



Weld County, Colorado
Section 33-T01N-R65W
Desha 4-09-3L
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	5200.18	20.02	168.26	5196.13	-33.89	7.04	10.00	33.99	Begin 20.02° tangent
4	7082.84	20.02	168.26	6965.06	-664.88	138.12	0.00	666.74	Begin 10°/100' build/turn
5	7787.35	90.02	180.12	7345.00	-1205.03	165.47	10.00	1207.21	LP Begin 90.02° lateral section
6	17119.64	90.02	180.12	7341.00	-10537.30	146.52	0.00	10538.32	PBHL/TD 17119.64 MD/7341.00 TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL Desha 4-9-3L 470 FSL 610 FWL	7341.00	-10537.30	146.5214517290.00	1731108.35	39.97361433	-104.67628492	
LP Desha 4-9-3L 470 FNL 610 FWL	7345.00	-1205.03	165.4714526622.26	1731093.46	39.99924232	-104.67621711	

Desha 4-09-3L			
Surf loc: 735 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
14527826.68	1730923.62	40.00255153	-104.67680796

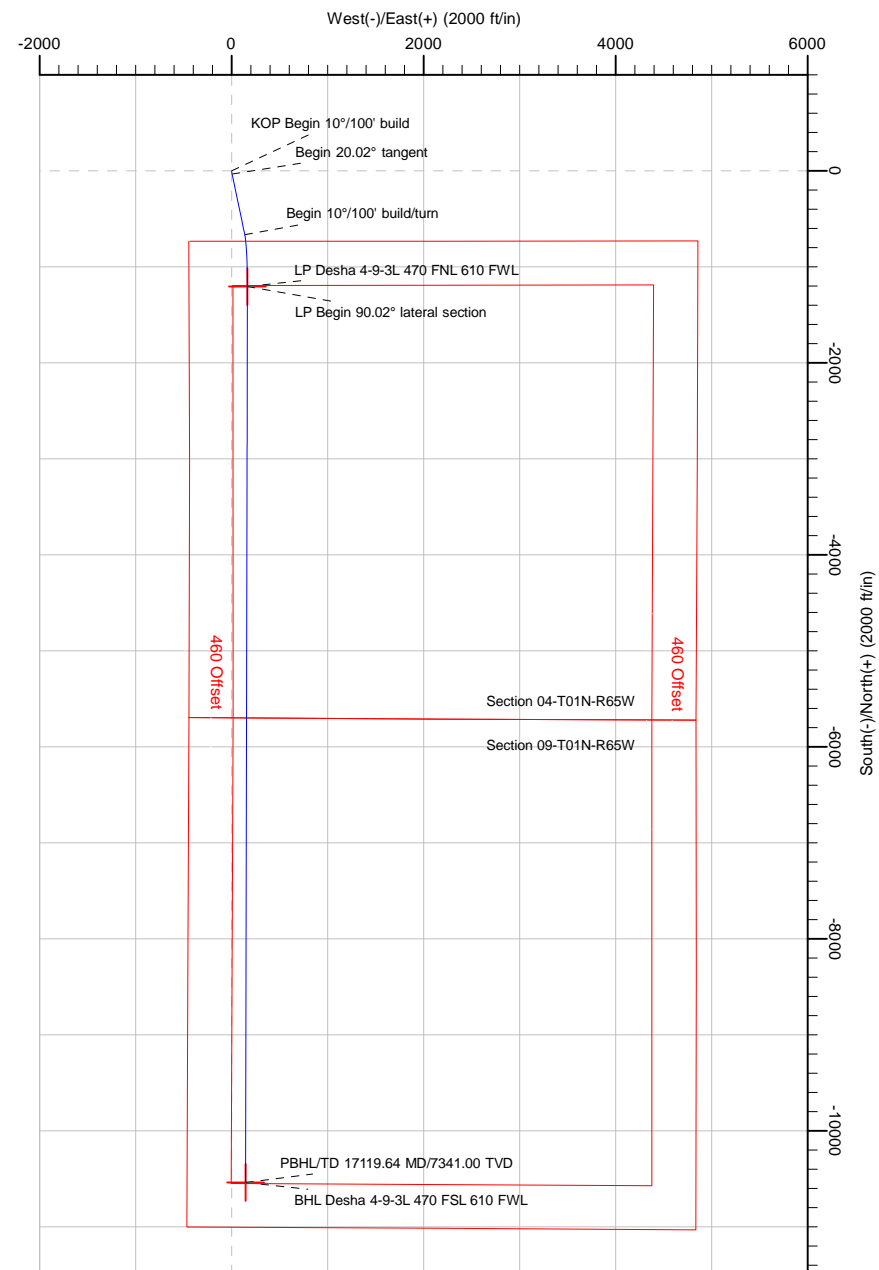
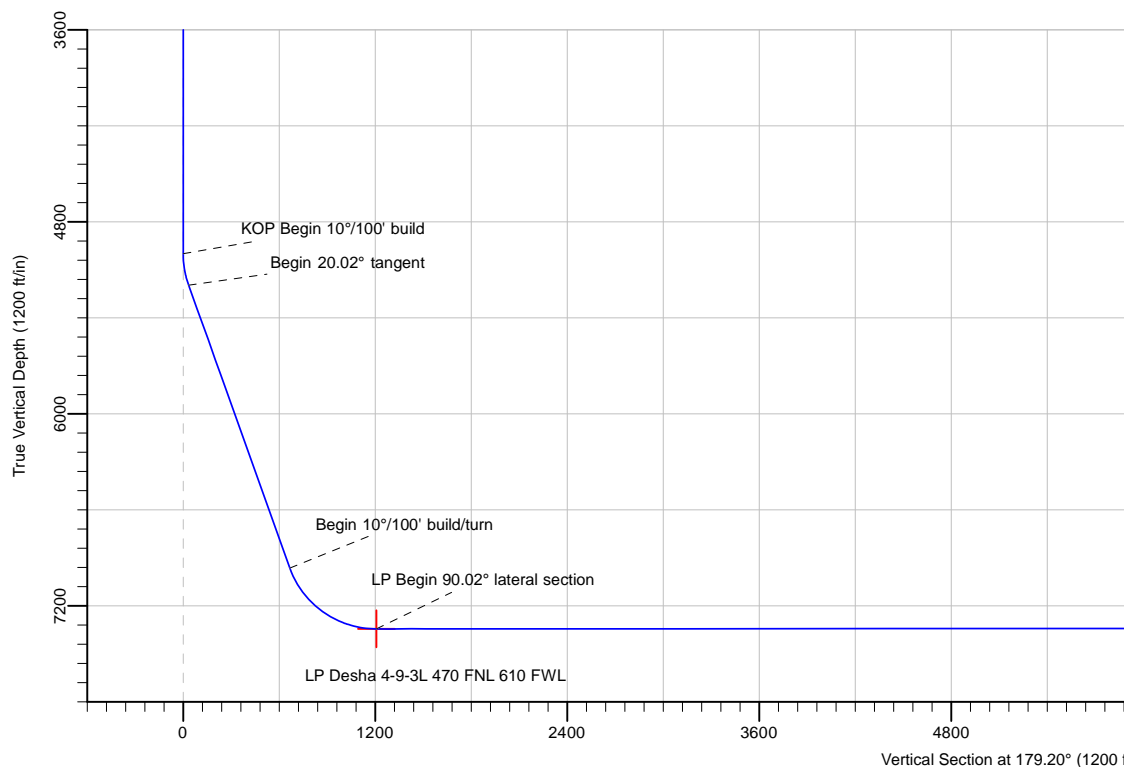
Azimuth Corrections:

