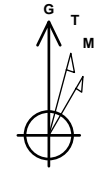




Company: B.P.  
Project: La Plata County, CO NAD83  
Site: Marquez A2  
Well: Marquez A2  
Wellbore: Lateral 1 ST1  
Design: Plan #2

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: 1.19°  
Magnetic North: 10.31°

Magnetic Field  
Strength: 50093.6snT  
Dip Angle: 63.60°  
Date: 8/15/2017  
Model: HDGM

WELL DETAILS: Marquez A2

GL 6260' & RKB 11' @ 6271.00usft (Aztec 507)  
+N/-S +E/-W Northing Easting Latitude Longitude  
0.00 0.00 1139297.43 2433779.38 37.0330750 -107.4397939

Plan: Plan #2 (Marquez A2/Lateral 1 ST1)

Created By: Janie Collins Date: 19:20, September 06 2017

DESIGN TARGET DETAILS

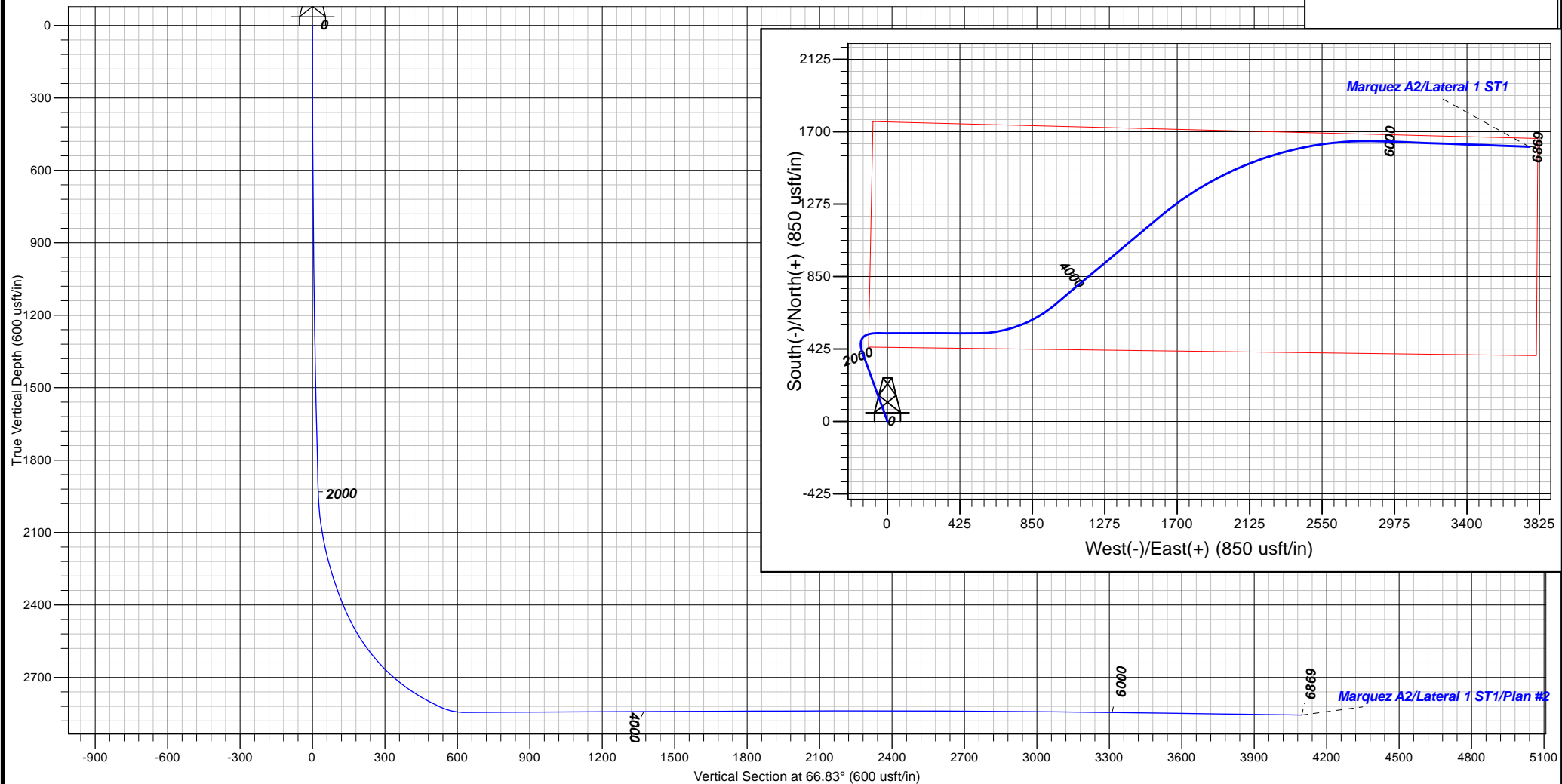
Name TVD +N/-S +E/-W Northing Easting  
Marquez A2 Lat 1 ST1 PBHL 2856.00 1611.28 3765.56 1140908.71 2437544.94

