



D90 ENERGY LLC

D90 Energy, LLC

Jackson County, Colorado
Sec 17, T7N, R80W, 6th PM
Castle 0780 2-17H20

Wellbore #1

Plan: Prelim #1

KLX Well Planning Report

16 March, 2022



D90 Energy, LLC
Jackson County, Colorado
Sec 17, T7N, R80W, 6th PM
Castle 0780 2-17H20
Prelim #1
26' kb

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
2000.0	0.00	0.00	2000.0	0.0	0.0	0.0	0.0	Build 2"/100'
2400.1	8.00	208.93	2398.8	-24.4	-13.5	24.7	27.9	EOB @ 8.00° Inc. / 208.93° Azm
3682.0	8.00	208.93	3668.2	-180.6	-99.8	182.6	206.3	Drop 2"/100'
4082.1	0.00	0.00	4067.0	-205.0	-113.3	207.3	234.2	EOD @ Vert.
6592.1	0.00	0.00	6577.0	-205.0	-113.3	207.3	234.2	Build 10"/100'
7492.1	90.00	181.17	7150.0	-777.8	-125.0	780.2	807.2	EOB @ 90.00° Inc. / 181.17° Azm
16719.3	90.00	181.17	7150.0	-10003.1	-313.4	10007.4	10034.4	TD @ 16719.3' MD / 7150.0' TVD