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



Azimuths to True North
Magnetic North: 8.28°

Magnetic Field
Strength: 52146.2snT
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 4-09-3L
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 4-09-3L	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 4-09-3L, Surf loc: 735 FSL 450 FWL Section 33-T01N-R65W					
Well Position	+N/-S	75.02 ft	Northing:	14,527,826.68 usft	Latitude:	40.00255153
	+E/-W	149.62 ft	Easting:	1,730,923.62 usft	Longitude:	-104.67680795
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	52,146.20000000

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	17,119.64	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	
5,200.18	20.02	168.26	5,196.13	-33.89	7.04	10.00	10.00	0.00	168.26	
7,082.84	20.02	168.26	6,965.06	-664.88	138.12	0.00	0.00	0.00	0.00	
7,787.35	90.02	180.12	7,345.00	-1,205.03	165.47	10.00	9.94	1.68	12.59	LP Desha 4-9-3L 470
17,119.64	90.02	180.12	7,341.00	-10,537.30	146.52	0.00	0.00	0.00	0.00	BHL Desha 4-9-3L 47

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-3L
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 4-09-3L	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	168.26	5,099.49	-8.52	1.77	8.55	10.00	10.00	0.00
5,200.00	20.00	168.26	5,195.96	-33.83	7.03	33.93	10.00	10.00	0.00

