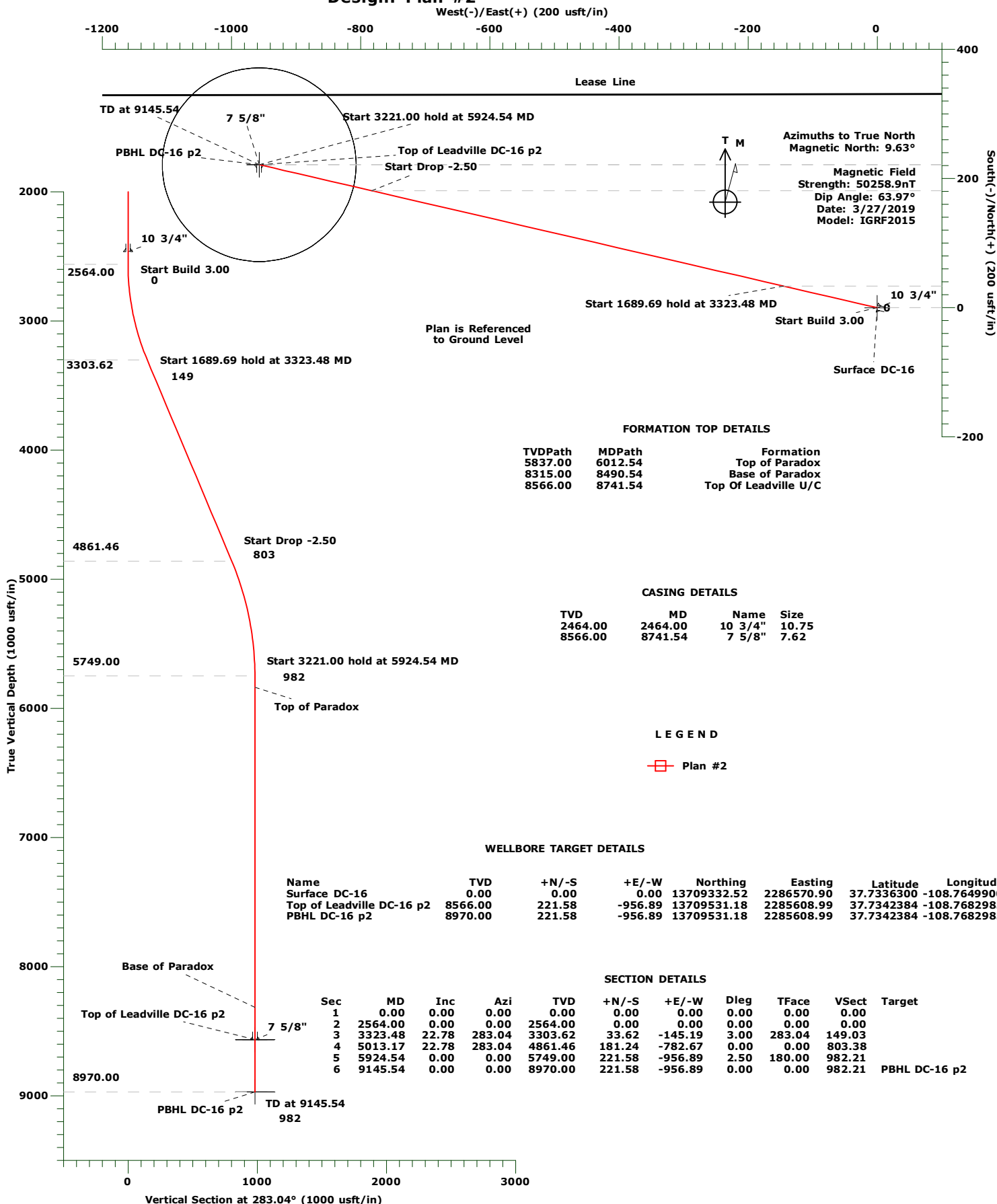




**KINDER MORGAN**  
Project: Dolores/Montezuma County, CO  
Site: DC-16  
Well: DC-16  
Wellbore: Original Hole  
Design: Plan #2



# **KINDER MORGAN**

**Dolores/Montezuma County, CO**

**DC-16**

**DC-16**

**Original Hole**

**Plan: Plan #2**

## **Standard Planning Report**

**14 December, 2018**

# Precision Drilling Corporation

## Planning Report

<b>Database:</b>	Compass_Rockies	<b>Local Co-ordinate Reference:</b>	Well DC-16
<b>Company:</b>	KINDER MORGAN	<b>TVD Reference:</b>	Ground Level @ 7406.20usft
<b>Project:</b>	Dolores/Montezuma County, CO	<b>MD Reference:</b>	Ground Level @ 7406.20usft
<b>Site:</b>	DC-16	<b>North Reference:</b>	True
<b>Well:</b>	DC-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	Plan #2		

