12	7,129.93	-4,786.96	158.02	14,523,015.34	1,731,099.21	39.98933710	-104.67624333
11,300.00	90.24	180.12	7,129.51	-4,886.96	157.81	14,522,915.34	1,731,099.37	39.98906249	-104.67624405
11,400.00	90.24	180.12	7,129.09	-4,986.96	157.61	14,522,815.34	1,731,099.53	39.98878787	-104.67624478
11,500.00	90.24	180.12	7,128.67	-5,086.95	157.41	14,522,715.34	1,731,099.69	39.98851326	-104.67624551
11,600.00	90.24	180.12	7,128.26	-5,186.95	157.21	14,522,615.35	1,731,099.85	39.98823865	-104.67624623
11,700.00	90.24	180.12	7,127.84	-5,286.95	157.00	14,522,515.35	1,731,100.01	39.98796403	-104.67624696
11,800.00	90.24	180.12	7,127.42	-5,386.95	156.80	14,522,415.35	1,731,100.17	39.98768942	-104.67624769
11,900.00	90.24	180.12	7,127.00	-5,486.95	156.60	14,522,315.35	1,731,100.33	39.98741481	-104.67624841
12,000.00	90.24	180.12	7,126.58	-5,586.95	156.39	14,522,215.35	1,731,100.49	39.98714019	-104.67624914
12,100.00	90.24	180.12	7,126.17	-5,686.95	156.19	14,522,115.35	1,731,100.65	39.98686558	-104.67624987
12,200.00	90.24	180.12	7,125.75	-5,786.95	155.99	14,522,015.35	1,731,100.81	39.98659096	-104.67625059
12,300.00	90.24	180.12	7,125.33	-5,886.95	155.78	14,521,915.35	1,731,100.97	39.98631635	-104.67625132
12,400.00	90.24	180.12	7,124.91	-5,986.95	155.58	14,521,815.35	1,731,101.13	39.98604174	-104.67625205
12,500.00	90.24	180.12	7,124.49	-6,086.94	155.38	14,521,715.36	1,731,101.29	39.98576712	-104.67625277
12,600.00	90.24	180.12	7,124.08	-6,186.94	155.17	14,521,615.36	1,731,101.45	39.98549251	-104.67625350
12,700.00	90.24	180.12	7,123.66	-6,286.94	154.97	14,521,515.36	1,731,101.61	39.98521789	-104.67625423
12,800.00	90.24	180.12	7,123.24	-6,386.94	154.77	14,521,415.36	1,731,101.77	39.98494328	-104.67625495
12,900.00	90.24	180.12	7,122.82	-6,486.94	154.57	14,521,315.36	1,731,101.93	39.98466867	-104.67625568
13,000.00	90.24	180.12	7,122.40	-6,586.94	154.36	14,521,215.36	1,731,102.09	39.98439405	-104.67625641
13,100.00	90.24	180.12	7,121.99	-6,686.94	154.16	14,521,115.36	1,731,102.25	39.98411944	-104.67625713
13,200.00	90.24	180.12	7,121.57	-6,786.94	153.96	14,521,015.36	1,731,102.40	39.98384482	-104.67625786
13,300.00	90.24	180.12	7,121.15	-6,886.94	153.75	14,520,915.37	1,731,102.56	39.98357021	-104.67625859
13,400.00	90.24	180.12	7,120.73	-6,986.93	153.55	14,520,815.37	1,731,102.72	39.98329560	-104.67625931
13,500.00	90.24	180.12	7,120.31	-7,086.93	153.35	14,520,715.37	1,731,102.88	39.98302098	-104.67626004
13,600.00	90.24	180.12	7,119.90	-7,186.93	153.14	14,520,615.37	1,731,103.04	39.98274637	-104.67626077
13,700.00	90.24	180.12	7,119.48	-7,286.93	152.94	14,520,515.37	1,731,103.20	39.98247175	-104.67626149
13,800.00	90.24	180.12	7,119.06	-7,386.93	152.74	14,520,415.37	1,731,103.36	39.98219714	-104.67626222
13,900.00	90.24	180.12	7,118.64	-7,486.93	152.53	14,520,315.37	1,731,103.52	39.98192253	-104.67626295
14,000.00	90.24	180.12	7,118.23	-7,586.93	152.33	14,520,215.37	1,731,103.68	39.98164791	-104.67626367
14,100.00	90.24	180.12	7,117.81	-7,686.93	152.13	14,520,115.38	1,731,103.84	39.98137330	-104.67626440
14,200.00	90.24	180.12	7,117.39	-7,786.93	151.93	14,520,015.38	1,731,104.00	39.98109868	-104.67626513
14,300.00	90.24	180.12	7,116.97	-7,886.92	151.72	14,519,915.38	1,731,104.16	39.98082407	-104.67626585
14,400.00	90.24	180.12	7,116.55	-7,986.92	151.52	14,519,815.38	1,731,104.32	39.98054946	-104.67626658
14,500.00	90.24	180.12	7,116.14	-8,086.92	151.32	14,519,715.38	1,731,104.48	39.98027484	-104.67626730
