

Weld County, Colorado
Section 33-T01N-R65W
Desha 4-15-1
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	5221.23	22.12	212.03	5215.78	-35.76	-22.37	10.00	37.56	Begin 22.12° tangent
4	6865.48	22.12	212.03	6738.97	-560.72	-350.78	0.00	588.96	Begin 10°/100' build/turn
5	7578.96	90.00	180.16	7120.00	-1103.35	-434.09	10.00	1136.76	LP Begin 90.00° lateral
6	11606.41	90.00	180.16	7120.00	-5130.79	-445.37	0.00	5150.08	PBHL/TD 11606.41 MD/7120.00 TVD

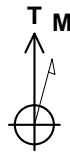
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Desha 4-15-1 LP 470 FNL 0 FWL	7120.00	-1103.35	-434.0914526622.89	1730496.12	39.99925000	-104.67835000	
Desha 4-15-1 PBHL 470 FSL 0 FWL	7120.00	-5130.79	-445.3714522595.45	1730499.45	39.98819000	-104.67839000	

Desha 4-15-1 Surf loc: 635 FSL 450 FWL Section 33-T01N-R65W			
NAD83 Colorado - HARN Universal Transverse Mercator (US Survey Feet) Zone 13N (108 W to 102 W) RKB=5078+24 @ 5102.00ft			
Northing	Easting	Latitude	Longitude
14527727.81	1730926.21	40.00228000	-104.67680000