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Project:	Weld County, Colorado	MD Reference:	RKB=5076+25 @ 5101.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-09-3L	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)	
5,200.18	20.02	168.26	5,196.13	-33.89	7.04	33.99	10.00	10.00	0.00	
Begin 20.02° tangent										
5,300.00	20.02	168.26	5,289.92	-67.35	13.99	67.54	0.00	0.00	0.00	
5,400.00	20.02	168.26	5,383.88	-100.86	20.95	101.14	0.00	0.00	0.00	
5,500.00	20.02	168.26	5,477.84	-134.38	27.92	134.75	0.00	0.00	0.00	
5,600.00	20.02	168.26	5,571.80	-167.89	34.88	168.36	0.00	0.00	0.00	
5,700.00	20.02	168.26	5,665.76	-201.41	41.84	201.97	0.00	0.00	0.00	
5,800.00	20.02	168.26	5,759.71	-234.93	48.80	235.58	0.00	0.00	0.00	
5,900.00	20.02	168.26	5,853.67	-268.44	55.77	269.19	0.00	0.00	0.00	
6,000.00	20.02	168.26	5,947.63	-301.96	62.73	302.80	0.00	0.00	0.00	
6,100.00	20.02	168.26	6,041.59	-335.47	69.69	336.41	0.00	0.00	0.00	
6,200.00	20.02	168.26	6,135.55	-368.99	76.66	370.02	0.00	0.00	0.00	
6,300.00	20.02	168.26	6,229.51	-402.50	83.62	403.63	0.00	0.00	0.00	
6,400.00	20.02	168.26	6,323.47	-436.02	90.58	437.24	0.00	0.00	0.00	
6,500.00	20.02	168.26	6,417.42	-469.54	97.54	470.85	0.00	0.00	0.00	
6,600.00	20.02	168.26	6,511.38	-503.05	104.51	504.46	0.00	0.00	0.00	
6,700.00	20.02	168.26	6,605.34	-536.57	111.47	538.07	0.00	0.00	0.00	
6,800.00	20.02	168.26	6,699.30	-570.08	118.43	571.68	0.00	0.00	0.00	
6,900.00	20.02	168.26	6,793.26	-603.60	125.39	605.28	0.00	0.00	0.00	
7,000.00	20.02	168.26	6,887.22	-637.12	132.36	638.89	0.00	0.00	0.00	
7,082.84	20.02	168.26	6,965.06	-664.88	138.12	666.74	0.00	0.00	0.00	
Begin 10°/100' build/turn										
7,100.00	21.70	169.28	6,981.09	-670.87	139.31	672.74	10.00	9.78	5.90	
7,200.00	31.55	173.12	7,070.38	-715.12	145.90	717.08	10.00	9.86	3.84	
7,300.00	41.47	175.26	7,150.66	-774.24	151.79	776.28	10.00	9.92	2.14	
7,400.00	51.42	176.69	7,219.48	-846.45	156.80	848.54	10.00	9.95	1.43	
7,500.00	61.38	177.77	7,274.76	-929.53	160.77	931.68	10.00	9.96	1.08	
7,600.00	71.34	178.67	7,314.80	-1,020.98	163.58	1,023.16	10.00	9.97	0.89	
7,700.00	81.31	179.46	7,338.41	-1,118.01	165.15	1,120.20	10.00	9.97	0.79	
7,787.35	90.02	180.12	7,345.00	-1,205.03	165.47	1,207.21	10.00	9.97	0.75	
LP Begin 90.02° lateral section										
7,800.00	90.02	180.12	7,344.99	-1,217.68	165.45	1,219.86	0.00	0.00	0.00	
7,900.00	90.02	180.12	7,344.95	-1,317.68	165.24	1,319.85	0.00	0.00	0.00	
8,000.00	90.02	180.12	7,344.91	-1,417.68	165.04	1,419.83	0.00	0.00	0.00	
8,100.00	90.02	180.12	7,344.87	-1,517.68	164.84	1,519.82	0.00	0.00	0.00	
8,200.00	90.02	180.12	7,344.82	-1,617.68	164.63	1,619.81	0.00	0.00	0.00	
8,300.00	90.02	180.12	7,344.78	-1,717.68	164.43	1,719.80	0.00	0.00	0.00	
8,400.00	90.02	180.12	7,344.74	-1,817.68	164.23	1,819.78	0.00	0.00	0.00	
8,500.00	90.02	180.12	7,344.69	-1,917.68	164.02	1,919.77	0.00	0.00	0.00	
8,600.00	90.02	180.12	7,344.65	-2,017.68	163.82	2,019.76	0.00	0.00	0.00	
8,700.00	90.02	180.12	7,344.61	-2,117.68	163.62	2,119.75	0.00	0.00	0.00	
8,800.00	90.02	180.12	7,344.57	-2,217.68	163.42	2,219.73	0.00	0.00	0.00	
8,900.00	90.02	180.12	7,344.52	-2,317.68	163.21	2,319.72	0.00	0.00	0.00	
9,000.00	90.02	180.12	7,344.48	-2,417.68	163.01	2,419.71	0.00	0.00	0.00	
9,100.00	90.02	180.12	7,344.44	-2,517.67	162.81	2,519.70	0.00	0.00	0.00	
9,200.00	90.02	180.12	7,344.39	-2,617.67	162.60	2,619.68	0.00	0.00	0.00	
9,300.00	90.02	180.12	7,344.35	-2,717.67	162.40	2,719.67	0.00	0.00	0.00	
9,400.00	90.02	180.12	7,344.31	-2,817.67	162.20	2,819.66	0.00	0.00	0.00	
9,500.00	90.02	180.12	7,344.27	-2,917.67	161.99	2,919.64	0.00	0.00	0.00	
9,600.00	90.02	180.12	7,344.22	-3,017.67	161.79	3,019.63	0.00	0.00	0.00	
9,700.00	90.02	180.12	7,344.18	-3,117.67	161.59	3,119.62	0.00	0.00	0.00	
9,800.00	90.02	180.12	7,344.14	-3,217.67	161.38	3,219.61	0.00	0.00	0.00	
9,900.00	90.02	180.12	7,344.09	-3,317.67	161.18	3,319.59	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 4-09-3L	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	90.02	180.12	7,344.05	-3,417.67	160.98	3,419.58	0.00	0.00	0.00
10,100.00	90.02	180.12	7,344.01	-3,517.67	160.78	3,519.57	0.00	0.00	0.00
10,200.00	90.02	180.12	7,343.97	-3,617.67	160.57	3,619.56	0.00	0.00	0.00
10,300.00	90.02	180.12	7,343.92	-3,717.67	160.37	3,719.54	0.00	0.00	0.00
10,400.00	90.02	180.12	7,343.88	-3,817.67	160.17	3,819.53	0.00	0.00	0.00
10,500.00	90.02	180.12	7,343.84	-3,917.67	159.96	3,919.52	0.00	0.00	0.00
10,600.00	90.02	180.12	7,343.79	-4,017.67	159.76	4,019.50	0.00	0.00	0.00
10,700.00	90.02	180.12	7,343.75	-4,117.67	159.56	4,119.49	0.00	0.00	0.00
10,800.00	90.02	180.12	7,343.71	-4,217.67	159.35	4,219.48	0.00	0.00	0.00
10,900.00	90.02	180.12	7,343.67	-4,317.67	159.15	4,319.47	0.00	0.00	0.00
11,000.00	90.02	180.12	7,343.62	-4,417.67	158.95	4,419.45	0.00	0.00	0.00
11,100.00	90.02	180.12	7,343.58	-4,517.67	158.74	4,519.44	0.00	0.00	0.00
11,200.00	90.02	180.12	7,343.54	-4,617.67	158.54	4,619.43	0.00	0.00	0.00
11,300.00	90.02	180.12	7,343.49	-4,717.67	158.34	4,719.42	0.00	0.00	0.00
11,400.00	90.02	180.12	7,343.45	-4,817.67	158.14	4,819.40	0.00	0.00	0.00
11,500.00	90.02	180.12	7,343.41	-4,917.67	157.93	4,919.39	0.00	0.00	0.00
11,600.00	90.02	180.12	7,343.37	-5,017.67	157.73	5,019.38	0.00	0.00	0.00
11,700.00	90.02	180.12	7,343.32	-5,117.67	157.53	5,119.36	0.00	0.00	0.00
11,800.00	90.02	180.12	7,343.28	-5,217.67	157.32	5,219.35	0.00	0.00	0.00
11,900.00	90.02	180.12	7,343.24	-5,317.67	157.12	5,319.34	0.00	0.00	0.00
12,000.00	90.02	180.12	7,343.19	-5,417.67	156.92	5,419.33	0.00	0.00	0.00
12,100.00	90.02	180.12	7,343.15	-5,517.67	156.71	5,519.31	0.00	0.00	0.00
12,200.00	90.02	180.12	7,343.11	-5,617.67	156.51	5,619.30	0.00	0.00	0.00
12,300.00	90.02	180.12	7,343.07	-5,717.67	156.31	5,719.29	0.00	0.00	0.00
12,400.00	90.02	180.12	7,343.02	-5,817.67	156.10	5,819.28	0.00	0.00	0.00
12,500.00	90.02	180.12	7,342.98	-5,917.67	155.90	5,919.26	0.00	0.00	0.00
12,600.00	90.02	180.12	7,342.94	-6,017.67	155.70	6,019.25	0.00	0.00	0.00
12,700.00	90.02	180.12	7,342.89	-6,117.67	155.50	6,119.24	0.00	0.00	0.00
12,800.00	90.02	180.12	7,342.85	-6,217.67	155.29	6,219.23	0.00	0.00	0.00
12,900.00	90.02	180.12	7,342.81	-6,317.67	155.09	6,319.21	0.00	0.00	0.00
13,000.00	90.02	180.12	7,342.77	-6,417.67	154.89	6,419.20	0.00	0.00	0.00
13,100.00	90.02	180.12	7,342.72	-6,517.67	154.68	6,519.19	0.00	0.00	0.00
13,200.00	90.02	180.12	7,342.68	-6,617.67	154.48	6,619.17	0.00	0.00	0.00
13,300.00	90.02	180.12	7,342.64	-6,717.67	154.28	6,719.16	0.00	0.00	0.00
13,400.00	90.02	180.12	7,342.59	-6,817.67	154.07	6,819.15	0.00	0.00	0.00
13,500.00	90.02	180.12	7,342.55	-6,917.67	153.87	6,919.14	0.00	0.00	0.00
13,600.00	90.02	180.12	7,342.51	-7,017.67	153.67	7,019.12	0.00	0.00	0.00
13,700.00	90.02	180.12	7,342.47	-7,117.67	153.46	7,119.11	0.00	0.00	0.00
13,800.00	90.02	180.12	7,342.42	-7,217.66	153.26	7,219.10	0.00	0.00	0.00
13,900.00	90.02	180.12	7,342.38	-7,317.66	153.06	7,319.09	0.00	0.00	0.00
14,000.00	90.02	180.12	7,342.34	-7,417.66	152.86	7,419.07	0.00	0.00	0.00
14,100.00	90.02	180.12	7,342.29	-7,517.66	152.65	7,519.06	0.00	0.00	0.00
14,200.00	90.02	180.12	7,342.25	-7,617.66	152.45	7,619.05	0.00	0.00	0.00
14,300.00	90.02	180.12	7,342.21	-7,717.66	152.25	7,719.03	0.00	0.00	0.00
14,400.00	90.02	180.12	7,342.17	-7,817.66	152.04	7,819.02	0.00	0.00	0.00
14,500.00	90.02	180.12	7,342.12	-7,917.66	151.84	7,919.01	0.00	0.00	0.00
14,600.00	90.02	180.12	7,342.08	-8,017.66	151.64	8,019.00	0.00	0.00	0.00
14,700.00	90.02	180.12	7,342.04	-8,117.66	151.43	8,118.98	0.00	0.00	0.00
14,800.00	90.02	180.12	7,341.99	-8,217.66	151.23	8,218.97	0.00	0.00	0.00
14,900.00	90.02	180.12	7,341.95	-8,317.66	151.03	8,318.96	0.00	0.00	0.00
15,000.00	90.02	180.12	7,341.91	-8,417.66	150.82	8,418.95	0.00	0.00	0.00
15,100.00	90.02	180.12	7,341.87	-8,517.66	150.62	8,518.93	0.00	0.00	0.00
15,200.00	90.02	180.12	7,341.82	-8,617.66	150.42	8,618.92	0.00	0.00	0.00
15,300.00	90.02	180.12	7,341.78	-8,717.66	150.22	8,718.91	0.00	0.00	0.00