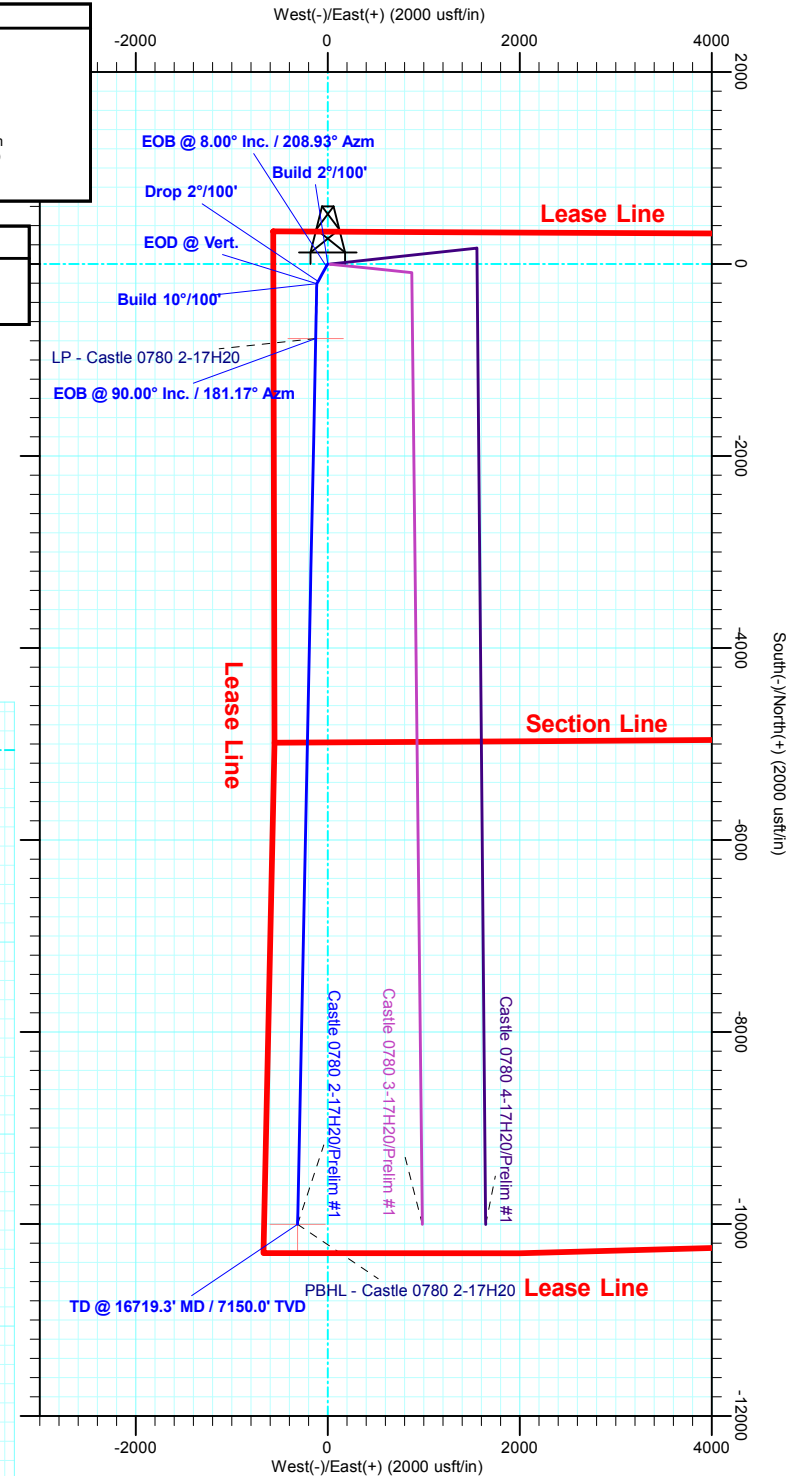
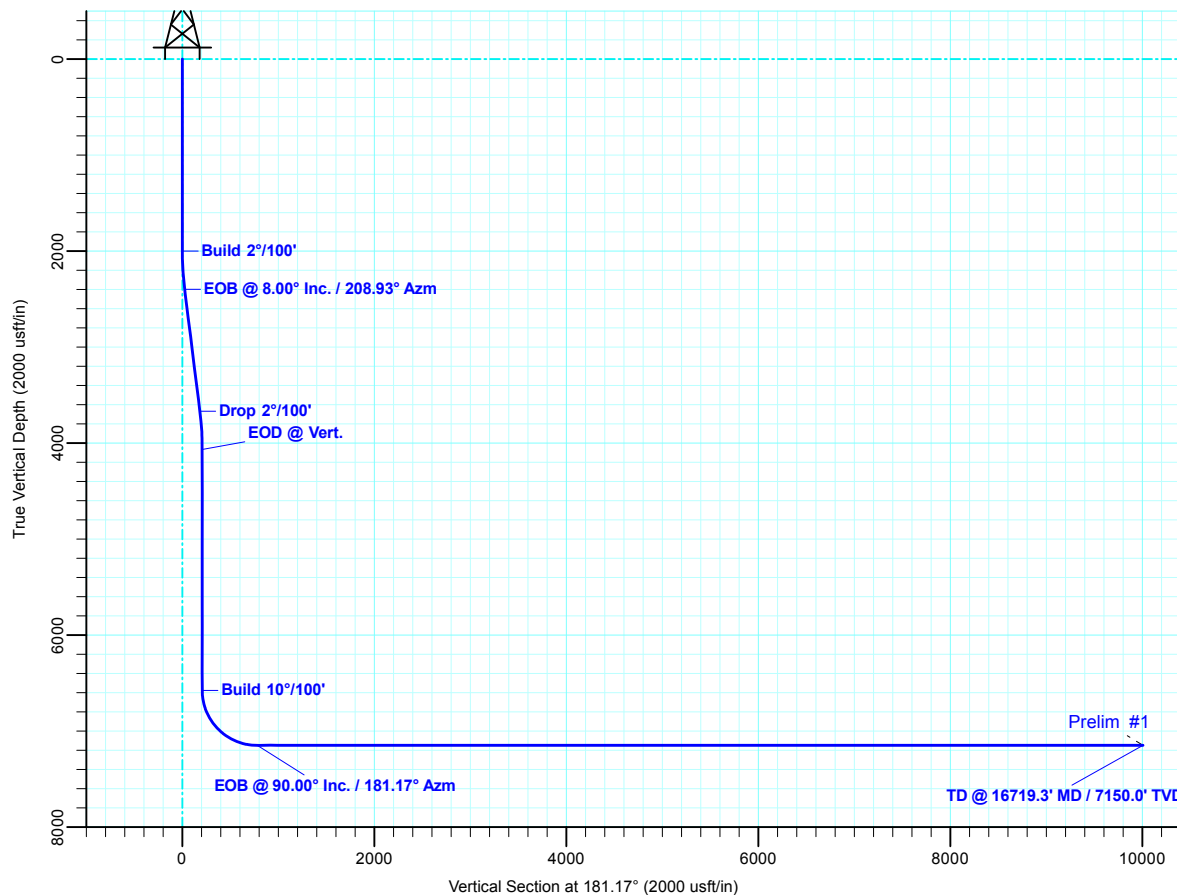
PROJECT DETAILS: Jackson County, Colorado

