



Company: B.P.  
Project: La Plata County, CO NAD83  
Site: Tiffany Pad  
Well: Tiffany 1-4

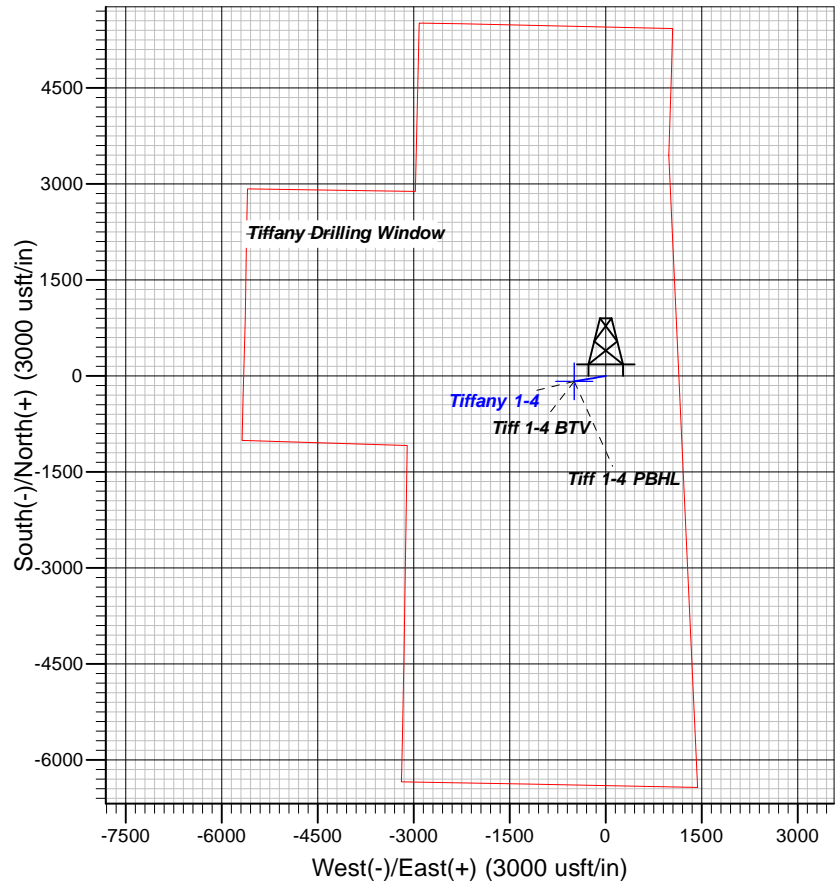
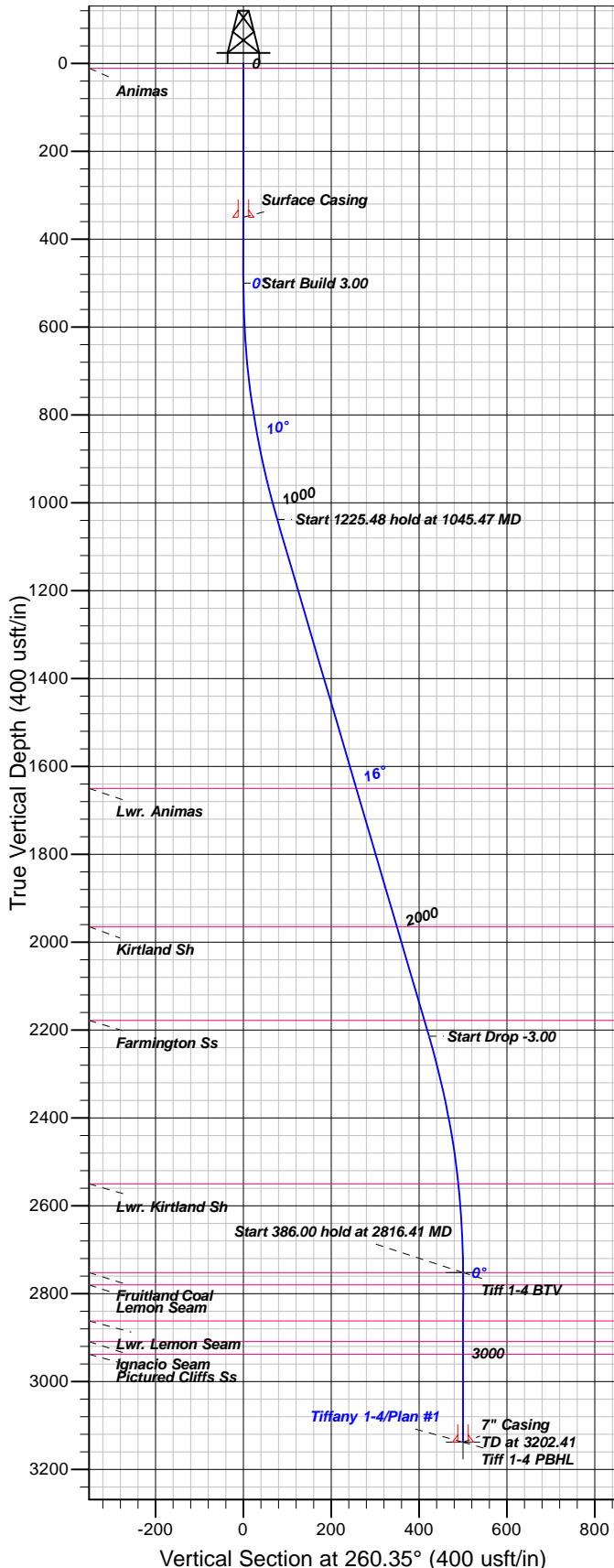