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-3L
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 4-09-3L	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	90.02	180.12	7,341.74	-8,817.66	150.01	8,818.89	0.00	0.00	0.00
15,500.00	90.02	180.12	7,341.69	-8,917.66	149.81	8,918.88	0.00	0.00	0.00
15,600.00	90.02	180.12	7,341.65	-9,017.66	149.61	9,018.87	0.00	0.00	0.00
15,700.00	90.02	180.12	7,341.61	-9,117.66	149.40	9,118.86	0.00	0.00	0.00
15,800.00	90.02	180.12	7,341.57	-9,217.66	149.20	9,218.84	0.00	0.00	0.00
15,900.00	90.02	180.12	7,341.52	-9,317.66	149.00	9,318.83	0.00	0.00	0.00
16,000.00	90.02	180.12	7,341.48	-9,417.66	148.79	9,418.82	0.00	0.00	0.00
16,100.00	90.02	180.12	7,341.44	-9,517.66	148.59	9,518.81	0.00	0.00	0.00
16,200.00	90.02	180.12	7,341.39	-9,617.66	148.39	9,618.79	0.00	0.00	0.00
16,300.00	90.02	180.12	7,341.35	-9,717.66	148.19	9,718.78	0.00	0.00	0.00
16,400.00	90.02	180.12	7,341.31	-9,817.66	147.98	9,818.77	0.00	0.00	0.00
16,500.00	90.02	180.12	7,341.27	-9,917.66	147.78	9,918.76	0.00	0.00	0.00
16,600.00	90.02	180.12	7,341.22	-10,017.66	147.58	10,018.74	0.00	0.00	0.00
16,700.00	90.02	180.12	7,341.18	-10,117.66	147.37	10,118.73	0.00	0.00	0.00
16,800.00	90.02	180.12	7,341.14	-10,217.66	147.17	10,218.72	0.00	0.00	0.00
16,900.00	90.02	180.12	7,341.09	-10,317.66	146.97	10,318.70	0.00	0.00	0.00
17,000.00	90.02	180.12	7,341.05	-10,417.66	146.76	10,418.69	0.00	0.00	0.00
17,100.00	90.02	180.12	7,341.01	-10,517.66	146.56	10,518.68	0.00	0.00	0.00
17,119.64	90.02	180.12	7,341.00	-10,537.30	146.52	10,538.32	0.00	0.00	0.00
PBHL/TD 17119.64 MD/7341.00 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 4-9-3L 470 F - plan hits target center - Point	0.00	0.00	7,341.00	-10,537.30	146.52	14,517,290.00	1,731,108.35	39.97361433	-104.67628492
LP Desha 4-9-3L 470 FM - plan hits target center - Point	0.00	0.00	7,345.00	-1,205.03	165.47	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
5,200.18	5,196.13	-33.89	7.04	Begin 20.02° tangent
7,082.84	6,965.06	-664.88	138.12	Begin 10°/100' build/turn
7,787.35	7,345.00	-1,205.03	165.47	LP Begin 90.02° lateral section
17,119.64	7,341.00	-10,537.30	146.52	PBHL/TD 17119.64 MD/7341.00 TVD

