



Bill Barrett Corporation

## COMPANY DETAILS: BILL BARRETT CORP

Calculation Method: Minimum Curvature  
Error System: ISCWSA  
Scan Method: Closest Approach 3D  
Error Surface: Elliptical Conic  
Warning Method: Error Ratio

## REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Felts 5-61-13-0108BH, True North  
Vertical (TVD) Reference: KB @ 4680.0ft (Original Well Elev)  
Section (VS) Reference: Slot - (0.0N, 0.0E)  
Measured Depth Reference: KB @ 4680.0ft (Original Well Elev)  
Calculation Method: Minimum Curvature

## WELL DETAILS: Felts 5-61-13-0108BH

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1392961.00	3371860.90	40° 24' 15.818 N	104° 9' 52.866 W

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1480.2	9.60	356.04	1477.9	40.1	-2.8	2.00	356.04	3.8	
4	4955.5	9.60	356.04	4904.6	618.5	-42.8	0.00	0.00	58.2	
5	5435.7	0.00	88.98	5382.5	658.5	-45.6	2.00	180.00	62.0	
6	5685.7	0.00	88.98	5632.5	658.5	-45.6	0.00	88.98	62.0	
7	6438.1	90.28	88.98	6110.0	667.0	434.2	12.00	88.98	536.7	F 13-0108BH LP
8	10495.5	90.28	88.98	6090.0	739.2	4490.8	0.00	0.00	4551.3	F 13-0108BH PBHL