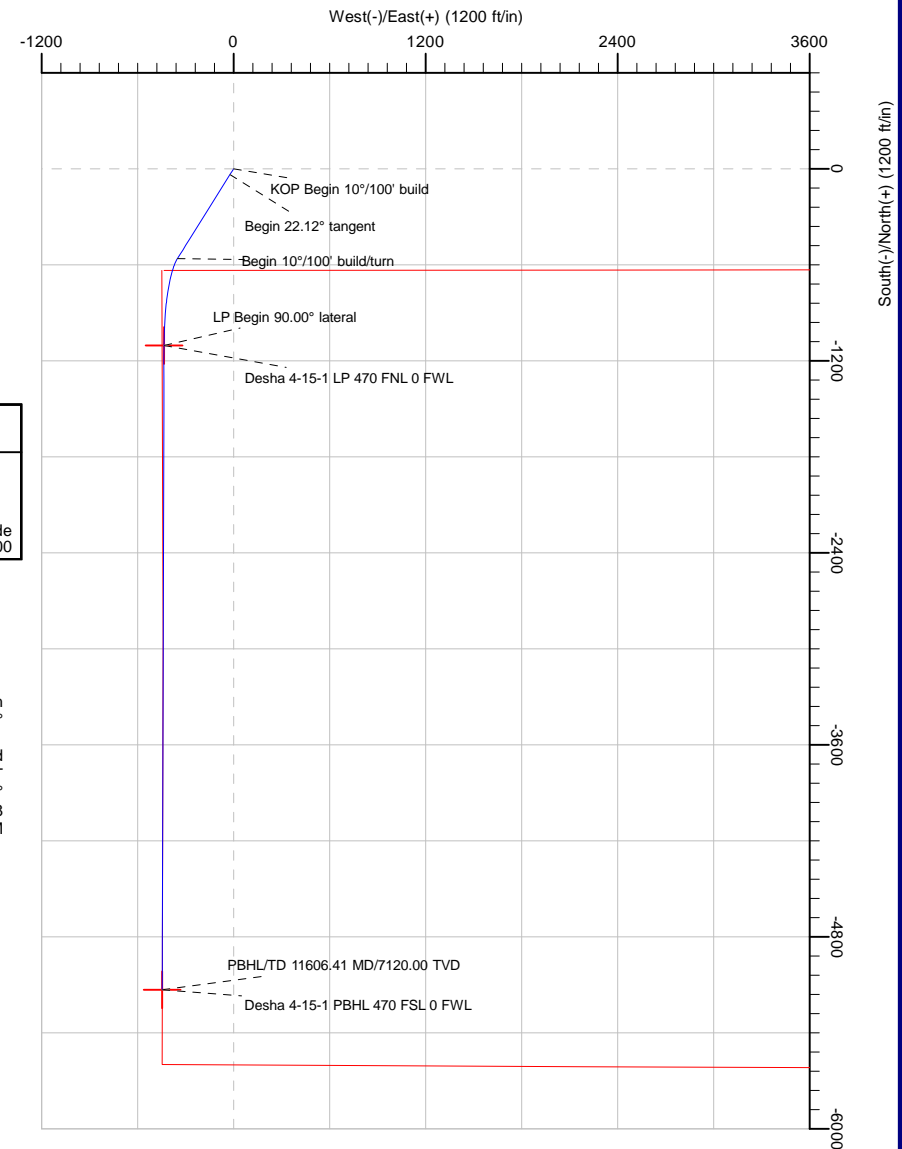
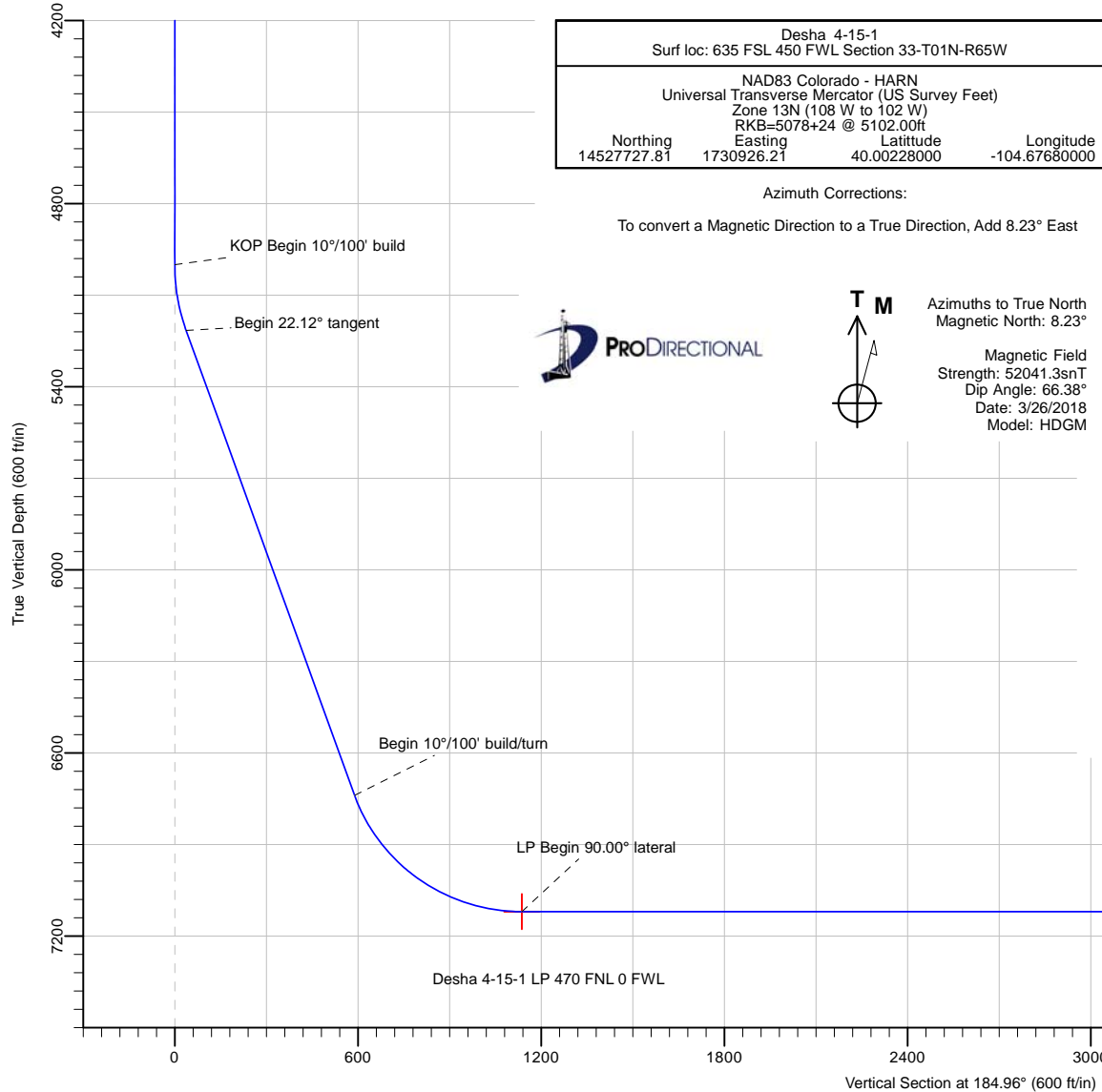
Azimuth Corrections:

To convert a Magnetic Direction to a True Direction, Add 8.23° East



Azimuths to True North
Magnetic North: 8.23°

Magnetic Field
Strength: 52041.3snT
Dip Angle: 66.38°
Date: 3/26/2018
Model: HDGM



PBHL/TD 11606.41 MD/7120.00 TVD

Desha 4-15-1 PBHL 470 FSL 0 FWL

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 4-15-1
Company:	Confluence Resources	TVD Reference:	RKB=5078+24 @ 5102.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5078+24 @ 5102.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-15-1	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 4-15-1, Surf loc: 635 FSL 450 FWL Section 33-T01N-R65W					
Well Position	+N/-S	-23.86 ft	Northing:	14,527,727.82 usft	Latitude:	40.00228000
	+E/-W	151.85 ft	Easting:	1,730,926.21 usft	Longitude:	-104.67680000
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,078.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/26/2018	8.23	66.38	52,041.30000000

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	184.96

Plan Survey Tool Program	Date	3/26/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	11,606.41	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	
5,221.23	22.12	212.03	5,215.78	-35.76	-22.37	10.00	10.00	0.00	212.03	
6,865.48	22.12	212.03	6,738.97	-560.72	-350.78	0.00	0.00	0.00	0.00	
7,578.96	90.00	180.16	7,120.00	-1,103.35	-434.09	10.00	9.51	-4.47	-33.87	Desha 4-15-1 LP 470
11,606.41	90.00	180.16	7,120.00	-5,130.79	-445.37	0.00	0.00	0.00	0.00	Desha 4-15-1 PBHL 4

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-15-1
Company:	Confluence Resources	TVD Reference:	RKB=5078+24 @ 5102.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5078+24 @ 5102.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-15-1	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	212.03	5,099.49	-7.38	-4.62	7.75	10.00	10.00	0.00
5,200.00	20.00	212.03	5,195.96	-29.29	-18.33	30.77	10.00	10.00	0.00