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-3L
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 4-09-3L	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 4-09-3L, Surf loc: 735 FSL 450 FWL Section 33-T01N-R65W					
Well Position	+N/-S	0.00 ft	Northing:	14,527,826.68 usft	Latitude:	40.00255153
	+E/-W	0.00 ft	Easting:	1,730,923.62 usft	Longitude:	-104.67680795
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	52,146.20000000

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	17,119.64 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	
5,200.18	20.02	168.26	5,196.13	-33.89	7.04	10.00	10.00	0.00	168.26	
7,082.84	20.02	168.26	6,965.06	-664.88	138.12	0.00	0.00	0.00	0.00	
7,787.35	90.02	180.12	7,345.00	-1,205.03	165.47	10.00	9.94	1.68	12.59	LP Desha 4-9-3L 470
17,119.64	90.02	180.12	7,341.00	-10,537.30	146.52	0.00	0.00	0.00	0.00	BHL Desha 4-9-3L 47

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-3L
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 4-09-3L	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	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
100.00	0.00	0.00	100.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
200.00	0.00	0.00	200.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
300.00	0.00	0.00	300.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
400.00	0.00	0.00	400.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
500.00	0.00	0.00	500.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
600.00	0.00	0.00	600.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
700.00	0.00	0.00	700.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
800.00	0.00	0.00	800.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
900.00	0.00	0.00	900.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,200.00	0.00	0.00	3,200.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,300.00	0.00	0.00	3,300.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,400.00	0.00	0.00	3,400.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,500.00	0.00	0.00	3,500.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,600.00	0.00	0.00	3,600.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,700.00	0.00	0.00	3,700.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,800.00	0.00	0.00	3,800.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
3,900.00	0.00	0.00	3,900.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,000.00	0.00	0.00	4,000.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,100.00	0.00	0.00	4,100.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,200.00	0.00	0.00	4,200.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,300.00	0.00	0.00	4,300.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,400.00	0.00	0.00	4,400.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,500.00	0.00	0.00	4,500.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,600.00	0.00	0.00	4,600.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,700.00	0.00	0.00	4,700.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,800.00	0.00	0.00	4,800.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
4,900.00	0.00	0.00	4,900.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
5,000.00	0.00	0.00	5,000.00	0.00	0.00	14,527,826.68	1,730,923.62	40.00255153	-104.67680795
KOP Begin 10°/100' build									
5,100.00	10.00	168.26	5,099.49	-8.52	1.77	14,527,818.17	1,730,925.42	40.00252813	-104.67680163
5,200.00	20.00	168.26	5,195.96	-33.83	7.03	14,527,792.88	1,730,930.77	40.00245863	-104.67678286