## PROJECT DETAILS: WELD COUNTY, COLORADO

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

## FORMATION TOP DETAILS

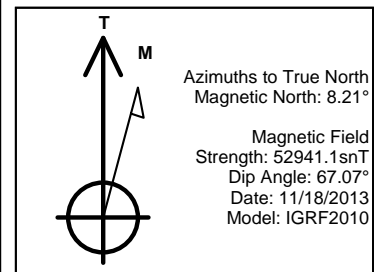
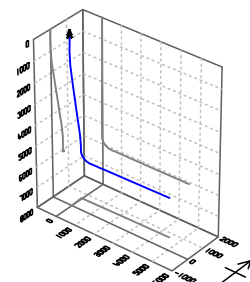
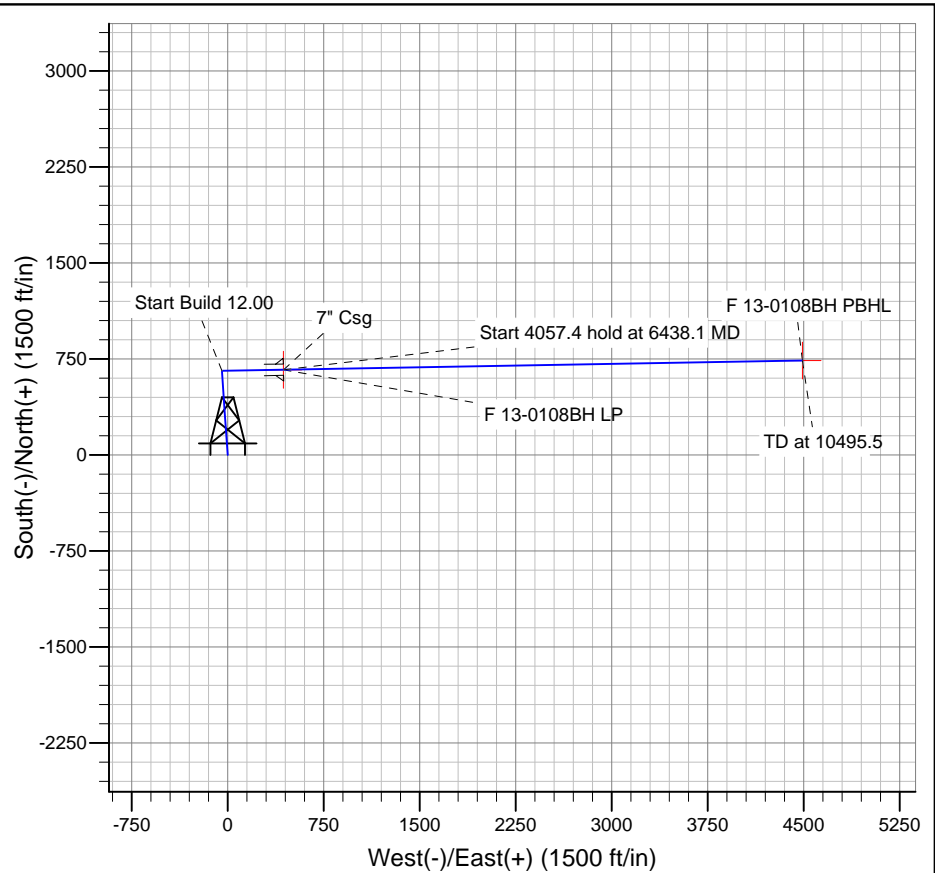
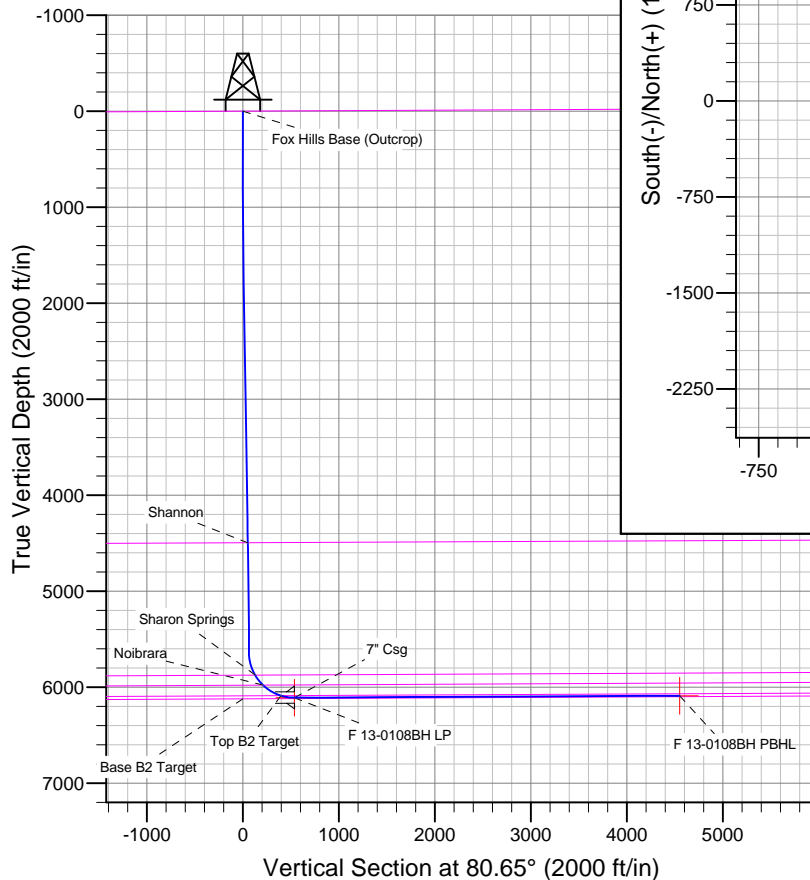
TVDPath	MDPath	Formation
		Base B2 Target
		Fox Hills Base (Outcrop)
4497.1	4542.3	Shannon
5875.8	5941.0	Sharon Springs
5979.4	6074.0	Noibrara
6089.5	6295.3	Top B2 Target

## CASING DETAILS

TVD	MD	Name	Size
6110.0	6440.0	7" Csg	7

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
F 13-0108BH PBHL	6090.0	739.2	4490.8	Point
F 13-0108BH LP	6110.0	667.0	434.2	Point