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Company:	Confluence Resources	TVD Reference:	RKB=5078+24 @ 5102.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5078+24 @ 5102.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-15-1	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)
5,221.23	22.12	212.03	5,215.78	-35.76	-22.37	37.56	10.00	10.00	0.00
Begin 22.12° tangent									
5,300.00	22.12	212.03	5,288.74	-60.91	-38.10	63.98	0.00	0.00	0.00
5,400.00	22.12	212.03	5,381.38	-92.84	-58.08	97.51	0.00	0.00	0.00
5,500.00	22.12	212.03	5,474.02	-124.76	-78.05	131.05	0.00	0.00	0.00
5,600.00	22.12	212.03	5,566.66	-156.69	-98.03	164.58	0.00	0.00	0.00
5,700.00	22.12	212.03	5,659.29	-188.62	-118.00	198.12	0.00	0.00	0.00
5,800.00	22.12	212.03	5,751.93	-220.55	-137.97	231.65	0.00	0.00	0.00
5,900.00	22.12	212.03	5,844.57	-252.47	-157.95	265.19	0.00	0.00	0.00
6,000.00	22.12	212.03	5,937.21	-284.40	-177.92	298.72	0.00	0.00	0.00
6,100.00	22.12	212.03	6,029.85	-316.33	-197.89	332.25	0.00	0.00	0.00
6,200.00	22.12	212.03	6,122.48	-348.25	-217.87	365.79	0.00	0.00	0.00
6,300.00	22.12	212.03	6,215.12	-380.18	-237.84	399.32	0.00	0.00	0.00
6,400.00	22.12	212.03	6,307.76	-412.11	-257.81	432.86	0.00	0.00	0.00
6,500.00	22.12	212.03	6,400.40	-444.03	-277.79	466.39	0.00	0.00	0.00
6,600.00	22.12	212.03	6,493.03	-475.96	-297.76	499.93	0.00	0.00	0.00
6,700.00	22.12	212.03	6,585.67	-507.89	-317.73	533.46	0.00	0.00	0.00
6,800.00	22.12	212.03	6,678.31	-539.82	-337.71	567.00	0.00	0.00	0.00
6,865.48	22.12	212.03	6,738.97	-560.72	-350.78	588.96	0.00	0.00	0.00
Begin 10°/100' build/turn									
6,900.00	25.06	207.49	6,770.60	-572.72	-357.61	601.50	10.00	8.51	-13.16
7,000.00	34.08	198.66	6,857.53	-618.17	-376.39	648.41	10.00	9.02	-8.83
7,100.00	43.50	193.23	6,935.41	-678.38	-393.28	709.84	10.00	9.41	-5.42
7,200.00	53.09	189.44	7,001.87	-751.50	-407.75	783.95	10.00	9.59	-3.80
7,300.00	62.78	186.50	7,054.91	-835.33	-419.37	868.47	10.00	9.69	-2.94
7,400.00	72.52	184.04	7,092.90	-927.31	-427.78	960.83	10.00	9.74	-2.46
7,500.00	82.28	181.83	7,114.69	-1,024.65	-432.73	1,058.23	10.00	9.77	-2.21
7,578.96	90.00	180.16	7,120.00	-1,103.35	-434.09	1,136.76	10.00	9.78	-2.11
LP Begin 90.00° lateral									
7,600.00	90.00	180.16	7,120.00	-1,124.40	-434.15	1,157.73	0.00	0.00	0.00
7,700.00	90.00	180.16	7,120.00	-1,224.40	-434.43	1,257.38	0.00	0.00	0.00
7,800.00	90.00	180.16	7,120.00	-1,324.40	-434.71	1,357.03	0.00	0.00	0.00
7,900.00	90.00	180.16	7,120.00	-1,424.40	-434.99	1,456.68	0.00	0.00	0.00
8,000.00	90.00	180.16	7,120.00	-1,524.40	-435.27	1,556.33	0.00	0.00	0.00
8,100.00	90.00	180.16	7,120.00	-1,624.40	-435.55	1,655.98	0.00	0.00	0.00
8,200.00	90.00	180.16	7,120.00	-1,724.40	-435.83	1,755.63	0.00	0.00	0.00
8,300.00	90.00	180.16	7,120.00	-1,824.40	-436.11	1,855.27	0.00	0.00	0.00
8,400.00	90.00	180.16	7,120.00	-1,924.40	-436.39	1,954.92	0.00	0.00	0.00
8,500.00	90.00	180.16	7,120.00	-2,024.40	-436.67	2,054.57	0.00	0.00	0.00
8,600.00	90.00	180.16	7,120.00	-2,124.39	-436.95	2,154.22	0.00	0.00	0.00
8,700.00	90.00	180.16	7,120.00	-2,224.39	-437.23	2,253.87	0.00	0.00	0.00
8,800.00	90.00	180.16	7,120.00	-2,324.39	-437.51	2,353.52	0.00	0.00	0.00
8,900.00	90.00	180.16	7,120.00	-2,424.39	-437.79	2,453.17	0.00	0.00	0.00
9,000.00	90.00	180.16	7,120.00	-2,524.39	-438.07	2,552.82	0.00	0.00	0.00
9,100.00	90.00	180.16	7,120.00	-2,624.39	-438.35	2,652.47	0.00	0.00	0.00
9,200.00	90.00	180.16	7,120.00	-2,724.39	-438.63	2,752.12	0.00	0.00	0.00
9,300.00	90.00	180.16	7,120.00	-2,824.39	-438.91	2,851.77	0.00	0.00	0.00
9,400.00	90.00	180.16	7,120.00	-2,924.39	-439.19	2,951.42	0.00	0.00	0.00
9,500.00	90.00	180.16	7,120.00	-3,024.39	-439.47	3,051.07	0.00	0.00	0.00
9,600.00	90.00	180.16	7,120.00	-3,124.39	-439.75	3,150.71	0.00	0.00	0.00
9,700.00	90.00	180.16	7,120.00	-3,224.39	-440.03	3,250.36	0.00	0.00	0.00
9,800.00	90.00	180.16	7,120.00	-3,324.39	-440.31	3,350.01	0.00	0.00	0.00
9,900.00	90.00	180.16	7,120.00	-3,424.39	-440.59	3,449.66	0.00	0.00	0.00