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-3L
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 4-09-3L	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	
5,200.18	20.02	168.26	5,196.13	-33.89	7.04	14,527,792.82	1,730,930.78	40.00245846	-104.67678281	
Begin 20.02° tangent										
5,300.00	20.02	168.26	5,289.92	-67.35	13.99	14,527,759.39	1,730,937.85	40.00236659	-104.67675799	
5,400.00	20.02	168.26	5,383.88	-100.86	20.95	14,527,725.90	1,730,944.94	40.00227455	-104.67673313	
5,500.00	20.02	168.26	5,477.84	-134.38	27.92	14,527,692.41	1,730,952.02	40.00218251	-104.67670827	
5,600.00	20.02	168.26	5,571.80	-167.89	34.88	14,527,658.92	1,730,959.11	40.00209047	-104.67668340	
5,700.00	20.02	168.26	5,665.76	-201.41	41.84	14,527,625.43	1,730,966.19	40.00199843	-104.67665854	
5,800.00	20.02	168.26	5,759.71	-234.93	48.80	14,527,591.94	1,730,973.27	40.00190639	-104.67663368	
5,900.00	20.02	168.26	5,853.67	-268.44	55.77	14,527,558.45	1,730,980.36	40.00181435	-104.67660882	
6,000.00	20.02	168.26	5,947.63	-301.96	62.73	14,527,524.96	1,730,987.44	40.00172231	-104.67658395	
6,100.00	20.02	168.26	6,041.59	-335.47	69.69	14,527,491.47	1,730,994.53	40.00163027	-104.67655909	
6,200.00	20.02	168.26	6,135.55	-368.99	76.66	14,527,457.98	1,731,001.61	40.00153823	-104.67653423	
6,300.00	20.02	168.26	6,229.51	-402.50	83.62	14,527,424.49	1,731,008.70	40.00144619	-104.67650937	
6,400.00	20.02	168.26	6,323.47	-436.02	90.58	14,527,391.00	1,731,015.78	40.00135415	-104.67648451	
6,500.00	20.02	168.26	6,417.42	-469.54	97.54	14,527,357.51	1,731,022.86	40.00126211	-104.67645964	
6,600.00	20.02	168.26	6,511.38	-503.05	104.51	14,527,324.02	1,731,029.95	40.00117007	-104.67643478	
6,700.00	20.02	168.26	6,605.34	-536.57	111.47	14,527,290.53	1,731,037.03	40.00107803	-104.67640992	
6,800.00	20.02	168.26	6,699.30	-570.08	118.43	14,527,257.04	1,731,044.12	40.00098599	-104.67638506	
6,900.00	20.02	168.26	6,793.26	-603.60	125.39	14,527,223.54	1,731,051.20	40.00089395	-104.67636020	
7,000.00	20.02	168.26	6,887.22	-637.12	132.36	14,527,190.05	1,731,058.28	40.00080191	-104.67633533	
7,082.84	20.02	168.26	6,965.06	-664.88	138.12	14,527,162.31	1,731,064.15	40.00072566	-104.67631474	
Begin 10°/100' build/turn										
7,100.00	21.70	169.28	6,981.09	-670.87	139.31	14,527,156.32	1,731,065.36	40.00070921	-104.67631050	
7,200.00	31.55	173.12	7,070.38	-715.12	145.90	14,527,112.10	1,731,072.12	40.00058770	-104.67628696	
7,300.00	41.47	175.26	7,150.66	-774.24	151.79	14,527,053.00	1,731,078.22	40.00042533	-104.67626594	
7,400.00	51.42	176.69	7,219.48	-846.45	156.80	14,526,980.82	1,731,083.48	40.00022705	-104.67624807	
7,500.00	61.38	177.77	7,274.76	-929.53	160.77	14,526,897.74	1,731,087.75	39.99999888	-104.67623390	
7,600.00	71.34	178.67	7,314.80	-1,020.98	163.58	14,526,806.31	1,731,090.90	39.99974775	-104.67622385	
7,700.00	81.31	179.46	7,338.41	-1,118.01	165.15	14,526,709.28	1,731,092.82	39.99948129	-104.67621824	
7,787.35	90.02	180.12	7,345.00	-1,205.03	165.47	14,526,622.26	1,731,093.46	39.99924232	-104.67621710	
LP Begin 90.02° lateral section										
7,800.00	90.02	180.12	7,344.99	-1,217.68	165.45	14,526,609.62	1,731,093.48	39.99920759	-104.67621719	
7,900.00	90.02	180.12	7,344.95	-1,317.68	165.24	14,526,509.62	1,731,093.64	39.99893298	-104.67621792	
8,000.00	90.02	180.12	7,344.91	-1,417.68	165.04	14,526,409.62	1,731,093.80	39.99865836	-104.67621865	
8,100.00	90.02	180.12	7,344.87	-1,517.68	164.84	14,526,309.62	1,731,093.96	39.99838374	-104.67621938	
8,200.00	90.02	180.12	7,344.82	-1,617.68	164.63	14,526,209.62	1,731,094.12	39.99810913	-104.67622010	
8,300.00	90.02	180.12	7,344.78	-1,717.68	164.43	14,526,109.62	1,731,094.28	39.99783451	-104.67622083	
8,400.00	90.02	180.12	7,344.74	-1,817.68	164.23	14,526,009.62	1,731,094.44	39.99755990	-104.67622156	
8,500.00	90.02	180.12	7,344.69	-1,917.68	164.02	14,525,909.62	1,731,094.60	39.99728528	-104.67622228	
8,600.00	90.02	180.12	7,344.65	-2,017.68	163.82	14,525,809.62	1,731,094.76	39.99701067	-104.67622301	
8,700.00	90.02	180.12	7,344.61	-2,117.68	163.62	14,525,709.62	1,731,094.91	39.99673605	-104.67622374	
8,800.00	90.02	180.12	7,344.57	-2,217.68	163.42	14,525,609.62	1,731,095.07	39.99646143	-104.67622447	
8,900.00	90.02	180.12	7,344.52	-2,317.68	163.21	14,525,509.62	1,731,095.23	39.99618682	-104.67622519	
9,000.00	90.02	180.12	7,344.48	-2,417.68	163.01	14,525,409.62	1,731,095.39	39.99591220	-104.67622592	
9,100.00	90.02	180.12	7,344.44	-2,517.67	162.81	14,525,309.62	1,731,095.55	39.99563759	-104.67622665	
9,200.00	90.02	180.12	7,344.39	-2,617.67	162.60	14,525,209.62	1,731,095.71	39.99536297	-104.67622737	
9,300.00	90.02	180.12	7,344.35	-2,717.67	162.40	14,525,109.62	1,731,095.87	39.99508835	-104.67622810	
9,400.00	90.02	180.12	7,344.31	-2,817.67	162.20	14,525,009.62	1,731,096.03	39.99481374	-104.67622883	
9,500.00	90.02	180.12	7,344.27	-2,917.67	161.99	14,524,909.62	1,731,096.19	39.99453912	-104.67622956	
9,600.00	90.02	180.12	7,344.22	-3,017.67	161.79	14,524,809.62	1,731,096.35	39.99426451	-104.67623028	
9,700.00	90.02	180.12	7,344.18	-3,117.67	161.59	14,524,709.62	1,731,096.51	39.99398989	-104.67623101	
9,800.00	90.02	180.12	7,344.14	-3,217.67	161.38	14,524,609.62	1,731,096.67	39.99371527	-104.67623174	
9,900.00	90.02	180.12	7,344.09	-3,317.67	161.18	14,524,509.62	1,731,096.83	39.99344066	-104.67623246	
10,000.00	90.02	180.12	7,344.05	-3,417.67	160.98	14,524,409.62	1,731,096.99	39.99316604	-104.67623319	