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

WELL DETAILS: Castle 0780 2-17H20

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1456815.41	2748614.51	40.583835	-106.405077

D90 ENERGY LLC





KLX
Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Castle 0780 2-17H20
Company:	D90 Energy, LLC	TVD Reference:	GLE @ 8174.8usft (26' kb)
Project:	Jackson County, Colorado	MD Reference:	GLE @ 8174.8usft (26' kb)
Site:	Sec 17, T7N, R80W, 6th PM	North Reference:	True
Well:	Castle 0780 2-17H20	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Project	Jackson County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Sec 17, T7N, R80W, 6th PM		
Site Position:		Northing:	1,456,815.41 usft
From:	Map	Easting:	2,748,614.51 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	40.583835
		Longitude:	-106.405078
		Grid Convergence:	-0.58 °

Well	Castle 0780 2-17H20		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2022	3/16/2022	8.65	66.52	51,782.20000000

Design	Prelim #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	181.17

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,400.1	8.00	208.93	2,398.8	-24.4	-13.5	2.00	2.00	0.00	208.93	
3,682.0	8.00	208.93	3,668.2	-180.6	-99.8	0.00	0.00	0.00	0.00	
4,082.1	0.00	0.00	4,067.0	-205.0	-113.3	2.00	-2.00	0.00	180.00	
6,592.1	0.00	0.00	6,577.0	-205.0	-113.3	0.00	0.00	0.00	0.00	
7,492.1	90.00	181.17	7,150.0	-777.8	-125.0	10.00	10.00	0.00	181.17	
16,719.3	90.00	181.17	7,150.0	-10,003.1	-313.4	0.00	0.00	0.00	0.00	PBHL - Castle 0780