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
3285.00	90.24	90.54	2844.79	516.91	515.21	0.00	0.00	677.02	
3791.69	90.23	50.00	2842.60	684.43	982.26	8.00	-89.93	1172.31	
4591.69	90.23	50.00	2839.39	1198.66	1595.09	0.00	0.00	1938.02	
5997.57	89.30	92.17	2845.40	1644.22	2895.20	3.00	91.29	3308.59	
6868.62	89.30	92.17	2856.00	1611.28	3765.56	0.00	0.00	4095.81	Marquez A2 Lat 1 ST1 PBHL

FORMATION TOP DETAILS

No formation data is available





**B.P.**

**La Plata County, CO NAD83**

**Marquez A2**

**Marquez A2**

**Lateral 1 ST1**

**Plan: Plan #2**

## **Standard Planning Report**

**06 September, 2017**



[www.scientificdrilling.com](http://www.scientificdrilling.com)





<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Marquez A2
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6260' & RKB 11' @ 6271.00usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6260' & RKB 11' @ 6271.00usft (Aztec 507)
<b>Site:</b>	Marquez A2	<b>North Reference:</b>	Grid
<b>Well:</b>	Marquez A2	<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		

<b>Site</b>	Marquez A2			
<b>Site Position:</b>		<b>Northing:</b>	1,139,297.43 usft	<b>Latitude:</b> 37.0330749
<b>From:</b> Map		<b>Easting:</b>	2,433,779.38 usft	<b>Longitude:</b> -107.4397939
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b> -1.19 °

<b>Well</b>	Marquez A2			
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,139,297.43 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	2,433,779.38 usft
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	0.00 usft
			<b>Ground Level:</b>	6,260.00 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	8/15/2017	9.12	63.60	50,094

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	3,285.00
<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	66.83

<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
3,285.00	90.24	90.54	2,844.79	516.91	515.21	0.00	0.00	0.00	0.00	
3,791.69	90.23	50.00	2,842.60	684.43	982.26	8.00	0.00	-8.00	-89.93	
4,591.69	90.23	50.00	2,839.39	1,198.66	1,595.09	0.00	0.00	0.00	0.00	
5,997.57	89.30	92.17	2,845.40	1,644.22	2,895.20	3.00	-0.07	3.00	91.29	
6,868.62	89.30	92.17	2,856.00	1,611.28	3,765.56	0.00	0.00	0.00	0.00	Marquez A2 Lat 1 ST1