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-3L
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 4-09-3L	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	90.02	180.12	7,344.01	-3,517.67	160.78	14,524,309.63	1,731,097.15	39.99289143	-104.67623392
10,200.00	90.02	180.12	7,343.97	-3,617.67	160.57	14,524,209.63	1,731,097.31	39.99261681	-104.67623465
10,300.00	90.02	180.12	7,343.92	-3,717.67	160.37	14,524,109.63	1,731,097.47	39.99234220	-104.67623537
10,400.00	90.02	180.12	7,343.88	-3,817.67	160.17	14,524,009.63	1,731,097.63	39.99206758	-104.67623610
10,500.00	90.02	180.12	7,343.84	-3,917.67	159.96	14,523,909.63	1,731,097.79	39.99179296	-104.67623683
10,600.00	90.02	180.12	7,343.79	-4,017.67	159.76	14,523,809.63	1,731,097.95	39.99151835	-104.67623755
10,700.00	90.02	180.12	7,343.75	-4,117.67	159.56	14,523,709.63	1,731,098.11	39.99124373	-104.67623828
10,800.00	90.02	180.12	7,343.71	-4,217.67	159.35	14,523,609.63	1,731,098.27	39.99096912	-104.67623901
10,900.00	90.02	180.12	7,343.67	-4,317.67	159.15	14,523,509.63	1,731,098.43	39.99069450	-104.67623973
11,000.00	90.02	180.12	7,343.62	-4,417.67	158.95	14,523,409.63	1,731,098.58	39.99041988	-104.67624046
11,100.00	90.02	180.12	7,343.58	-4,517.67	158.74	14,523,309.63	1,731,098.74	39.99014527	-104.67624119
11,200.00	90.02	180.12	7,343.54	-4,617.67	158.54	14,523,209.63	1,731,098.90	39.98987065	-104.67624191
11,300.00	90.02	180.12	7,343.49	-4,717.67	158.34	14,523,109.63	1,731,099.06	39.98959603	-104.67624264
11,400.00	90.02	180.12	7,343.45	-4,817.67	158.14	14,523,009.63	1,731,099.22	39.98932142	-104.67624337
11,500.00	90.02	180.12	7,343.41	-4,917.67	157.93	14,522,909.63	1,731,099.38	39.98904680	-104.67624409
11,600.00	90.02	180.12	7,343.37	-5,017.67	157.73	14,522,809.63	1,731,099.54	39.98877219	-104.67624482
11,700.00	90.02	180.12	7,343.32	-5,117.67	157.53	14,522,709.63	1,731,099.70	39.98849757	-104.67624555
11,800.00	90.02	180.12	7,343.28	-5,217.67	157.32	14,522,609.63	1,731,099.86	39.98822295	-104.67624628
11,900.00	90.02	180.12	7,343.24	-5,317.67	157.12	14,522,509.63	1,731,100.02	39.98794834	-104.67624700
12,000.00	90.02	180.12	7,343.19	-5,417.67	156.92	14,522,409.63	1,731,100.18	39.98767372	-104.67624773
12,100.00	90.02	180.12	7,343.15	-5,517.67	156.71	14,522,309.63	1,731,100.34	39.98739911	-104.67624846
12,200.00	90.02	180.12	7,343.11	-5,617.67	156.51	14,522,209.63	1,731,100.50	39.98712449	-104.67624918
12,300.00	90.02	180.12	7,343.07	-5,717.67	156.31	14,522,109.63	1,731,100.66	39.98684987	-104.67624991
12,400.00	90.02	180.12	7,343.02	-5,817.67	156.10	14,522,009.63	1,731,100.82	39.98657526	-104.67625064
12,500.00	90.02	180.12	7,342.98	-5,917.67	155.90	14,521,909.63	1,731,100.98	39.98630064	-104.67625136
12,600.00	90.02	180.12	7,342.94	-6,017.67	155.70	14,521,809.63	1,731,101.14	39.98602602	-104.67625209
12,700.00	90.02	180.12	7,342.89	-6,117.67	155.50	14,521,709.63	1,731,101.30	39.98575141	-104.67625282
12,800.00	90.02	180.12	7,342.85	-6,217.67	155.29	14,521,609.63	1,731,101.46	39.98547679	-104.67625354
12,900.00	90.02	180.12	7,342.81	-6,317.67	155.09	14,521,509.63	1,731,101.62	39.98520218	-104.67625427
13,000.00	90.02	180.12	7,342.77	-6,417.67	154.89	14,521,409.63	1,731,101.78	39.98492756	-104.67625500
13,100.00	90.02	180.12	7,342.72	-6,517.67	154.68	14,521,309.64	1,731,101.94	39.98465294	-104.67625572
13,200.00	90.02	180.12	7,342.68	-6,617.67	154.48	14,521,209.64	1,731,102.09	39.98437833	-104.67625645
13,300.00	90.02	180.12	7,342.64	-6,717.67	154.28	14,521,109.64	1,731,102.25	39.98410371	-104.67625718
13,400.00	90.02	180.12	7,342.59	-6,817.67	154.07	14,521,009.64	1,731,102.41	39.98382909	-104.67625790
13,500.00	90.02	180.12	7,342.55	-6,917.67	153.87	14,520,909.64	1,731,102.57	39.98355448	-104.67625863
13,600.00	90.02	180.12	7,342.51	-7,017.67	153.67	14,520,809.64	1,731,102.73	39.98327986	-104.67625935
13,700.00	90.02	180.12	7,342.47	-7,117.67	153.46	14,520,709.64	1,731,102.89	39.98300524	-104.67626008
13,800.00	90.02	180.12	7,342.42	-7,217.66	153.26	14,520,609.64	1,731,103.05	39.98273063	-104.67626081
13,900.00	90.02	180.12	7,342.38	-7,317.66	153.06	14,520,509.64	1,731,103.21	39.98245601	-104.67626153
14,000.00	90.02	180.12	7,342.34	-7,417.66	152.86	14,520,409.64	1,731,103.37	39.98218140	-104.67626226
14,100.00	90.02	180.12	7,342.29	-7,517.66	152.65	14,520,309.64	1,731,103.53	39.98190678	-104.67626299
14,200.00	90.02	180.12	7,342.25	-7,617.66	152.45	14,520,209.64	1,731,103.69	39.98163216	-104.67626371
14,300.00	90.02	180.12	7,342.21	-7,717.66	152.25	14,520,109.64	1,731,103.85	39.98135755	-104.67626444
14,400.00	90.02	180.12	7,342.17	-7,817.66	152.04	14,520,009.64	1,731,104.01	39.98108293	-104.67626517
14,500.00	90.02	180.12	7,342.12	-7,917.66	151.84	14,519,909.64	1,731,104.17	39.98080831	-104.67626589
14,600.00	90.02	180.12	7,342.08	-8,017.66	151.64	14,519,809.64	1,731,104.33	39.98053370	-104.67626662
14,700.00	90.02	180.12	7,342.04	-8,117.66	151.43	14,519,709.64	1,731,104.49	39.98025908	-104.67626735
14,800.00	90.02	180.12	7,341.99	-8,217.66	151.23	14,519,609.64	1,731,104.65	39.97998446	-104.67626807
14,900.00	90.02	180.12	7,341.95	-8,317.66	151.03	14,519,509.64	1,731,104.81	39.97970985	-104.67626880
15,000.00	90.02	180.12	7,341.91	-8,417.66	150.82	14,519,409.64	1,731,104.97	39.97943523	-104.67626953
15,100.00	90.02	180.12	7,341.87	-8,517.66	150.62	14,519,309.64	1,731,105.13	39.97916061	-104.67627025
15,200.00	90.02	180.12	7,341.82	-8,617.66	150.42	14,519,209.64	1,731,105.29	39.97888600	-104.67627098
15,300.00	90.02	180.12	7,341.78	-8,717.66	150.22	14,519,109.64	1,731,105.45	39.97861138	-104.67627170
15,400.00	90.02	180.12	7,341.74	-8,817.66	150.01	14,519,009.64	1,731,105.60	39.97833676	-104.67627243
15,500.00	90.02	180.12	7,341.69	-8,917.66	149.81	14,518,909.64	1,731,105.76	39.97806215	-104.67627316