# Bill Barrett Corp

## Planning Report

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well Felts 5-61-13-0108BH
<b>Company:</b>	BILL BARRETT CORP	<b>TVD Reference:</b>	KB @ 4680.0ft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB @ 4680.0ft (Original Well Elev)
<b>Site:</b>	Felts 5-61-13 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Felts 5-61-13-0108BH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

<b>Project</b>	WELD COUNTY, COLORADO		
<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 Northern Zone		

Site		Felts 5-61-13 Pad				
Site Position:		Northing:	1,392,915.83ft	Latitude:	40° 24' 15.372 N	
From:	Lat/Long	Easting:	3,371,860.46ft	Longitude:	104° 9' 52.880 W	
Position Uncertainty:		0.0 ft	Slot Radius:	"	Grid Convergence:	0.86 °

Well	Felts 5-61-13-0108BH					
Well Position	+N-S	45.2 ft	Northing:	1,392,961.00 ft	Latitude:	40° 24' 15.818 N
	+E-W	1.1 ft	Easting:	3,371,860.90 ft	Longitude:	104° 9' 52.866 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,660.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	11/18/2013	8.21	67.07	52,941

<b>Design</b>	Design #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	80.65	

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,480.2	9.60	356.04	1,477.9	40.1	-2.8	2.00	2.00	0.00	356.04	
4,955.5	9.60	356.04	4,904.6	618.5	-42.8	0.00	0.00	0.00	0.00	
5,435.7	0.00	88.98	5,382.5	658.5	-45.6	2.00	-2.00	0.00	180.00	
5,685.7	0.00	88.98	5,632.5	658.5	-45.6	0.00	0.00	0.00	88.98	
6,438.1	90.28	88.98	6,110.0	667.0	434.2	12.00	12.00	0.00	88.98	F 13-0108BH LP
10,495.5	90.28	88.98	6,090.0	739.2	4,490.8	0.00	0.00	0.00	0.00	F 13-0108BH PBHL