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Marquez A2
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6260' & RKB 11' @ 6271.00usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6260' & RKB 11' @ 6271.00usft (Aztec 507)
<b>Site:</b>	Marquez A2	<b>North Reference:</b>	Grid
<b>Well:</b>	Marquez A2	<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)
3,285.00	90.24	90.54	2,844.79	516.91	515.21	677.02	0.00	0.00	0.00
3,300.00	90.25	89.34	2,844.73	516.92	530.21	690.81	8.00	0.01	-8.00
3,400.00	90.25	81.34	2,844.29	525.05	629.80	785.57	8.00	0.01	-8.00
3,500.00	90.25	73.34	2,843.85	546.95	727.28	883.81	8.00	0.00	-8.00
3,600.00	90.25	65.34	2,843.41	582.22	820.77	983.63	8.00	0.00	-8.00
3,700.00	90.24	57.33	2,842.98	630.15	908.44	1,083.09	8.00	-0.01	-8.00
3,791.69	90.23	50.00	2,842.60	684.43	982.26	1,172.31	8.00	-0.01	-8.00
3,800.00	90.23	50.00	2,842.57	689.77	988.62	1,180.26	0.00	0.00	0.00
3,900.00	90.23	50.00	2,842.17	754.05	1,065.23	1,275.98	0.00	0.00	0.00
4,000.00	90.23	50.00	2,841.77	818.33	1,141.83	1,371.69	0.00	0.00	0.00
4,100.00	90.23	50.00	2,841.37	882.61	1,218.44	1,467.41	0.00	0.00	0.00
4,200.00	90.23	50.00	2,840.96	946.89	1,295.04	1,563.12	0.00	0.00	0.00
4,300.00	90.23	50.00	2,840.56	1,011.16	1,371.64	1,658.83	0.00	0.00	0.00
4,400.00	90.23	50.00	2,840.16	1,075.44	1,448.25	1,754.55	0.00	0.00	0.00
4,500.00	90.23	50.00	2,839.76	1,139.72	1,524.85	1,850.26	0.00	0.00	0.00
4,591.69	90.23	50.00	2,839.39	1,198.66	1,595.09	1,938.02	0.00	0.00	0.00
4,600.00	90.22	50.25	2,839.36	1,203.99	1,601.47	1,945.98	3.00	-0.07	3.00
4,700.00	90.16	53.25	2,839.03	1,265.89	1,679.99	2,042.52	3.00	-0.07	3.00
4,800.00	90.09	56.25	2,838.81	1,323.60	1,761.64	2,140.30	3.00	-0.07	3.00
4,900.00	90.02	59.25	2,838.72	1,376.96	1,846.20	2,239.03	3.00	-0.07	3.00
5,000.00	89.95	62.25	2,838.75	1,425.82	1,933.44	2,338.45	3.00	-0.07	3.00
5,100.00	89.88	65.25	2,838.89	1,470.05	2,023.11	2,438.30	3.00	-0.07	3.00
5,200.00	89.81	68.24	2,839.16	1,509.53	2,114.98	2,538.29	3.00	-0.07	3.00
5,300.00	89.75	71.24	2,839.54	1,544.14	2,208.78	2,638.15	3.00	-0.07	3.00
5,400.00	89.68	74.24	2,840.04	1,573.81	2,304.27	2,737.60	3.00	-0.07	3.00
5,500.00	89.61	77.24	2,840.66	1,598.43	2,401.17	2,836.38	3.00	-0.07	3.00
5,600.00	89.55	80.24	2,841.40	1,617.95	2,499.24	2,934.22	3.00	-0.07	3.00
5,700.00	89.48	83.24	2,842.24	1,632.31	2,598.18	3,030.84	3.00	-0.06	3.00
5,800.00	89.42	86.24	2,843.20	1,641.47	2,697.75	3,125.98	3.00	-0.06	3.00
5,900.00	89.36	89.24	2,844.26	1,645.42	2,797.65	3,219.38	3.00	-0.06	3.00
5,997.57	89.30	92.17	2,845.40	1,644.22	2,895.20	3,308.59	3.00	-0.06	3.00
6,000.00	89.30	92.17	2,845.43	1,644.13	2,897.63	3,310.78	0.00	0.00	0.00
6,100.00	89.30	92.17	2,846.65	1,640.34	2,997.55	3,401.16	0.00	0.00	0.00
6,200.00	89.30	92.17	2,847.86	1,636.56	3,097.47	3,491.53	0.00	0.00	0.00
6,300.00	89.30	92.17	2,849.08	1,632.78	3,197.39	3,581.91	0.00	0.00	0.00
6,400.00	89.30	92.17	2,850.30	1,629.00	3,297.31	3,672.29	0.00	0.00	0.00
6,500.00	89.30	92.17	2,851.51	1,625.22	3,397.23	3,762.66	0.00	0.00	0.00
6,600.00	89.30	92.17	2,852.73	1,621.44	3,497.15	3,853.04	0.00	0.00	0.00
6,700.00	89.30	92.17	2,853.95	1,617.66	3,597.07	3,943.42	0.00	0.00	0.00
6,800.00	89.30	92.17	2,855.16	1,613.87	3,696.99	4,033.79	0.00	0.00	0.00
6,868.62	89.30	92.17	2,856.00	1,611.28	3,765.56	4,095.81	0.00	0.00	0.00
Marquez A2 Lat 1 ST1 PBHL									



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Marquez A2
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6260' & RKB 11' @ 6271.00usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6260' & RKB 11' @ 6271.00usft (Aztec 507)
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<b>Well:</b>	Marquez A2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Lateral 1 ST1		
<b>Design:</b>	Plan #2		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
Marquez A2 Lat 1 ST1 P	0.00	360.00	2,856.00	1,611.28	3,765.56	1,140,908.71	2,437,544.94	37.0377132	-107.4270112
- plan hits target center									
- Point									