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-09-3L
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 4-09-3L	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	90.02	180.12	7,341.65	-9,017.66	149.61	14,518,809.64	1,731,105.92	39.97778753	-104.67627388
15,700.00	90.02	180.12	7,341.61	-9,117.66	149.40	14,518,709.64	1,731,106.08	39.97751291	-104.67627461
15,800.00	90.02	180.12	7,341.57	-9,217.66	149.20	14,518,609.64	1,731,106.24	39.97723830	-104.67627534
15,900.00	90.02	180.12	7,341.52	-9,317.66	149.00	14,518,509.64	1,731,106.40	39.97696368	-104.67627606
16,000.00	90.02	180.12	7,341.48	-9,417.66	148.79	14,518,409.64	1,731,106.56	39.97668906	-104.67627679
16,100.00	90.02	180.12	7,341.44	-9,517.66	148.59	14,518,309.65	1,731,106.72	39.97641445	-104.67627751
16,200.00	90.02	180.12	7,341.39	-9,617.66	148.39	14,518,209.65	1,731,106.88	39.97613983	-104.67627824
16,300.00	90.02	180.12	7,341.35	-9,717.66	148.19	14,518,109.65	1,731,107.04	39.97586521	-104.67627897
16,400.00	90.02	180.12	7,341.31	-9,817.66	147.98	14,518,009.65	1,731,107.20	39.97559060	-104.67627969
16,500.00	90.02	180.12	7,341.27	-9,917.66	147.78	14,517,909.65	1,731,107.36	39.97531598	-104.67628042
16,600.00	90.02	180.12	7,341.22	-10,017.66	147.58	14,517,809.65	1,731,107.52	39.97504136	-104.67628115
16,700.00	90.02	180.12	7,341.18	-10,117.66	147.37	14,517,709.65	1,731,107.68	39.97476675	-104.67628187
16,800.00	90.02	180.12	7,341.14	-10,217.66	147.17	14,517,609.65	1,731,107.84	39.97449213	-104.67628260
16,900.00	90.02	180.12	7,341.09	-10,317.66	146.97	14,517,509.65	1,731,108.00	39.97421751	-104.67628332
17,000.00	90.02	180.12	7,341.05	-10,417.66	146.76	14,517,409.65	1,731,108.16	39.97394290	-104.67628405
17,100.00	90.02	180.12	7,341.01	-10,517.66	146.56	14,517,309.65	1,731,108.32	39.97366828	-104.67628478
17,119.64	90.02	180.12	7,341.00	-10,537.30	146.52	14,517,290.00	1,731,108.35	39.97361433	-104.67628492
PBHL/TD 17119.64 MD/7341.00 TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL Desha 4-9-3L 470 F	0.00	0.00	7,341.00	-10,537.30	146.52	14,517,290.00	1,731,108.35	39.97361433	-104.67628492
- plan hits target center									
- Point									
LP Desha 4-9-3L 470 FM	0.00	0.00	7,345.00	-1,205.03	165.47	14,526,622.26	1,731,093.46	39.99924232	-104.67621710
- plan hits target center									
- Point									

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
5,000.00	5,000.00	0.00	0.00	KOP Begin 10°/100' build	
5,200.18	5,196.13	-33.89	7.04	Begin 20.02° tangent	
7,082.84	6,965.06	-664.88	138.12	Begin 10°/100' build/turn	
7,787.35	7,345.00	-1,205.03	165.47	LP Begin 90.02° lateral section	
17,119.64	7,341.00	-10,537.30	146.52	PBHL/TD 17119.64 MD/7341.00 TVD	