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Castle 0780 2-17H20
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Project:	Jackson County, Colorado	MD Reference:	GLE @ 8174.8usft (26' kb)
Site:	Sec 17, T7N, R80W, 6th PM	North Reference:	True
Well:	Castle 0780 2-17H20	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 2°/100'									
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	2.00	208.93	2,100.0	-1.5	-0.8	1.5	2.00	2.00	0.00
2,200.0	4.00	208.93	2,199.8	-6.1	-3.4	6.2	2.00	2.00	0.00
2,300.0	6.00	208.93	2,299.5	-13.7	-7.6	13.9	2.00	2.00	0.00
EOB @ 8.00° Inc. / 208.93° Azm									
2,400.1	8.00	208.93	2,398.8	-24.4	-13.5	24.7	2.00	2.00	0.00
2,500.0	8.00	208.93	2,497.7	-36.6	-20.2	37.0	0.00	0.00	0.00
2,600.0	8.00	208.93	2,596.8	-48.8	-27.0	49.3	0.00	0.00	0.00
2,700.0	8.00	208.93	2,695.8	-61.0	-33.7	61.6	0.00	0.00	0.00
2,800.0	8.00	208.93	2,794.8	-73.1	-40.4	73.9	0.00	0.00	0.00
2,900.0	8.00	208.93	2,893.8	-85.3	-47.2	86.3	0.00	0.00	0.00
3,000.0	8.00	208.93	2,992.9	-97.5	-53.9	98.6	0.00	0.00	0.00
3,100.0	8.00	208.93	3,091.9	-109.7	-60.6	110.9	0.00	0.00	0.00
3,200.0	8.00	208.93	3,190.9	-121.9	-67.4	123.2	0.00	0.00	0.00
3,300.0	8.00	208.93	3,289.9	-134.0	-74.1	135.5	0.00	0.00	0.00
3,400.0	8.00	208.93	3,389.0	-146.2	-80.8	147.9	0.00	0.00	0.00
3,500.0	8.00	208.93	3,488.0	-158.4	-87.6	160.2	0.00	0.00	0.00
3,600.0	8.00	208.93	3,587.0	-170.6	-94.3	172.5	0.00	0.00	0.00
Drop 2°/100'									
3,682.0	8.00	208.93	3,668.2	-180.6	-99.8	182.6	0.00	0.00	0.00
3,700.0	7.64	208.93	3,686.1	-182.7	-101.0	184.8	2.00	-2.00	0.00
3,800.0	5.64	208.93	3,785.4	-192.9	-106.6	195.0	2.00	-2.00	0.00
3,900.0	3.64	208.93	3,885.0	-199.9	-110.5	202.2	2.00	-2.00	0.00
4,000.0	1.64	208.93	3,984.9	-204.0	-112.7	206.2	2.00	-2.00	0.00
EOD @ Vert.									
4,082.1	0.00	0.00	4,067.0	-205.0	-113.3	207.3	2.00	-2.00	0.00
4,100.0	0.00	0.00	4,084.9	-205.0	-113.3	207.3	0.00	0.00	0.00
4,200.0	0.00	0.00	4,184.9	-205.0	-113.3	207.3	0.00	0.00	0.00
4,300.0	0.00	0.00	4,284.9	-205.0	-113.3	207.3	0.00	0.00	0.00
4,400.0	0.00	0.00	4,384.9	-205.0	-113.3	207.3	0.00	0.00	0.00
4,500.0	0.00	0.00	4,484.9	-205.0	-113.3	207.3	0.00	0.00	0.00
4,600.0	0.00	0.00	4,584.9	-205.0	-113.3	207.3	0.00	0.00	0.00
4,700.0	0.00	0.00	4,684.9	-205.0	-113.3	207.3	0.00	0.00	0.00