### Well Details: Tiffany 1-4

GL 6479.14' & RKB 11' @ 6490.14usft (Aztec 507)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot D
0.00	0.00	1164991.41	2400363.16	37.1016614	-107.5561747	

Azimuths to Grid North  
True North: 1.26°  
Magnetic North: 10.56°  
Magnetic Field  
Strength: 50285.2snT  
Dip Angle: 63.67°  
Date: 12/7/2015  
Model: HDGM



### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
11.00	11.00	Animas
1650.00	1683.22	Lwr. Animas
1965.00	2011.52	Kirtland Sh
2178.00	2233.51	Farmington Ss
2550.00	2614.04	Lwr. Kirtland Sh
2752.00	2816.41	Fruitland Coal
2780.00	2844.41	Lemon Seam
2862.00	2926.41	Lwr. Lemon Seam
2909.00	2973.41	Ignacio Seam
2938.00	3002.41	Pictured Cliffs Ss

### Plan: Plan #1

16:01, January 11 2016  
Created By: Janie Collins

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

### CASING DETAILS

TVD	MD	Name	Size
350.00	350.00	Surface Casing	9.62
3138.00	3202.41	7" Casing	7.00

### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	1045.47	16.36	260.35	1038.08	-12.97	-76.27	3.00	260.35	77.37	
4	2270.95	16.36	260.35	2213.92	-70.86	-416.65	0.00	0.00	422.63	
5	2816.41	0.00	0.00	2752.00	-83.83	-492.92	3.00	180.00	500.00	Tiff 1-4 BTV
6	3202.41	0.00	0.00	3138.00	-83.83	-492.92	0.00	0.00	500.00	Tiff 1-4 PBHL

### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Tiff 1-4 BTV	2752.00	-83.83	-492.92	1164907.58	2399870.24	37.1014014	-107.5578580	Point
- plan hits target center								
Tiff 1-4 PBHL	3138.00	-83.83	-492.92	1164907.58	2399870.24	37.1014014	-107.5578580	Point
- plan hits target center								



**B.P.**

**La Plata County, CO NAD83**

**Tiffany Pad**

**Tiffany 1-4 - Slot D**

**Pilot**

**Plan: Plan #1**

## **Standard Planning Report**

**11 January, 2016**





<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Tiffany 1-4 - Slot D
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6479.14' & RKB 11' @ 6490.14usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6479.14' & RKB 11' @ 6490.14usft (Aztec 507)
<b>Site:</b>	Tiffany Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Tiffany 1-4	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot		
<b>Design:</b>	Plan #1		