14,600.00	90.24	180.12	7,115.72	-8,186.92	151.11	14,519,615.38	1,731,104.64	39.98000023	-104.67626803
14,700.00	90.24	180.12	7,115.30	-8,286.92	150.91	14,519,515.38	1,731,104.80	39.97972561	-104.67626876
14,800.00	90.24	180.12	7,114.88	-8,386.92	150.71	14,519,415.38	1,731,104.96	39.97945100	-104.67626948
14,900.00	90.24	180.12	7,114.46	-8,486.92	150.50	14,519,315.38	1,731,105.12	39.97917638	-104.67627021
15,000.00	90.24	180.12	7,114.05	-8,586.92	150.30	14,519,215.39	1,731,105.28	39.97890177	-104.67627094
15,100.00	90.24	180.12	7,113.63	-8,686.92	150.10	14,519,115.39	1,731,105.44	39.97862716	-104.67627166
15,200.00	90.24	180.12	7,113.21	-8,786.92	149.89	14,519,015.39	1,731,105.60	39.97835254	-104.67627239
15,300.00	90.24	180.12	7,112.79	-8,886.91	149.69	14,518,915.39	1,731,105.76	39.97807793	-104.67627312
15,400.00	90.24	180.12	7,112.37	-8,986.91	149.49	14,518,815.39	1,731,105.91	39.97780331	-104.67627384
15,500.00	90.24	180.12	7,111.96	-9,086.91	149.29	14,518,715.39	1,731,106.07	39.97752870	-104.67627457

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-1L
Company:	Confluence Resources	TVD Reference:	RKB=5076+25 @ 5101.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-1L	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	90.24	180.12	7,111.54	-9,186.91	149.08	14,518,615.39	1,731,106.23	39.97725408	-104.67627529
15,700.00	90.24	180.12	7,111.12	-9,286.91	148.88	14,518,515.39	1,731,106.39	39.97697947	-104.67627602
15,800.00	90.24	180.12	7,110.70	-9,386.91	148.68	14,518,415.40	1,731,106.55	39.97670486	-104.67627675
15,900.00	90.24	180.12	7,110.29	-9,486.91	148.47	14,518,315.40	1,731,106.71	39.97643024	-104.67627747
16,000.00	90.24	180.12	7,109.87	-9,586.91	148.27	14,518,215.40	1,731,106.87	39.97615563	-104.67627820
16,100.00	90.24	180.12	7,109.45	-9,686.91	148.07	14,518,115.40	1,731,107.03	39.97588101	-104.67627892
16,200.00	90.24	180.12	7,109.03	-9,786.90	147.86	14,518,015.40	1,731,107.19	39.97560640	-104.67627965
16,300.00	90.24	180.12	7,108.61	-9,886.90	147.66	14,517,915.40	1,731,107.35	39.97533178	-104.67628038
16,400.00	90.24	180.12	7,108.20	-9,986.90	147.46	14,517,815.40	1,731,107.51	39.97505717	-104.67628110
16,500.00	90.24	180.12	7,107.78	-10,086.90	147.26	14,517,715.40	1,731,107.67	39.97478255	-104.67628183
16,600.00	90.24	180.12	7,107.36	-10,186.90	147.05	14,517,615.41	1,731,107.83	39.97450794	-104.67628256
16,700.00	90.24	180.12	7,106.94	-10,286.90	146.85	14,517,515.41	1,731,107.99	39.97423333	-104.67628328
16,800.00	90.24	180.12	7,106.52	-10,386.90	146.65	14,517,415.41	1,731,108.15	39.97395871	-104.67628401
16,900.00	90.24	180.12	7,106.11	-10,486.90	146.44	14,517,315.41	1,731,108.31	39.97368410	-104.67628473
16,925.41	90.24	180.12	7,106.00	-10,512.30	146.39	14,517,290.00	1,731,108.35	39.97361433	-104.67628492
PBHL/TD 16925.40 MD/7106.00 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
BHL Desha 4-9-1L 470 F - plan hits target center - Point	0.00	0.00	7,106.00	-10,512.30	146.39	14,517,290.00	1,731,108.35	39.97361433	-104.67628492
LP Desha 4-9-1L 470 FN - plan hits target center - Point	0.00	0.00	7,145.00	-1,180.03	165.34	14,526,622.26	1,731,093.46	39.99924232	-104.67621710

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,000.00	5,000.00	0.00	0.00	KOP Begin 10°/100' build
5,214.74	5,209.75	-38.91	8.24	Begin 21.47° tangent
6,900.40	6,778.40	-642.59	136.12	Begin 10°/100' build/turn
7,593.03	7,145.00	-1,180.03	165.34	LP Begin 90.24° lateral section
16,925.41	7,106.00	-10,512.30	146.39	PBHL/TD 16925.40 MD/7106.00 TVD