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Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.0	0.00	0.00	4,784.9	-205.0	-113.3	207.3	0.00	0.00	0.00
4,900.0	0.00	0.00	4,884.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,000.0	0.00	0.00	4,984.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,100.0	0.00	0.00	5,084.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,200.0	0.00	0.00	5,184.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,300.0	0.00	0.00	5,284.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,400.0	0.00	0.00	5,384.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,500.0	0.00	0.00	5,484.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,584.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,700.0	0.00	0.00	5,684.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,784.9	-205.0	-113.3	207.3	0.00	0.00	0.00
5,900.0	0.00	0.00	5,884.9	-205.0	-113.3	207.3	0.00	0.00	0.00
6,000.0	0.00	0.00	5,984.9	-205.0	-113.3	207.3	0.00	0.00	0.00
6,100.0	0.00	0.00	6,084.9	-205.0	-113.3	207.3	0.00	0.00	0.00
6,200.0	0.00	0.00	6,184.9	-205.0	-113.3	207.3	0.00	0.00	0.00
6,300.0	0.00	0.00	6,284.9	-205.0	-113.3	207.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,384.9	-205.0	-113.3	207.3	0.00	0.00	0.00
6,500.0	0.00	0.00	6,484.9	-205.0	-113.3	207.3	0.00	0.00	0.00
Build 10°/100'									
6,592.1	0.00	0.00	6,577.0	-205.0	-113.3	207.3	0.00	0.00	0.00
6,600.0	0.79	181.17	6,584.9	-205.1	-113.3	207.3	10.00	10.00	0.00
6,650.0	5.79	181.17	6,634.8	-207.9	-113.4	210.2	10.00	10.00	0.00
6,700.0	10.79	181.17	6,684.3	-215.1	-113.5	217.4	10.00	10.00	0.00
6,750.0	15.79	181.17	6,732.9	-226.6	-113.7	228.9	10.00	10.00	0.00
6,800.0	20.79	181.17	6,780.4	-242.3	-114.1	244.6	10.00	10.00	0.00
6,850.0	25.79	181.17	6,826.3	-262.1	-114.5	264.3	10.00	10.00	0.00
6,900.0	30.79	181.17	6,870.3	-285.8	-114.9	288.0	10.00	10.00	0.00
6,950.0	35.79	181.17	6,912.1	-313.2	-115.5	315.5	10.00	10.00	0.00
7,000.0	40.79	181.17	6,951.3	-344.2	-116.1	346.5	10.00	10.00	0.00
7,050.0	45.79	181.17	6,987.7	-378.4	-116.8	380.7	10.00	10.00	0.00
7,100.0	50.79	181.17	7,021.0	-415.7	-117.6	418.0	10.00	10.00	0.00
7,150.0	55.79	181.17	7,050.8	-455.8	-118.4	458.1	10.00	10.00	0.00
7,200.0	60.79	181.17	7,077.1	-498.3	-119.3	500.6	10.00	10.00	0.00
7,250.0	65.79	181.17	7,099.6	-542.9	-120.2	545.3	10.00	10.00	0.00
7,300.0	70.79	181.17	7,118.1	-589.4	-121.2	591.7	10.00	10.00	0.00
7,350.0	75.79	181.17	7,132.4	-637.2	-122.1	639.6	10.00	10.00	0.00
7,400.0	80.79	181.17	7,142.6	-686.2	-123.1	688.5	10.00	10.00	0.00
7,450.0	85.79	181.17	7,148.4	-735.8	-124.1	738.2	10.00	10.00	0.00
EOB @ 90.00° Inc. / 181.17° Azm									
7,492.1	90.00	181.17	7,150.0	-777.8	-125.0	780.2	10.00	10.00	0.00
7,500.0	90.00	181.17	7,150.0	-785.8	-125.2	788.1	0.00	0.00	0.00
7,600.0	90.00	181.17	7,150.0	-885.7	-127.2	888.1	0.00	0.00	0.00
7,700.0	90.00	181.17	7,150.0	-985.7	-129.2	988.1	0.00	0.00	0.00
7,800.0	90.00	181.17	7,150.0	-1,085.7	-131.3	1,088.1	0.00	0.00	0.00
7,900.0	90.00	181.17	7,150.0	-1,185.7	-133.3	1,188.1	0.00	0.00	0.00
8,000.0	90.00	181.17	7,150.0	-1,285.7	-135.4	1,288.1	0.00	0.00	0.00
8,100.0	90.00	181.17	7,150.0	-1,385.6	-137.4	1,388.1	0.00	0.00	0.00
8,200.0	90.00	181.17	7,150.0	-1,485.6	-139.5	1,488.1	0.00	0.00	0.00
8,300.0	90.00	181.17	7,150.0	-1,585.6	-141.5	1,588.1	0.00	0.00	0.00
8,400.0	90.00	181.17	7,150.0	-1,685.6	-143.5	1,688.1	0.00	0.00	0.00
8,500.0	90.00	181.17	7,150.0	-1,785.5	-145.6	1,788.1	0.00	0.00	0.00
8,600.0	90.00	181.17	7,150.0	-1,885.5	-147.6	1,888.1	0.00	0.00	0.00
8,700.0	90.00	181.17	7,150.0	-1,985.5	-149.7	1,988.1	0.00	0.00	0.00

