

# **BILL BARRETT CORP**

**WELD COUNTY, COLORADO**

**Greasewood 14-29H**

**Greasewood 14-29H**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**23 May, 2014**



**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 Greasewood 14-29H, True North  
Vertical (TVD) Reference: WELL @ 4690.0ft (Original Well Elev)  
Section (VS) Reference: Slot - (0.0N, 0.0E)  
Measured Depth Reference: WELL @ 4690.0ft (Original Well Elev)  
Calculation Method: Minimum Curvature

## WELL DETAILS: Greasewood 14-29H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1410634.32	3354576.49	40° 27' 12.960 N	104° 13' 32.992 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	171.5	3.43	192.23	171.4	-5.0	-1.1	2.00	192.23	-5.0	
3	5598.9	3.43	192.23	5589.1	-322.4	-69.9	0.00	0.00	-321.1	
4	5770.5	0.00	0.00	5760.5	-327.5	-71.0	2.00	180.00	-326.1	
5	6520.5	90.00	0.00	6238.0	150.0	-71.0	12.00	0.00	151.3	GW 14-29H LP
6	10304.6	90.00	0.00	6238.0	3934.2	-71.0	0.00	0.00	3934.8	GW 14-29H 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

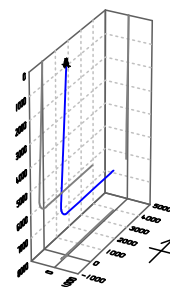
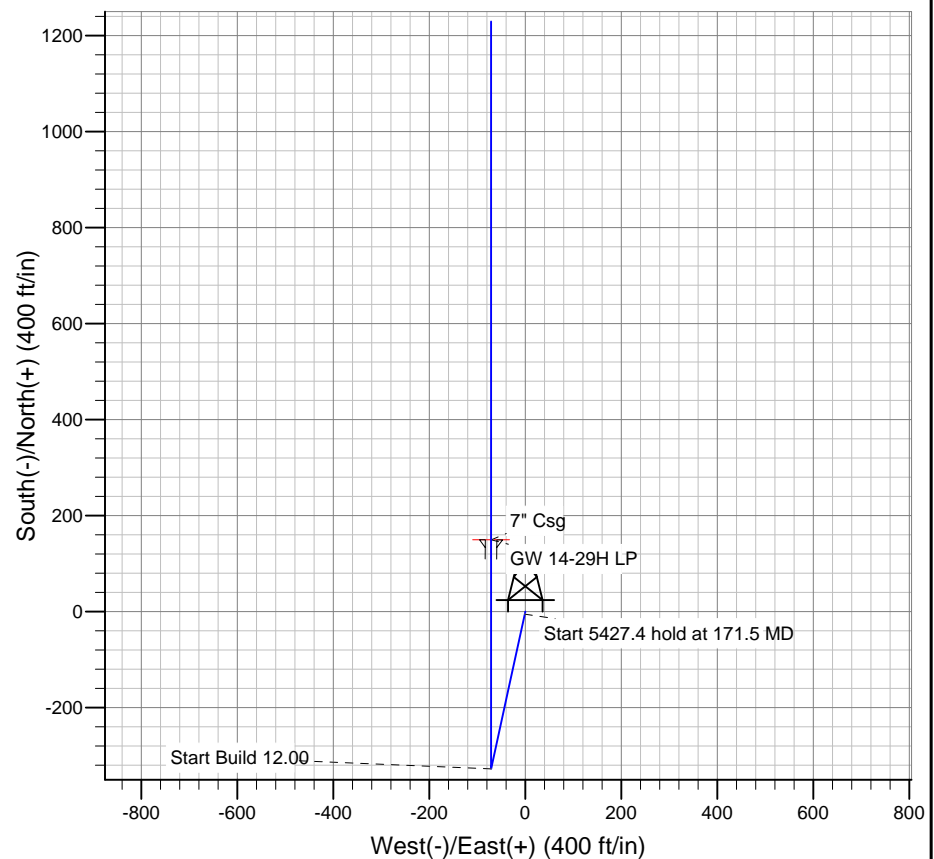
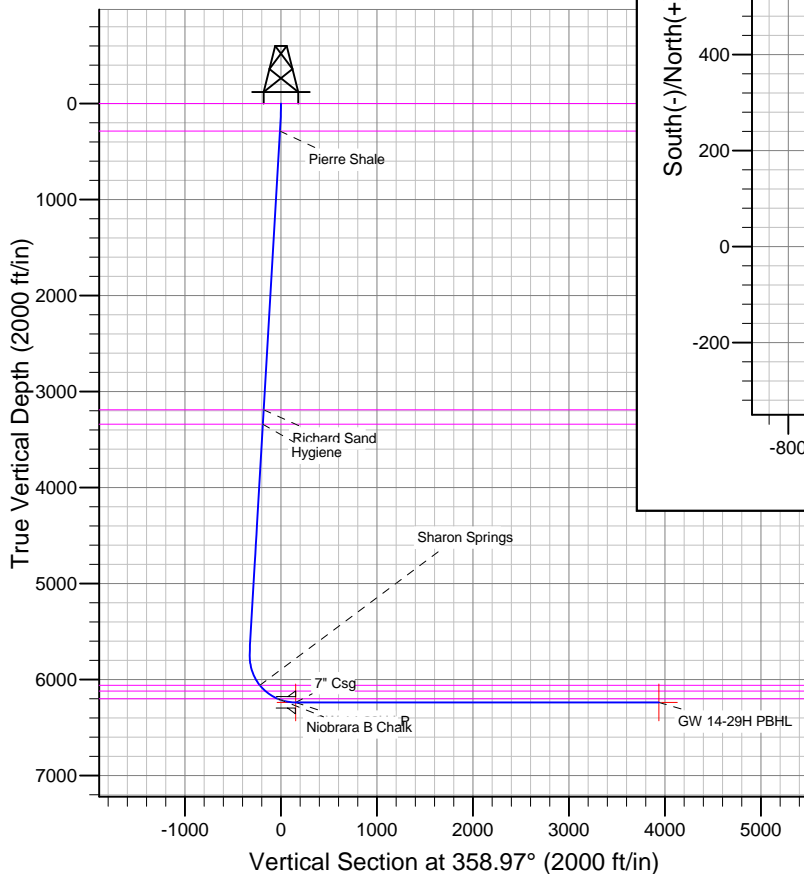
TVDPath	MDPath	Formation