<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		Tiffany Pad			
Site Position:		Northing:	1,165,118.91 usft	Latitude:	37.1020115
From:	Map	Easting:	2,400,363.16 usft	Longitude:	-107.5561843
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.26 °

Well	Tiffany 1-4 - Slot D					
Well Position	+N/-S	-127.50 usft	Northing:	1,164,991.41 usft	Latitude:	37.1016614
	+E/-W	0.00 usft	Easting:	2,400,363.16 usft	Longitude:	-107.5561747
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,479.14 usft

<b>Wellbore</b>	Pilot				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	12/7/2015	9.30	63.67	50,285

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<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	260.35

<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
0.00	0.00	0.00	0.00	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	
1,045.47	16.36	260.35	1,038.08	-12.97	-76.27	3.00	3.00	0.00	260.35	
2,270.95	16.36	260.35	2,213.92	-70.86	-416.65	0.00	0.00	0.00	0.00	
2,816.41	0.00	0.00	2,752.00	-83.83	-492.92	3.00	-3.00	0.00	180.00	Tiff 1-4 BTV
3,202.41	0.00	0.00	3,138.00	-83.83	-492.92	0.00	0.00	0.00	0.00	Tiff 1-4 PBHL



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Tiffany 1-4 - Slot D
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6479.14' & RKB 11' @ 6490.14usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6479.14' & RKB 11' @ 6490.14usft (Aztec 507)
<b>Site:</b>	Tiffany Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Tiffany 1-4	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot		
<b>Design:</b>	Plan #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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11.00	0.00	0.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	
Animas										
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	
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00	
Surface Casing										
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	3.00	260.35	599.95	-0.44	-2.58	2.62	3.00	3.00	0.00	
700.00	6.00	260.35	699.63	-1.75	-10.31	10.46	3.00	3.00	0.00	
800.00	9.00	260.35	798.77	-3.94	-23.18	23.51	3.00	3.00	0.00	
900.00	12.00	260.35	897.08	-7.00	-41.14	41.74	3.00	3.00	0.00	
1,000.00	15.00	260.35	994.31	-10.91	-64.16	65.08	3.00	3.00	0.00	
1,045.47	16.36	260.35	1,038.08	-12.97	-76.27	77.37	3.00	3.00	0.00	
1,100.00	16.36	260.35	1,090.41	-15.55	-91.42	92.73	0.00	0.00	0.00	
1,200.00	16.36	260.35	1,186.35	-20.27	-119.19	120.90	0.00	0.00	0.00	
1,300.00	16.36	260.35	1,282.30	-24.99	-146.97	149.08	0.00	0.00	0.00	
1,400.00	16.36	260.35	1,378.25	-29.72	-174.74	177.25	0.00	0.00	0.00	
1,500.00	16.36	260.35	1,474.20	-34.44	-202.52	205.43	0.00	0.00	0.00	
1,600.00	16.36	260.35	1,570.15	-39.17	-230.29	233.60	0.00	0.00	0.00	
1,683.22	16.36	260.35	1,650.00	-43.10	-253.41	257.05	0.00	0.00	0.00	
Lwr. Animas										
1,700.00	16.36	260.35	1,666.10	-43.89	-258.07	261.77	0.00	0.00	0.00	
1,800.00	16.36	260.35	1,762.05	-48.61	-285.84	289.95	0.00	0.00	0.00	
1,900.00	16.36	260.35	1,858.00	-53.34	-313.62	318.12	0.00	0.00	0.00	
2,000.00	16.36	260.35	1,953.95	-58.06	-341.39	346.30	0.00	0.00	0.00	
2,011.52	16.36	260.35	1,965.00	-58.60	-344.59	349.54	0.00	0.00	0.00	
Kirtland Sh										
2,100.00	16.36	260.35	2,049.90	-62.78	-369.17	374.47	0.00	0.00	0.00	
2,200.00	16.36	260.35	2,145.85	-67.51	-396.94	402.64	0.00	0.00	0.00	
2,233.51	16.36	260.35	2,178.00	-69.09	-406.25	412.08	0.00	0.00	0.00	
Farmington Ss										
2,270.95	16.36	260.35	2,213.92	-70.86	-416.65	422.63	0.00	0.00	0.00	
2,300.00	15.49	260.35	2,241.86	-72.20	-424.51	430.60	3.00	-3.00	0.00	
2,400.00	12.49	260.35	2,338.88	-76.25	-448.34	454.78	3.00	-3.00	0.00	
2,500.00	9.49	260.35	2,437.03	-79.45	-467.14	473.85	3.00	-3.00	0.00	
2,600.00	6.49	260.35	2,536.05	-81.78	-480.85	487.75	3.00	-3.00	0.00	
2,614.04	6.07	260.35	2,550.00	-82.03	-482.36	489.29	3.00	-3.00	0.00	
Lwr. Kirtland Sh										
2,700.00	3.49	260.35	2,635.66	-83.24	-489.42	496.45	3.00	-3.00	0.00	
2,800.00	0.49	260.35	2,735.59	-83.82	-492.85	499.93	3.00	-3.00	0.00	
2,816.41	0.00	0.00	2,752.00	-83.83	-492.92	500.00	3.00	-3.00	0.00	
Fruitland Coal - Tiff 1-4 BTV										
2,844.41	0.00	0.00	2,780.00	-83.83	-492.92	500.00	0.00	0.00	0.00	
Lemon Seam										
2,900.00	0.00	0.00	2,835.59	-83.83	-492.92	500.00	0.00	0.00	0.00	
2,926.41	0.00	0.00	2,862.00	-83.83	-492.92	500.00	0.00	0.00	0.00	
Lwr. Lemon Seam										
2,973.41	0.00	0.00	2,909.00	-83.83	-492.92	500.00	0.00	0.00	0.00	