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Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,800.0	90.00	181.17	7,150.0	-2,085.5	-151.7	2,088.1	0.00	0.00	0.00
8,900.0	90.00	181.17	7,150.0	-2,185.5	-153.7	2,188.1	0.00	0.00	0.00
9,000.0	90.00	181.17	7,150.0	-2,285.4	-155.8	2,288.1	0.00	0.00	0.00
9,100.0	90.00	181.17	7,150.0	-2,385.4	-157.8	2,388.1	0.00	0.00	0.00
9,200.0	90.00	181.17	7,150.0	-2,485.4	-159.9	2,488.1	0.00	0.00	0.00
9,300.0	90.00	181.17	7,150.0	-2,585.4	-161.9	2,588.1	0.00	0.00	0.00
9,400.0	90.00	181.17	7,150.0	-2,685.4	-164.0	2,688.1	0.00	0.00	0.00
9,500.0	90.00	181.17	7,150.0	-2,785.3	-166.0	2,788.1	0.00	0.00	0.00
9,600.0	90.00	181.17	7,150.0	-2,885.3	-168.0	2,888.1	0.00	0.00	0.00
9,700.0	90.00	181.17	7,150.0	-2,985.3	-170.1	2,988.1	0.00	0.00	0.00
9,800.0	90.00	181.17	7,150.0	-3,085.3	-172.1	3,088.1	0.00	0.00	0.00
9,900.0	90.00	181.17	7,150.0	-3,185.3	-174.2	3,188.1	0.00	0.00	0.00
10,000.0	90.00	181.17	7,150.0	-3,285.2	-176.2	3,288.1	0.00	0.00	0.00
10,100.0	90.00	181.17	7,150.0	-3,385.2	-178.3	3,388.1	0.00	0.00	0.00
10,200.0	90.00	181.17	7,150.0	-3,485.2	-180.3	3,488.1	0.00	0.00	0.00
10,300.0	90.00	181.17	7,150.0	-3,585.2	-182.3	3,588.1	0.00	0.00	0.00
10,400.0	90.00	181.17	7,150.0	-3,685.2	-184.4	3,688.1	0.00	0.00	0.00
10,500.0	90.00	181.17	7,150.0	-3,785.1	-186.4	3,788.1	0.00	0.00	0.00
10,600.0	90.00	181.17	7,150.0	-3,885.1	-188.5	3,888.1	0.00	0.00	0.00
10,700.0	90.00	181.17	7,150.0	-3,985.1	-190.5	3,988.1	0.00	0.00	0.00
10,800.0	90.00	181.17	7,150.0	-4,085.1	-192.5	4,088.1	0.00	0.00	0.00
10,900.0	90.00	181.17	7,150.0	-4,185.0	-194.6	4,188.1	0.00	0.00	0.00
11,000.0	90.00	181.17	7,150.0	-4,285.0	-196.6	4,288.1	0.00	0.00	0.00
11,100.0	90.00	181.17	7,150.0	-4,385.0	-198.7	4,388.1	0.00	0.00	0.00
11,200.0	90.00	181.17	7,150.0	-4,485.0	-200.7	4,488.1	0.00	0.00	0.00
11,300.0	90.00	181.17	7,150.0	-4,585.0	-202.8	4,588.1	0.00	0.00	0.00
11,400.0	90.00	181.17	7,150.0	-4,684.9	-204.8	4,688.1	0.00	0.00	0.00
11,500.0	90.00	181.17	7,150.0	-4,784.9	-206.8	4,788.1	0.00	0.00	0.00
11,600.0	90.00	181.17	7,150.0	-4,884.9	-208.9	4,888.1	0.00	0.00	0.00
11,700.0	90.00	181.17	7,150.0	-4,984.9	-210.9	4,988.1	0.00	0.00	0.00
11,800.0	90.00	181.17	7,150.0	-5,084.9	-213.0	5,088.1	0.00	0.00	0.00
11,900.0	90.00	181.17	7,150.0	-5,184.8	-215.0	5,188.1	0.00	0.00	0.00
12,000.0	90.00	181.17	7,150.0	-5,284.8	-217.0	5,288.1	0.00	0.00	0.00