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## Planning Report

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well Felts 5-61-13-0108BH
<b>Company:</b>	BILL BARRETT CORP	<b>TVD Reference:</b>	KB @ 4680.0ft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB @ 4680.0ft (Original Well Elev)
<b>Site:</b>	Felts 5-61-13 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Felts 5-61-13-0108BH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
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	2.00	356.04	1,100.0	1.7	-0.1	0.2	2.00	2.00	0.00
1,200.0	4.00	356.04	1,199.8	7.0	-0.5	0.7	2.00	2.00	0.00
1,300.0	6.00	356.04	1,299.5	15.7	-1.1	1.5	2.00	2.00	0.00
1,400.0	8.00	356.04	1,398.7	27.8	-1.9	2.6	2.00	2.00	0.00
1,480.2	9.60	356.04	1,477.9	40.1	-2.8	3.8	2.00	2.00	0.00
1,500.0	9.60	356.04	1,497.5	43.4	-3.0	4.1	0.00	0.00	0.00
1,600.0	9.60	356.04	1,596.1	60.0	-4.2	5.6	0.00	0.00	0.00
1,700.0	9.60	356.04	1,694.7	76.6	-5.3	7.2	0.00	0.00	0.00
1,800.0	9.60	356.04	1,793.3	93.3	-6.5	8.8	0.00	0.00	0.00
1,900.0	9.60	356.04	1,891.9	109.9	-7.6	10.3	0.00	0.00	0.00
2,000.0	9.60	356.04	1,990.5	126.6	-8.8	11.9	0.00	0.00	0.00
2,100.0	9.60	356.04	2,089.1	143.2	-9.9	13.5	0.00	0.00	0.00
2,200.0	9.60	356.04	2,187.7	159.9	-11.1	15.0	0.00	0.00	0.00
2,300.0	9.60	356.04	2,286.3	176.5	-12.2	16.6	0.00	0.00	0.00
2,400.0	9.60	356.04	2,384.9	193.1	-13.4	18.2	0.00	0.00	0.00
2,500.0	9.60	356.04	2,483.5	209.8	-14.5	19.7	0.00	0.00	0.00
2,600.0	9.60	356.04	2,582.1	226.4	-15.7	21.3	0.00	0.00	0.00
2,700.0	9.60	356.04	2,680.7	243.1	-16.8	22.9	0.00	0.00	0.00
2,800.0	9.60	356.04	2,779.3	259.7	-18.0	24.4	0.00	0.00	0.00
2,900.0	9.60	356.04	2,877.9	276.4	-19.1	26.0	0.00	0.00	0.00
3,000.0	9.60	356.04	2,976.5	293.0	-20.3	27.6	0.00	0.00	0.00
3,100.0	9.60	356.04	3,075.1	309.6	-21.4	29.1	0.00	0.00	0.00
3,200.0	9.60	356.04	3,173.7	326.3	-22.6	30.7	0.00	0.00	0.00
3,300.0	9.60	356.04	3,272.3	342.9	-23.7	32.3	0.00	0.00	0.00
3,400.0	9.60	356.04	3,370.9	359.6	-24.9	33.8	0.00	0.00	0.00
3,500.0	9.60	356.04	3,469.4	376.2	-26.0	35.4	0.00	0.00	0.00
3,600.0	9.60	356.04	3,568.0	392.9	-27.2	37.0	0.00	0.00	0.00
3,700.0	9.60	356.04	3,666.6	409.5	-28.3	38.5	0.00	0.00	0.00
3,800.0	9.60	356.04	3,765.2	426.1	-29.5	40.1	0.00	0.00	0.00
3,900.0	9.60	356.04	3,863.8	442.8	-30.7	41.7	0.00	0.00	0.00
4,000.0	9.60	356.04	3,962.4	459.4	-31.8	43.2	0.00	0.00	0.00
4,100.0	9.60	356.04	4,061.0	476.1	-33.0	44.8	0.00	0.00	0.00
4,200.0	9.60	356.04	4,159.6	492.7	-34.1	46.4	0.00	0.00	0.00
4,300.0	9.60	356.04	4,258.2	509.4	-35.3	47.9	0.00	0.00	0.00
4,400.0	9.60	356.04	4,356.8	526.0	-36.4	49.5	0.00	0.00	0.00
4,500.0	9.60	356.04	4,455.4	542.6	-37.6	51.1	0.00	0.00	0.00
4,542.3	9.60	356.04	4,497.1	549.7	-38.1	51.7	0.00	0.00	0.00
Shannon									
4,600.0	9.60	356.04	4,554.0	559.3	-38.7	52.6	0.00	0.00	0.00
4,700.0	9.60	356.04	4,652.6	575.9	-39.9	54.2	0.00	0.00	0.00
4,800.0	9.60	356.04	4,751.2	592.6	-41.0	55.8	0.00	0.00	0.00
4,900.0	9.60	356.04	4,849.8	609.2	-42.2	57.3	0.00	0.00	0.00
4,955.5	9.60	356.04	4,904.6	618.5	-42.8	58.2	0.00	0.00	0.00