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Company:	Confluence Resources	TVD Reference:	RKB=5078+24 @ 5102.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5078+24 @ 5102.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-15-1	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	180.16	7,120.00	-3,524.39	-440.87	3,549.31	0.00	0.00	0.00	
10,100.00	90.00	180.16	7,120.00	-3,624.39	-441.15	3,648.96	0.00	0.00	0.00	
10,200.00	90.00	180.16	7,120.00	-3,724.39	-441.43	3,748.61	0.00	0.00	0.00	
10,300.00	90.00	180.16	7,120.00	-3,824.39	-441.71	3,848.26	0.00	0.00	0.00	
10,400.00	90.00	180.16	7,120.00	-3,924.39	-441.99	3,947.91	0.00	0.00	0.00	
10,500.00	90.00	180.16	7,120.00	-4,024.39	-442.27	4,047.56	0.00	0.00	0.00	
10,600.00	90.00	180.16	7,120.00	-4,124.39	-442.55	4,147.21	0.00	0.00	0.00	
10,700.00	90.00	180.16	7,120.00	-4,224.39	-442.83	4,246.86	0.00	0.00	0.00	
10,800.00	90.00	180.16	7,120.00	-4,324.39	-443.11	4,346.51	0.00	0.00	0.00	
10,900.00	90.00	180.16	7,120.00	-4,424.39	-443.39	4,446.15	0.00	0.00	0.00	
11,000.00	90.00	180.16	7,120.00	-4,524.39	-443.67	4,545.80	0.00	0.00	0.00	
11,100.00	90.00	180.16	7,120.00	-4,624.38	-443.95	4,645.45	0.00	0.00	0.00	
11,200.00	90.00	180.16	7,120.00	-4,724.38	-444.23	4,745.10	0.00	0.00	0.00	
11,300.00	90.00	180.16	7,120.00	-4,824.38	-444.51	4,844.75	0.00	0.00	0.00	
11,400.00	90.00	180.16	7,120.00	-4,924.38	-444.79	4,944.40	0.00	0.00	0.00	
11,500.00	90.00	180.16	7,120.00	-5,024.38	-445.07	5,044.05	0.00	0.00	0.00	
11,600.00	90.00	180.16	7,120.00	-5,124.38	-445.35	5,143.70	0.00	0.00	0.00	
11,606.41	90.00	180.16	7,120.00	-5,130.79	-445.37	5,150.08	0.00	0.00	0.00	
PBHL/TD 11606.41 MD/7120.00 TVD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude		Longitude
Desha 4-15-1 PBHL 470	0.00	0.00	7,120.00	-5,130.79	-445.37	14,522,595.46	1,730,499.45	39.98819000		-104.67839000
- plan hits target center										
- Point										
Desha 4-15-1 LP 470 F1	0.00	0.00	7,120.00	-1,103.35	-434.09	14,526,622.90	1,730,496.12	39.99925000		-104.67835000
- plan hits target center										
- Point										

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	
5,221.23	5,215.78	-35.76	-22.37	Begin 22.12° tangent	
6,865.48	6,738.97	-560.72	-350.78	Begin 10°/100' build/turn	
7,578.96	7,120.00	-1,103.35	-434.09	LP Begin 90.00° lateral	
11,606.41	7,120.00	-5,130.79	-445.37	PBHL/TD 11606.41 MD/7120.00 TVD	

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-15-1
Company:	Confluence Resources	TVD Reference:	RKB=5078+24 @ 5102.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5078+24 @ 5102.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-15-1	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 4-15-1, Surf loc: 635 FSL 450 FWL Section 33-T01N-R65W					
Well Position	+N/-S	0.00 ft	Northing:	14,527,727.82 usft	Latitude:	40.00228000
	+E/-W	0.00 ft	Easting:	1,730,926.21 usft	Longitude:	-104.67680000
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,078.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/26/2018	8.23	66.38	52,041.30000000

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	184.96

Plan Survey Tool Program	Date	3/26/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	11,606.41	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	
5,221.23	22.12	212.03	5,215.78	-35.76	-22.37	10.00	10.00	0.00	212.03	
6,865.48	22.12	212.03	6,738.97	-560.72	-350.78	0.00	0.00	0.00	0.00	
7,578.96	90.00	180.16	7,120.00	-1,103.35	-434.09	10.00	9.51	-4.47	-33.87	Desha 4-15-1 LP 470
11,606.41	90.00	180.16	7,120.00	-5,130.79	-445.37	0.00	0.00	0.00	0.00	Desha 4-15-1 PBHL 4