12,100.0	90.00	181.17	7,150.0	-5,384.8	-219.1	5,388.1	0.00	0.00	0.00
12,200.0	90.00	181.17	7,150.0	-5,484.8	-221.1	5,488.1	0.00	0.00	0.00
12,300.0	90.00	181.17	7,150.0	-5,584.8	-223.2	5,588.1	0.00	0.00	0.00
12,400.0	90.00	181.17	7,150.0	-5,684.7	-225.2	5,688.1	0.00	0.00	0.00
12,500.0	90.00	181.17	7,150.0	-5,784.7	-227.3	5,788.1	0.00	0.00	0.00
12,600.0	90.00	181.17	7,150.0	-5,884.7	-229.3	5,888.1	0.00	0.00	0.00
12,700.0	90.00	181.17	7,150.0	-5,984.7	-231.3	5,988.1	0.00	0.00	0.00
12,800.0	90.00	181.17	7,150.0	-6,084.7	-233.4	6,088.1	0.00	0.00	0.00
12,900.0	90.00	181.17	7,150.0	-6,184.6	-235.4	6,188.1	0.00	0.00	0.00
13,000.0	90.00	181.17	7,150.0	-6,284.6	-237.5	6,288.1	0.00	0.00	0.00
13,100.0	90.00	181.17	7,150.0	-6,384.6	-239.5	6,388.1	0.00	0.00	0.00
13,200.0	90.00	181.17	7,150.0	-6,484.6	-241.5	6,488.1	0.00	0.00	0.00
13,300.0	90.00	181.17	7,150.0	-6,584.5	-243.6	6,588.1	0.00	0.00	0.00
13,400.0	90.00	181.17	7,150.0	-6,684.5	-245.6	6,688.1	0.00	0.00	0.00
13,500.0	90.00	181.17	7,150.0	-6,784.5	-247.7	6,788.1	0.00	0.00	0.00
13,600.0	90.00	181.17	7,150.0	-6,884.5	-249.7	6,888.1	0.00	0.00	0.00
13,700.0	90.00	181.17	7,150.0	-6,984.5	-251.8	6,988.1	0.00	0.00	0.00
13,800.0	90.00	181.17	7,150.0	-7,084.4	-253.8	7,088.1	0.00	0.00	0.00
13,900.0	90.00	181.17	7,150.0	-7,184.4	-255.8	7,188.1	0.00	0.00	0.00
14,000.0	90.00	181.17	7,150.0	-7,284.4	-257.9	7,288.1	0.00	0.00	0.00
14,100.0	90.00	181.17	7,150.0	-7,384.4	-259.9	7,388.1	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Castle 0780 2-17H20
Company:	D90 Energy, LLC	TVD Reference:	GLE @ 8174.8usft (26' kb)
Project:	Jackson County, Colorado	MD Reference:	GLE @ 8174.8usft (26' kb)
Site:	Sec 17, T7N, R80W, 6th PM	North Reference:	True
Well:	Castle 0780 2-17H20	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,200.0	90.00	181.17	7,150.0	-7,484.4	-262.0	7,488.1	0.00	0.00	0.00
14,300.0	90.00	181.17	7,150.0	-7,584.3	-264.0	7,588.1	0.00	0.00	0.00
14,400.0	90.00	181.17	7,150.0	-7,684.3	-266.1	7,688.1	0.00	0.00	0.00
14,500.0	90.00	181.17	7,150.0	-7,784.3	-268.1	7,788.1	0.00	0.00	0.00
14,600.0	90.00	181.17	7,150.0	-7,884.3	-270.1	7,888.1	0.00	0.00	0.00
14,700.0	90.00	181.17	7,150.0	-7,984.3	-272.2	7,988.1	0.00	0.00	0.00
14,800.0	90.00	181.17	7,150.0	-8,084.2	-274.2	8,088.1	0.00	0.00	0.00
14,900.0	90.00	181.17	7,150.0	-8,184.2	-276.3	8,188.1	0.00	0.00	0.00
15,000.0	90.00	181.17	7,150.0	-8,284.2	-278.3	8,288.1	0.00	0.00	0.00