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## Planning Report

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well Felts 5-61-13-0108BH
<b>Company:</b>	BILL BARRETT CORP	<b>TVD Reference:</b>	KB @ 4680.0ft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB @ 4680.0ft (Original Well Elev)
<b>Site:</b>	Felts 5-61-13 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Felts 5-61-13-0108BH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,000.0	8.71	356.04	4,948.5	625.5	-43.3	58.9	2.00	-2.00	0.00
5,100.0	6.71	356.04	5,047.6	638.9	-44.2	60.1	2.00	-2.00	0.00
5,200.0	4.71	356.04	5,147.1	648.8	-44.9	61.1	2.00	-2.00	0.00
5,300.0	2.71	356.04	5,246.9	655.3	-45.4	61.7	2.00	-2.00	0.00
5,400.0	0.71	356.04	5,346.8	658.3	-45.6	62.0	2.00	-2.00	0.00
5,435.7	0.00	88.98	5,382.5	658.5	-45.6	62.0	2.00	-2.00	0.00
5,500.0	0.00	88.98	5,446.8	658.5	-45.6	62.0	0.00	0.00	0.00
5,600.0	0.00	88.98	5,546.8	658.5	-45.6	62.0	0.00	0.00	0.00
5,685.7	0.00	88.98	5,632.5	658.5	-45.6	62.0	0.00	0.00	0.00
5,700.0	1.71	88.98	5,646.8	658.5	-45.4	62.2	12.00	12.00	0.00
5,800.0	13.71	88.98	5,745.7	658.7	-32.0	75.4	12.00	12.00	0.00
5,900.0	25.71	88.98	5,839.7	659.3	1.7	108.8	12.00	12.00	0.00
5,941.0	30.63	88.98	5,875.8	659.7	21.0	127.9	12.00	12.00	0.00
Sharon Springs									
6,000.0	37.71	88.98	5,924.6	660.3	54.1	160.7	12.00	12.00	0.00
6,074.0	46.60	88.98	5,979.4	661.2	103.8	209.8	12.00	12.00	0.00
Noibrra									
6,100.0	49.71	88.98	5,996.8	661.5	123.1	228.9	12.00	12.00	0.00
6,200.0	61.71	88.98	6,053.0	663.0	205.6	310.5	12.00	12.00	0.00
6,295.3	73.15	88.98	6,089.5	664.5	293.4	397.5	12.00	12.00	0.00
Top B2 Target									
6,300.0	73.71	88.98	6,090.8	664.6	297.9	401.9	12.00	12.00	0.00
6,400.0	85.71	88.98	6,108.7	666.4	396.1	499.1	12.00	12.00	0.00
6,438.1	90.28	88.98	6,110.0	667.0	434.2	536.7	12.00	12.00	0.00
F 13-0108BH LP									
6,440.0	90.28	88.98	6,110.0	667.1	436.1	538.6	0.00	0.00	0.00
7" Csg									
6,500.0	90.28	88.98	6,109.7	668.1	496.1	598.0	0.00	0.00	0.00
6,600.0	90.28	88.98	6,109.2	669.9	596.0	696.9	0.00	0.00	0.00
6,700.0	90.28	88.98	6,108.7	671.7	696.0	795.9	0.00	0.00	0.00
6,800.0	90.28	88.98	6,108.2	673.5	796.0	894.8	0.00	0.00	0.00
6,900.0	90.28	88.98	6,107.7	675.3	896.0	993.8	0.00	0.00	0.00
7,000.0	90.28	88.98	6,107.2	677.0	996.0	1,092.7	0.00	0.00	0.00
7,100.0	90.28	88.98	6,106.7	678.8	1,096.0	1,191.7	0.00	0.00	0.00
7,200.0	90.28	88.98	6,106.2	680.6	1,195.9	1,290.6	0.00	0.00	0.00
7,300.0	90.28	88.98	6,105.8	682.4	1,295.9	1,389.5	0.00	0.00	0.00
7,400.0	90.28	88.98	6,105.3	684.2	1,395.9	1,488.5	0.00	0.00	0.00
7,500.0	90.28	88.98	6,104.8	685.9	1,495.9	1,587.4	0.00	0.00	0.00
7,600.0	90.28	88.98	6,104.3	687.7	1,595.9	1,686.4	0.00	0.00	0.00
7,700.0	90.28	88.98	6,103.8	689.5	1,695.9	1,785.3	0.00	0.00	0.00
7,800.0	90.28	88.98	6,103.3	691.3	1,795.8	1,884.3	0.00	0.00	0.00
7,900.0	90.28	88.98	6,102.8	693.0	1,895.8	1,983.2	0.00	0.00	0.00
8,000.0	90.28	88.98	6,102.3	694.8	1,995.8	2,082.2	0.00	0.00	0.00
8,100.0	90.28	88.98	6,101.8	696.6	2,095.8	2,181.1	0.00	0.00	0.00
8,200.0	90.28	88.98	6,101.3	698.4	2,195.8	2,280.0	0.00	0.00	0.00
8,300.0	90.28	88.98	6,100.8	700.2	2,295.8	2,379.0	0.00	0.00	0.00
8,400.0	90.28	88.98	6,100.3	701.9	2,395.7	2,477.9	0.00	0.00	0.00
8,500.0	90.28	88.98	6,099.8	703.7	2,495.7	2,576.9	0.00	0.00	0.00
8,600.0	90.28	88.98	6,099.3	705.5	2,595.7	2,675.8	0.00	0.00	0.00
8,700.0	90.28	88.98	6,098.9	707.3	2,695.7	2,774.8	0.00	0.00	0.00
8,800.0	90.28	88.98	6,098.4	709.1	2,795.7	2,873.7	0.00	0.00	0.00
8,900.0	90.28	88.98	6,097.9	710.8	2,895.6	2,972.7	0.00	0.00	0.00
9,000.0	90.28	88.98	6,097.4	712.6	2,995.6	3,071.6	0.00	0.00	0.00