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-15-1
Company:	Confluence Resources	TVD Reference:	RKB=5078+24 @ 5102.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5078+24 @ 5102.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-15-1	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	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
100.00	0.00	0.00	100.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
200.00	0.00	0.00	200.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
300.00	0.00	0.00	300.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
400.00	0.00	0.00	400.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
500.00	0.00	0.00	500.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
600.00	0.00	0.00	600.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
700.00	0.00	0.00	700.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
800.00	0.00	0.00	800.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
900.00	0.00	0.00	900.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,200.00	0.00	0.00	3,200.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,300.00	0.00	0.00	3,300.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,400.00	0.00	0.00	3,400.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,500.00	0.00	0.00	3,500.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,600.00	0.00	0.00	3,600.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,700.00	0.00	0.00	3,700.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,800.00	0.00	0.00	3,800.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
3,900.00	0.00	0.00	3,900.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,000.00	0.00	0.00	4,000.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,100.00	0.00	0.00	4,100.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,200.00	0.00	0.00	4,200.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,300.00	0.00	0.00	4,300.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,400.00	0.00	0.00	4,400.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,500.00	0.00	0.00	4,500.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,600.00	0.00	0.00	4,600.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,700.00	0.00	0.00	4,700.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,800.00	0.00	0.00	4,800.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
4,900.00	0.00	0.00	4,900.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
5,000.00	0.00	0.00	5,000.00	0.00	0.00	14,527,727.82	1,730,926.21	40.00228000	-104.67680000
KOP Begin 10°/100' build									
5,100.00	10.00	212.03	5,099.49	-7.38	-4.62	14,527,720.42	1,730,921.62	40.00225974	-104.67681648
5,200.00	20.00	212.03	5,195.96	-29.29	-18.33	14,527,698.46	1,730,907.99	40.00219956	-104.67686544