15,100.0	90.00	181.17	7,150.0	-8,384.2	-280.3	8,388.1	0.00	0.00	0.00
15,200.0	90.00	181.17	7,150.0	-8,484.2	-282.4	8,488.1	0.00	0.00	0.00
15,300.0	90.00	181.17	7,150.0	-8,584.1	-284.4	8,588.1	0.00	0.00	0.00
15,400.0	90.00	181.17	7,150.0	-8,684.1	-286.5	8,688.1	0.00	0.00	0.00
15,500.0	90.00	181.17	7,150.0	-8,784.1	-288.5	8,788.1	0.00	0.00	0.00
15,600.0	90.00	181.17	7,150.0	-8,884.1	-290.6	8,888.1	0.00	0.00	0.00
15,700.0	90.00	181.17	7,150.0	-8,984.0	-292.6	8,988.1	0.00	0.00	0.00
15,800.0	90.00	181.17	7,150.0	-9,084.0	-294.6	9,088.1	0.00	0.00	0.00
15,900.0	90.00	181.17	7,150.0	-9,184.0	-296.7	9,188.1	0.00	0.00	0.00
16,000.0	90.00	181.17	7,150.0	-9,284.0	-298.7	9,288.1	0.00	0.00	0.00
16,100.0	90.00	181.17	7,150.0	-9,384.0	-300.8	9,388.1	0.00	0.00	0.00
16,200.0	90.00	181.17	7,150.0	-9,483.9	-302.8	9,488.1	0.00	0.00	0.00
16,300.0	90.00	181.17	7,150.0	-9,583.9	-304.8	9,588.1	0.00	0.00	0.00
16,400.0	90.00	181.17	7,150.0	-9,683.9	-306.9	9,688.1	0.00	0.00	0.00
16,500.0	90.00	181.17	7,150.0	-9,783.9	-308.9	9,788.1	0.00	0.00	0.00
16,600.0	90.00	181.17	7,150.0	-9,883.9	-311.0	9,888.1	0.00	0.00	0.00
16,700.0	90.00	181.17	7,150.0	-9,983.8	-313.0	9,988.1	0.00	0.00	0.00
TD @ 16719.3' MD / 7150.0' TVD									
16,719.3	90.00	181.17	7,150.0	-10,003.1	-313.4	10,007.4	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LP - Castle 0780 2-17 - hit/miss target - Shape - Point	0.00	0.00	7,150.0	-777.8	-125.0	1,456,038.89	2,748,481.58	40.581700	-106.405528
PBHL - Castle 0780 2 - plan misses target center by 0.5usft at 16719.3usft MD (7150.0 TVD, -10003.1 N, -313.4 E) - Point	0.00	0.00	7,150.0	-10,003.1	-312.9	1,446,816.01	2,748,199.53	40.556378	-106.406204



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Castle 0780 2-17H20
Company:	D90 Energy, LLC	TVD Reference:	GLE @ 8174.8usft (26' kb)
Project:	Jackson County, Colorado	MD Reference:	GLE @ 8174.8usft (26' kb)
Site:	Sec 17, T7N, R80W, 6th PM	North Reference:	True
Well:	Castle 0780 2-17H20	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Prelim #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.0	2,000.0	0.0	0.0	Build 2°/100'
2,400.1	2,398.8	-24.4	-13.5	EOB @ 8.00° Inc. / 208.93° Azm
3,682.0	3,668.2	-180.6	-99.8	Drop 2°/100'
4,082.1	4,067.0	-205.0	-113.3	EOD @ Vert.
6,592.1	6,577.0	-205.0	-113.3	Build 10°/100'
7,492.1	7,150.0	-777.8	-125.0	EOB @ 90.00° Inc. / 181.17° Azm
16,719.3	7,150.0	-10,003.1	-313.4	TD @ 16719.3' MD / 7150.0' TVD