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## Planning Report

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well Felts 5-61-13-0108BH
<b>Company:</b>	BILL BARRETT CORP	<b>TVD Reference:</b>	KB @ 4680.0ft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB @ 4680.0ft (Original Well Elev)
<b>Site:</b>	Felts 5-61-13 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Felts 5-61-13-0108BH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
9,100.0	90.28	88.98	6,096.9	714.4	3,095.6	3,170.5	0.00	0.00	0.00	
9,200.0	90.28	88.98	6,096.4	716.2	3,195.6	3,269.5	0.00	0.00	0.00	
9,300.0	90.28	88.98	6,095.9	717.9	3,295.6	3,368.4	0.00	0.00	0.00	
9,400.0	90.28	88.98	6,095.4	719.7	3,395.6	3,467.4	0.00	0.00	0.00	
9,500.0	90.28	88.98	6,094.9	721.5	3,495.5	3,566.3	0.00	0.00	0.00	
9,600.0	90.28	88.98	6,094.4	723.3	3,595.5	3,665.3	0.00	0.00	0.00	
9,700.0	90.28	88.98	6,093.9	725.1	3,695.5	3,764.2	0.00	0.00	0.00	
9,800.0	90.28	88.98	6,093.4	726.8	3,795.5	3,863.2	0.00	0.00	0.00	
9,900.0	90.28	88.98	6,092.9	728.6	3,895.5	3,962.1	0.00	0.00	0.00	
10,000.0	90.28	88.98	6,092.4	730.4	3,995.5	4,061.0	0.00	0.00	0.00	
10,100.0	90.28	88.98	6,091.9	732.2	4,095.4	4,160.0	0.00	0.00	0.00	
10,200.0	90.28	88.98	6,091.5	734.0	4,195.4	4,258.9	0.00	0.00	0.00	
10,300.0	90.28	88.98	6,091.0	735.7	4,295.4	4,357.9	0.00	0.00	0.00	
10,400.0	90.28	88.98	6,090.5	737.5	4,395.4	4,456.8	0.00	0.00	0.00	
10,495.5	90.28	88.98	6,090.0	739.2	4,490.8	4,551.3	0.00	0.00	0.00	
F 13-0108BH PBHL										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
6,440.0	6,110.0	7" Csg	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	0.0	Fox Hills Base (Outcrop)		-0.28	88.98
4,542.3	4,497.0	Shannon		-0.28	88.98
5,941.0	5,876.0	Sharon Springs		-0.28	88.98
6,074.0	5,980.0	Noibrara		-0.28	88.98
6,295.3	6,091.0	Top B2 Target		-0.28	88.98
	6,122.0	Base B2 Target		-0.28	88.98