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-15-1
Company:	Confluence Resources	TVD Reference:	RKB=5078+24 @ 5102.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5078+24 @ 5102.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-15-1	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
5,221.23	22.12	212.03	5,215.78	-35.76	-22.37	14,527,691.98	1,730,903.96	40.00218180	-104.67687988
Begin 22.12° tangent									
5,300.00	22.12	212.03	5,288.74	-60.91	-38.10	14,527,666.77	1,730,888.32	40.00211273	-104.67693606
5,400.00	22.12	212.03	5,381.38	-92.84	-58.08	14,527,634.77	1,730,868.46	40.00202506	-104.67700738
5,500.00	22.12	212.03	5,474.02	-124.76	-78.05	14,527,602.77	1,730,848.61	40.00193738	-104.67707871
5,600.00	22.12	212.03	5,566.66	-156.69	-98.03	14,527,570.77	1,730,828.75	40.00184970	-104.67715003
5,700.00	22.12	212.03	5,659.29	-188.62	-118.00	14,527,538.77	1,730,808.89	40.00176203	-104.67722135
5,800.00	22.12	212.03	5,751.93	-220.55	-137.97	14,527,506.77	1,730,789.03	40.00167435	-104.67729267
5,900.00	22.12	212.03	5,844.57	-252.47	-157.95	14,527,474.77	1,730,769.18	40.00158667	-104.67736399
6,000.00	22.12	212.03	5,937.21	-284.40	-177.92	14,527,442.78	1,730,749.32	40.00149899	-104.67743531
6,100.00	22.12	212.03	6,029.85	-316.33	-197.89	14,527,410.78	1,730,729.46	40.00141132	-104.67750663
6,200.00	22.12	212.03	6,122.48	-348.25	-217.87	14,527,378.78	1,730,709.60	40.00132364	-104.67757795
6,300.00	22.12	212.03	6,215.12	-380.18	-237.84	14,527,346.78	1,730,689.75	40.00123596	-104.67764927
6,400.00	22.12	212.03	6,307.76	-412.11	-257.81	14,527,314.78	1,730,669.89	40.00114829	-104.67772059
6,500.00	22.12	212.03	6,400.40	-444.03	-277.79	14,527,282.78	1,730,650.03	40.00106061	-104.67779191
6,600.00	22.12	212.03	6,493.03	-475.96	-297.76	14,527,250.78	1,730,630.18	40.00097293	-104.67786323
6,700.00	22.12	212.03	6,585.67	-507.89	-317.73	14,527,218.78	1,730,610.32	40.00088525	-104.67793455
6,800.00	22.12	212.03	6,678.31	-539.82	-337.71	14,527,186.78	1,730,590.46	40.00079758	-104.67800587
6,865.48	22.12	212.03	6,738.97	-560.72	-350.78	14,527,165.83	1,730,577.46	40.00074016	-104.67805257
Begin 10°/100' build/turn									
6,900.00	25.06	207.49	6,770.60	-572.72	-357.61	14,527,153.80	1,730,570.68	40.00070721	-104.67807693
7,000.00	34.08	198.66	6,857.53	-618.17	-376.39	14,527,108.29	1,730,552.06	40.00058239	-104.67814401
7,100.00	43.50	193.23	6,935.41	-678.38	-393.28	14,527,048.02	1,730,535.39	40.00041706	-104.67820429
7,200.00	53.09	189.44	7,001.87	-751.50	-407.75	14,526,974.84	1,730,521.19	40.00021625	-104.67825596
7,300.00	62.78	186.50	7,054.91	-835.33	-419.37	14,526,890.97	1,730,509.87	39.99998604	-104.67829744
7,400.00	72.52	184.04	7,092.90	-927.31	-427.78	14,526,798.96	1,730,501.79	39.99973345	-104.67832747
7,500.00	82.28	181.83	7,114.69	-1,024.65	-432.73	14,526,701.61	1,730,497.20	39.99946613	-104.67834514
7,578.96	90.00	180.16	7,120.00	-1,103.35	-434.09	14,526,622.90	1,730,496.12	39.99925000	-104.67835000
LP Begin 90.00° lateral									
7,600.00	90.00	180.16	7,120.00	-1,124.40	-434.15	14,526,601.85	1,730,496.14	39.99919221	-104.67835021
7,700.00	90.00	180.16	7,120.00	-1,224.40	-434.43	14,526,501.85	1,730,496.22	39.99891760	-104.67835120
7,800.00	90.00	180.16	7,120.00	-1,324.40	-434.71	14,526,401.86	1,730,496.30	39.99864298	-104.67835219
7,900.00	90.00	180.16	7,120.00	-1,424.40	-434.99	14,526,301.86	1,730,496.39	39.99836837	-104.67835319
8,000.00	90.00	180.16	7,120.00	-1,524.40	-435.27	14,526,201.86	1,730,496.47	39.99809375	-104.67835418
8,100.00	90.00	180.16	7,120.00	-1,624.40	-435.55	14,526,101.86	1,730,496.55	39.99781914	-104.67835517
8,200.00	90.00	180.16	7,120.00	-1,724.40	-435.83	14,526,001.86	1,730,496.63	39.99754452	-104.67835617
8,300.00	90.00	180.16	7,120.00	-1,824.40	-436.11	14,525,901.86	1,730,496.72	39.99726990	-104.67835716
8,400.00	90.00	180.16	7,120.00	-1,924.40	-436.39	14,525,801.86	1,730,496.80	39.99699529	-104.67835815
8,500.00	90.00	180.16	7,120.00	-2,024.40	-436.67	14,525,701.86	1,730,496.88	39.99672067	-104.67835915
8,600.00	90.00	180.16	7,120.00	-2,124.39	-436.95	14,525,601.86	1,730,496.96	39.99644606	-104.67836014
8,700.00	90.00	180.16	7,120.00	-2,224.39	-437.23	14,525,501.86	1,730,497.05	39.99617144	-104.67836113
8,800.00	90.00	180.16	7,120.00	-2,324.39	-437.51	14,525,401.86	1,730,497.13	39.99589683	-104.67836213
8,900.00	90.00	180.16	7,120.00	-2,424.39	-437.79	14,525,301.86	1,730,497.21	39.99562221	-104.67836312
9,000.00	90.00	180.16	7,120.00	-2,524.39	-438.07	14,525,201.86	1,730,497.30	39.99534760	-104.67836411
9,100.00	90.00	180.16	7,120.00	-2,624.39	-438.35	14,525,101.86	1,730,497.38	39.99507298	-104.67836511
9,200.00	90.00	180.16	7,120.00	-2,724.39	-438.63	14,525,001.86	1,730,497.46	39.99479837	-104.67836610
9,300.00	90.00	180.16	7,120.00	-2,824.39	-438.91	14,524,901.86	1,730,497.54	39.99452375	-104.67836709
9,400.00	90.00	180.16	7,120.00	-2,924.39	-439.19	14,524,801.86	1,730,497.63	39.99424914	-104.67836809
9,500.00	90.00	180.16	7,120.00	-3,024.39	-439.47	14,524,701.86	1,730,497.71	39.99397452	-104.67836908
9,600.00	90.00	180.16	7,120.00	-3,124.39	-439.75	14,524,601.86	1,730,497.79	39.99369990	-104.67837007
9,700.00	90.00	180.16	7,120.00	-3,224.39	-440.03	14,524,501.86	1,730,497.87	39.99342529	-104.67837107
9,800.00	90.00	180.16	7,120.00	-3,324.39	-440.31	14,524,401.86	1,730,497.96	39.99315067	-104.67837206
9,900.00	90.00	180.16	7,120.00	-3,424.39	-440.59	14,524,301.86	1,730,498.04	39.99287606	-104.67837305
10,000.00	90.00	180.16	7,120.00	-3,524.39	-440.87	14,524,201.86	1,730,498.12	39.99260144	-104.67837404