<b>Project</b>	Dolores/Montezuma County, CO		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Fee	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 12N (114 W to 108 W)		

Site	DC-16				
Site Position:		Northing:	13,709,332.51 usft	Latitude:	37.7336300
From:	Lat/Long	Easting:	2,286,570.90 usft	Longitude:	-108.7649900
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	1.37 °

Well	DC-16					
Well Position	+N-S	0.00 usft	Northing:	13,709,332.51 usft	Latitude:	37.7336300
	+E-W	0.00 usft	Easting:	2,286,570.90 usft	Longitude:	-108.7649900
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	7,406.20 usft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	3/27/2019	9.63	63.97	50,258.94372575

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	283.04

<b>Plan Survey Tool Program</b>	<b>Date</b>	12/14/2018		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	9,145.54 Plan #2 (Original Hole)	MWD+IGRF	
			OWSG MWD + IGRF or W	

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,564.00	0.00	0.00	2,564.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,323.48	22.78	283.04	3,303.62	33.62	-145.19	3.00	3.00	0.00	283.04	
5,013.17	22.78	283.04	4,861.46	181.24	-782.67	0.00	0.00	0.00	0.00	
5,924.54	0.00	0.00	5,749.00	221.58	-956.89	2.50	-2.50	0.00	180.00	
9,145.54	0.00	0.00	8,970.00	221.58	-956.89	0.00	0.00	0.00	0.00	PBHL DC-16 p2

# Precision Drilling Corporation

## Planning Report

<b>Database:</b>	Compass_Rockies	<b>Local Co-ordinate Reference:</b>	Well DC-16
<b>Company:</b>	KINDER MORGAN	<b>TVD Reference:</b>	Ground Level @ 7406.20usft
<b>Project:</b>	Dolores/Montezuma County, CO	<b>MD Reference:</b>	Ground Level @ 7406.20usft
<b>Site:</b>	DC-16	<b>North Reference:</b>	True
<b>Well:</b>	DC-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	Plan #2		

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)
0.00	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
2,564.00	0.00	0.00	2,564.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	1.08	283.04	2,600.00	0.08	-0.33	0.34	3.00	3.00	0.00
2,700.00	4.08	283.04	2,699.89	1.09	-4.72	4.84	3.00	3.00	0.00
2,800.00	7.08	283.04	2,799.40	3.29	-14.19	14.56	3.00	3.00	0.00
2,900.00	10.08	283.04	2,898.27	6.65	-28.72	29.48	3.00	3.00	0.00
3,000.00	13.08	283.04	2,996.22	11.18	-48.27	49.55	3.00	3.00	0.00
3,100.00	16.08	283.04	3,092.99	16.86	-72.80	74.72	3.00	3.00	0.00
3,200.00	19.08	283.04	3,188.31	23.67	-102.22	104.92	3.00	3.00	0.00
3,300.00	22.08	283.04	3,281.92	31.60	-136.46	140.07	3.00	3.00	0.00
3,323.48	22.78	283.04	3,303.62	33.62	-145.19	149.03	3.00	3.00	0.00
3,400.00	22.78	283.04	3,374.17	40.31	-174.06	178.66	0.00	0.00	0.00
3,500.00	22.78	283.04	3,466.37	49.04	-211.78	217.39	0.00	0.00	0.00
3,600.00	22.78	283.04	3,558.56	57.78	-249.51	256.11	0.00	0.00	0.00
3,700.00	22.78	283.04	3,650.76	66.51	-287.24	294.84	0.00	0.00	0.00
3,800.00	22.78	283.04	3,742.96	75.25	-324.97	333.57	0.00	0.00	0.00
3,900.00	22.78	283.04	3,835.15	83.99	-362.70	372.29	0.00	0.00	0.00
4,000.00	22.78	283.04	3,927.35	92.72	-400.42	411.02	0.00	0.00	0.00
4,100.00	22.78	283.04	4,019.55	101.46	-438.15	449.75	0.00	0.00	0.00
4,200.00	22.78	283.04	4,111.75	110.20	-475.88	488.47	0.00	0.00	0.00
4,300.00	22.78	283.04	4,203.94	118.93	-513.61	527.20	0.00	0.00	0.00
4,400.00	22.78	283.04	4,296.14	127.67	-551.34	565.92	0.00	0.00	0.00
4,500.00	22.78	283.04	4,388.34	136.41	-589.06	604.65	0.00	0.00	0.00
4,600.00	22.78	283.04	4,480.53	145.14	-626.79	643.38	0.00	0.00	0.00
4,700.00	22.78	283.04	4,572.73	153.88	-664.52	682.10	0.00	0.00	0.00
4,800.00	22.78	283.04	4,664.93	162.61	-702.25	720.83	0.00	0.00	0.00
4,900.00	22.78	283.04	4,757.12	171.35	-739.98	759.56	0.00	0.00	0.00
5,000.00	22.78	283.04	4,849.32	180.09	-777.70	798.28	0.00	0.00	0.00
5,013.17	22.78	283.04	4,861.46	181.24	-782.67	803.38	0.00	0.00	0.00