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Tiffany 1-4 - Slot D
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6479.14' & RKB 11' @ 6490.14usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6479.14' & RKB 11' @ 6490.14usft (Aztec 507)
<b>Site:</b>	Tiffany Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Tiffany 1-4	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot		
<b>Design:</b>	Plan #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)
<b>Ignacio Seam</b>									
3,000.00	0.00	0.00	2,935.59	-83.83	-492.92	500.00	0.00	0.00	0.00
3,002.41	0.00	0.00	2,938.00	-83.83	-492.92	500.00	0.00	0.00	0.00
<b>Pictured Cliffs Ss</b>									
3,100.00	0.00	0.00	3,035.59	-83.83	-492.92	500.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,135.59	-83.83	-492.92	500.00	0.00	0.00	0.00
3,202.41	0.00	0.00	3,138.00	-83.83	-492.92	500.00	0.00	0.00	0.00
<b>7" Casing - Tiff 1-4 PBHL</b>									

**Design Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Tiff 1-4 BTV - plan hits target center - Point	0.00	0.00	2,752.00	-83.83	-492.92	1,164,907.58	2,399,870.24	37.1014014	-107.5578581
Tiff 1-4 PBHL - plan hits target center - Point	0.00	0.00	3,138.00	-83.83	-492.92	1,164,907.58	2,399,870.24	37.1014014	-107.5578581

**Casing Points**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
350.00	350.00	Surface Casing	9.62	12.25
3,202.41	3,138.00	7" Casing	7.00	8.75

**Formations**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
11.00	11.00	Animas		0.00	360.00
1,683.22	1,650.00	Lwr. Animas		0.00	360.00
2,011.52	1,965.00	Kirtland Sh		0.00	360.00
2,233.51	2,178.00	Farmington Ss		0.00	360.00
2,614.04	2,550.00	Lwr. Kirtland Sh		0.00	360.00
2,816.41	2,752.00	Fruitland Coal		0.00	360.00
2,844.41	2,780.00	Lemon Seam		0.00	360.00
2,926.41	2,862.00	Lwr. Lemon Seam		0.00	360.00
2,973.41	2,909.00	Ignacio Seam		0.00	360.00
3,002.41	2,938.00	Pictured Cliffs Ss		0.00	0.00