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Desha 4-15-1
Company:	Confluence Resources	TVD Reference:	RKB=5078+24 @ 5102.00ft
Project:	Weld County, Colorado	MD Reference:	RKB=5078+24 @ 5102.00ft
Site:	Section 33-T01N-R65W	North Reference:	True
Well:	Desha 4-15-1	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	180.16	7,120.00	-3,624.39	-441.15	14,524,101.86	1,730,498.20	39.99232683	-104.67837504
10,200.00	90.00	180.16	7,120.00	-3,724.39	-441.43	14,524,001.86	1,730,498.29	39.99205221	-104.67837603
10,300.00	90.00	180.16	7,120.00	-3,824.39	-441.71	14,523,901.86	1,730,498.37	39.99177760	-104.67837702
10,400.00	90.00	180.16	7,120.00	-3,924.39	-441.99	14,523,801.86	1,730,498.45	39.99150298	-104.67837802
10,500.00	90.00	180.16	7,120.00	-4,024.39	-442.27	14,523,701.86	1,730,498.53	39.99122836	-104.67837901
10,600.00	90.00	180.16	7,120.00	-4,124.39	-442.55	14,523,601.86	1,730,498.62	39.99095375	-104.67838000
10,700.00	90.00	180.16	7,120.00	-4,224.39	-442.83	14,523,501.86	1,730,498.70	39.99067913	-104.67838100
10,800.00	90.00	180.16	7,120.00	-4,324.39	-443.11	14,523,401.86	1,730,498.78	39.99040452	-104.67838199
10,900.00	90.00	180.16	7,120.00	-4,424.39	-443.39	14,523,301.86	1,730,498.86	39.99012990	-104.67838298
11,000.00	90.00	180.16	7,120.00	-4,524.39	-443.67	14,523,201.86	1,730,498.95	39.98985529	-104.67838398
11,100.00	90.00	180.16	7,120.00	-4,624.38	-443.95	14,523,101.86	1,730,499.03	39.98958067	-104.67838497
11,200.00	90.00	180.16	7,120.00	-4,724.38	-444.23	14,523,001.86	1,730,499.11	39.98930606	-104.67838596
11,300.00	90.00	180.16	7,120.00	-4,824.38	-444.51	14,522,901.86	1,730,499.20	39.98903144	-104.67838695
11,400.00	90.00	180.16	7,120.00	-4,924.38	-444.79	14,522,801.86	1,730,499.28	39.98875682	-104.67838795
11,500.00	90.00	180.16	7,120.00	-5,024.38	-445.07	14,522,701.86	1,730,499.36	39.98848221	-104.67838894
11,600.00	90.00	180.16	7,120.00	-5,124.38	-445.35	14,522,601.86	1,730,499.44	39.98820759	-104.67838993
11,606.41	90.00	180.16	7,120.00	-5,130.79	-445.37	14,522,595.46	1,730,499.45	39.98819000	-104.67839000
PBHL/TD 11606.41 MD/7120.00 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									
Desha 4-15-1 PBHL 470	0.00	0.00	7,120.00	-5,130.79	-445.37	14,522,595.46	1,730,499.45	39.98819000	-104.67839000
- plan hits target center									
- Point									
Desha 4-15-1 LP 470 FM	0.00	0.00	7,120.00	-1,103.35	-434.09	14,526,622.90	1,730,496.12	39.99925000	-104.67835000
- 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	
5,221.23	5,215.78	-35.76	-22.37	Begin 22.12° tangent	
6,865.48	6,738.97	-560.72	-350.78	Begin 10°/100' build/turn	
7,578.96	7,120.00	-1,103.35	-434.09	LP Begin 90.00° lateral	
11,606.41	7,120.00	-5,130.79	-445.37	PBHL/TD 11606.41 MD/7120.00 TVD	