# Precision Drilling Corporation

## Planning Report

<b>Database:</b>	Compass_Rockies	<b>Local Co-ordinate Reference:</b>	Well DC-16
<b>Company:</b>	KINDER MORGAN	<b>TVD Reference:</b>	Ground Level @ 7406.20usft
<b>Project:</b>	Dolores/Montezuma County, CO	<b>MD Reference:</b>	Ground Level @ 7406.20usft
<b>Site:</b>	DC-16	<b>North Reference:</b>	True
<b>Well:</b>	DC-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	Plan #2		

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)	
5,100.00	20.61	283.04	4,942.14	188.48	-813.95	835.48	2.50	-2.50	0.00	
5,200.00	18.11	283.04	5,036.47	195.96	-846.24	868.64	2.50	-2.50	0.00	
5,300.00	15.61	283.04	5,132.16	202.50	-874.50	897.64	2.50	-2.50	0.00	
5,400.00	13.11	283.04	5,229.03	208.10	-898.67	922.45	2.50	-2.50	0.00	
5,500.00	10.61	283.04	5,326.89	212.74	-918.70	943.01	2.50	-2.50	0.00	
5,600.00	8.11	283.04	5,425.55	216.41	-934.54	959.27	2.50	-2.50	0.00	
5,700.00	5.61	283.04	5,524.82	219.10	-946.19	971.22	2.50	-2.50	0.00	
5,800.00	3.11	283.04	5,624.52	220.82	-953.60	978.83	2.50	-2.50	0.00	
5,900.00	0.61	283.04	5,724.46	221.55	-956.77	982.08	2.50	-2.50	0.00	
5,924.54	0.00	0.00	5,749.00	221.58	-956.89	982.21	2.50	-2.50	0.00	
6,000.00	0.00	0.00	5,824.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,100.00	0.00	0.00	5,924.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,024.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,124.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,224.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,324.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,424.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,524.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,624.46	221.58	-956.89	982.21	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,724.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,824.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,100.00	0.00	0.00	6,924.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,024.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,300.00	0.00	0.00	7,124.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,224.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,324.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,424.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,524.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,624.46	221.58	-956.89	982.21	0.00	0.00	0.00	
7,900.00	0.00	0.00	7,724.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,000.00	0.00	0.00	7,824.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,100.00	0.00	0.00	7,924.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,200.00	0.00	0.00	8,024.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,300.00	0.00	0.00	8,124.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,400.00	0.00	0.00	8,224.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,500.00	0.00	0.00	8,324.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,600.00	0.00	0.00	8,424.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,700.00	0.00	0.00	8,524.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,800.00	0.00	0.00	8,624.46	221.58	-956.89	982.21	0.00	0.00	0.00	
8,900.00	0.00	0.00	8,724.46	221.58	-956.89	982.21	0.00	0.00	0.00	
9,000.00	0.00	0.00	8,824.46	221.58	-956.89	982.21	0.00	0.00	0.00	
9,100.00	0.00	0.00	8,924.46	221.58	-956.89	982.21	0.00	0.00	0.00	
9,145.54	0.00	0.00	8,970.00	221.58	-956.89	982.21	0.00	0.00	0.00	

# Precision Drilling Corporation

## Planning Report

<b>Database:</b>	Compass_Rockies	<b>Local Co-ordinate Reference:</b>	Well DC-16
<b>Company:</b>	KINDER MORGAN	<b>TVD Reference:</b>	Ground Level @ 7406.20usft
<b>Project:</b>	Dolores/Montezuma County, CO	<b>MD Reference:</b>	Ground Level @ 7406.20usft
<b>Site:</b>	DC-16	<b>North Reference:</b>	True
<b>Well:</b>	DC-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	Plan #2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Surface DC-16	0.00	1.37	0.00	0.00	0.00	13,709,332.51	2,286,570.90	37.7336300	-108.7649900
- plan hits target center									
- Point									
Top of Leadville DC-16	0.00	1.37	8,566.00	221.58	-956.89	13,709,531.18	2,285,608.99	37.7342384	-108.7682985
- plan hits target center									
- Circle (radius 150.00)									
PBHL DC-16 p2	0.00	1.37	8,970.00	221.58	-956.89	13,709,531.18	2,285,608.99	37.7342384	-108.7682985
- plan hits target center									
- Circle (radius 150.00)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,464.00	2,464.00	10 3/4"	10.75	13.50	
8,741.54	8,566.00	7 5/8"	7.62	8.50	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,012.54	5,837.00	Top of Paradox		0.00	
8,490.54	8,315.00	Base of Paradox		0.00	
8,741.54	8,566.00	Top Of Leadville U/C		0.00	