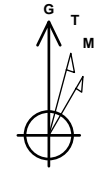




Company: B.P.  
Project: La Plata County, CO NAD83  
Site: Harper Pad  
Well: Harper 01-18 2  
Wellbore: Lateral 1 ST1  
Design: Plan #2

PROJECT DETAILS: La Plata County, CO NAD83

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



Azimuths to Grid North  
True North: 1.25°  
Magnetic North: 10.45°

Magnetic Field  
Strength: 50109.5snT  
Dip Angle: 63.65°  
Date: 1/19/2018  
Model: HDGM

WELL DETAILS: Harper 01-18 2

GL 6919' & RKB 11' @ 6930.00usft (Aztec 507)  
+N/-S +E/-W Northing Easting Latitude Longitude  
0.00 0.00 1196059.56 2404386.66 37.1872087 -107.5447140

Plan: Plan #2 (Harper 01-18 2/Lateral 1 ST1)

Created By: Janie Collins Date: 10:16, January 22 2018

DESIGN TARGET DETAILS

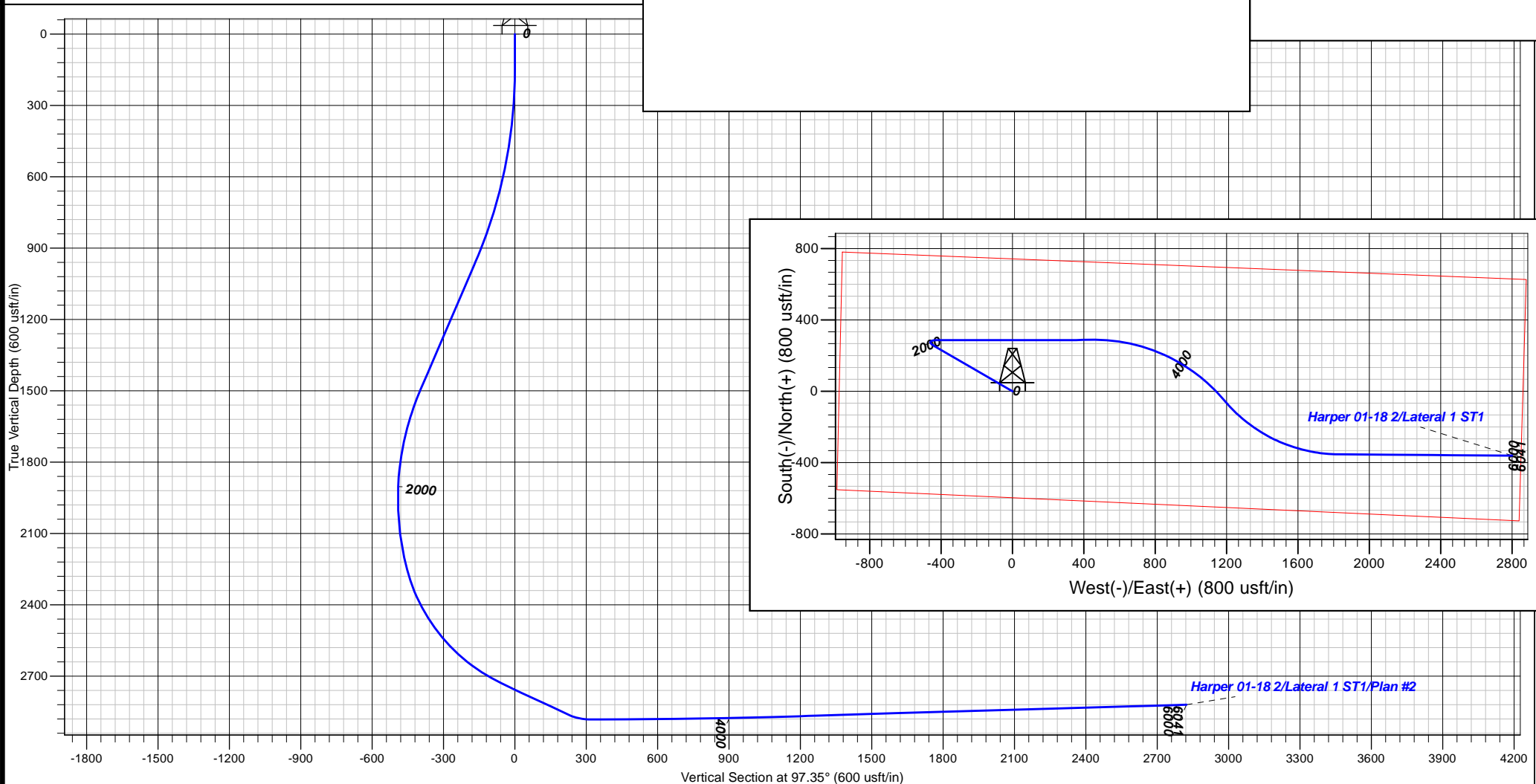
Name TVD +N/-S +E/-W Northing Easting  
Harper Lat1ST1 BHL 2820.00 -361.00 2800.22 1195698.56 2407186.88

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
3455.00	90.18	87.04	2881.92	287.86	406.79	0.00	0.00	366.65	
4337.73	91.41	140.00	2868.76	-51.93	1187.59	6.00	88.37	1184.48	
5069.20	91.65	90.43	2847.94	-353.79	1828.66	6.77	-89.04	1858.89	
6041.19	91.65	90.43	2820.00	-361.00	2800.22	0.00	0.00	2823.39	Harper Lat1ST1 BHL

CASING DETAILS

No casing data is available





**B.P.**

**La Plata County, CO NAD83**

**Harper Pad**

**Harper 01-18 2**

**Lateral 1 ST1**

**Plan: Plan #2**

## **Standard Planning Report**

**22 January, 2018**





<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Harper 01-18 2
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6919' & RKB 11' @ 6930.00usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6919' & RKB 11' @ 6930.00usft (Aztec 507)
<b>Site:</b>	Harper Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Harper 01-18 2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral 1 ST1		
<b>Design:</b>	Plan #2		

<b>Project</b>	La Plata County, CO NAD83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Southern Zone		

Site		Harper Pad			
Site Position:		Northing:	1,196,059.56 usft	Latitude:	37.1872086
From:	Map	Easting:	2,404,386.66 usft	Longitude:	-107.5447140
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.25 °

Well	Harper 01-18 2					
Well Position	+N/-S	0.00 usft	Northing:	1,196,059.56 usft	Latitude:	37.1872086
	+E/-W	0.00 usft	Easting:	2,404,386.66 usft	Longitude:	-107.5447140
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,919.00 usft

<b>Wellbore</b>	Lateral 1 ST1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	1/19/2018	9.20	63.65	50,110

<b>Design</b>	Plan #2				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN		<b>Tie On Depth:</b>	3,455.00
<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	97.35	

<b>Plan Sections</b>										
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
3,455.00	90.18	87.04	2,881.92	287.86	406.79	0.00	0.00	0.00	0.00	
4,337.73	91.41	140.00	2,868.76	-51.93	1,187.59	6.00	0.14	6.00	88.37	
5,069.20	91.65	90.43	2,847.94	-353.79	1,828.66	6.77	0.03	-6.78	-89.04	
6,041.19	91.65	90.43	2,820.00	-361.00	2,800.22	0.00	0.00	0.00	0.00	Harper Lat1ST1 BHL



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Harper 01-18 2
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6919' & RKB 11' @ 6930.00usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6919' & RKB 11' @ 6930.00usft (Aztec 507)
<b>Site:</b>	Harper Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Harper 01-18 2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral 1 ST1		
<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)
3,455.00	90.18	87.04	2,881.92	287.86	406.79	366.65	0.00	0.00	0.00
3,500.00	90.25	89.74	2,881.76	289.12	451.77	411.09	6.00	0.17	6.00
3,600.00	90.42	95.74	2,881.17	284.34	551.61	510.72	6.00	0.17	6.00
3,700.00	90.58	101.74	2,880.29	269.15	650.40	610.65	6.00	0.16	6.00
3,800.00	90.74	107.74	2,879.13	243.73	747.06	709.76	6.00	0.16	6.00
3,900.00	90.89	113.74	2,877.71	208.34	840.53	806.99	6.00	0.15	6.00
4,000.00	91.03	119.74	2,876.03	163.38	929.78	901.26	6.00	0.14	6.00
4,100.00	91.16	125.73	2,874.12	109.34	1,013.85	991.55	6.00	0.13	6.00
4,200.00	91.27	131.74	2,871.99	46.81	1,091.80	1,076.85	6.00	0.12	6.00
4,300.00	91.38	137.74	2,869.68	-23.52	1,162.78	1,156.25	6.00	0.10	6.00
4,337.73	91.41	140.00	2,868.76	-51.93	1,187.59	1,184.48	6.00	0.09	6.00
4,400.00	91.48	135.78	2,867.19	-98.10	1,229.33	1,231.78	6.77	0.11	-6.78
4,500.00	91.57	129.00	2,864.53	-165.46	1,303.11	1,313.57	6.77	0.09	-6.78
4,600.00	91.64	122.23	2,861.73	-223.63	1,384.33	1,401.56	6.77	0.07	-6.78
4,700.00	91.68	115.45	2,858.83	-271.82	1,471.84	1,494.51	6.77	0.05	-6.78
4,800.00	91.70	108.67	2,855.88	-309.34	1,564.42	1,591.13	6.77	0.02	-6.78
4,900.00	91.70	101.89	2,852.90	-335.67	1,660.79	1,690.07	6.77	0.00	-6.78
5,000.00	91.68	95.12	2,849.94	-350.44	1,759.59	1,789.95	6.77	-0.03	-6.78
5,069.20	91.65	90.43	2,847.94	-353.79	1,828.66	1,858.89	6.77	-0.05	-6.78
5,100.00	91.65	90.43	2,847.05	-354.02	1,859.44	1,889.45	0.00	0.00	0.00
5,200.00	91.65	90.43	2,844.18	-354.76	1,959.40	1,988.68	0.00	0.00	0.00
5,300.00	91.65	90.43	2,841.30	-355.50	2,059.36	2,087.91	0.00	0.00	0.00
5,400.00	91.65	90.43	2,838.43	-356.24	2,159.31	2,187.14	0.00	0.00	0.00
5,500.00	91.65	90.43	2,835.55	-356.98	2,259.27	2,286.37	0.00	0.00	0.00
5,600.00	91.65	90.43	2,832.68	-357.73	2,359.22	2,385.60	0.00	0.00	0.00
5,700.00	91.65	90.43	2,829.81	-358.47	2,459.18	2,484.83	0.00	0.00	0.00
5,800.00	91.65	90.43	2,826.93	-359.21	2,559.14	2,584.06	0.00	0.00	0.00
5,900.00	91.65	90.43	2,824.06	-359.95	2,659.09	2,683.29	0.00	0.00	0.00
6,000.00	91.65	90.43	2,821.18	-360.69	2,759.05	2,782.52	0.00	0.00	0.00
6,041.19	91.65	90.43	2,820.00	-361.00	2,800.22	2,823.39	0.00	0.00	0.00

Harper Lat1ST1 BHL

## Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Harper Lat1ST1 BHL	0.00	360.00	2,820.00	-361.00	2,800.22	1,195,698.56	2,407,186.88	37.1863853	-107.5350770
- hit/miss target									
- Shape									
- Point									