0.0	0.0	Fox Hills
285.0	285.3	Pierre Shale
3190.0	3195.5	Richard Sand
3340.0	3345.8	Hygiene
6060.0	6094.2	Sharon Springs
6120.0	6177.5	Niobrara
6200.0	6328.7	Niobrara B Chalk

## CASING DETAILS

TVD	MD	Name	Size
6238.0	6520.0	7" Csg	7

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
GW 14-29H LP	6238.0	150.0	-71.0	Point
GW 14-29H PBHL	6238.0	3934.2	-71.0	Point



Azimuths to True North  
Magnetic North: 8.18°

Magnetic Field  
Strength: 52906.5snT  
Dip Angle: 67.08°  
Date: 5/23/2014  
Model: IGRF2010

# Bill Barrett Corp

## Planning Report

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well Greasewood 14-29H
<b>Company:</b>	BILL BARRETT CORP	<b>TVD Reference:</b>	WELL @ 4690.0ft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	WELL @ 4690.0ft (Original Well Elev)
<b>Site:</b>	Greasewood 14-29H	<b>North Reference:</b>	True
<b>Well:</b>	Greasewood 14-29H	<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		Greasewood 14-29H				
Site Position:		Northing:	1,410,634.32 ft	Latitude:	40° 27' 12.960 N	
From:	Lat/Long	Easting:	3,354,576.49 ft	Longitude:	104° 13' 32.992 W	
Position Uncertainty:		0.0 ft	Slot Radius:	"	Grid Convergence:	0.82 °

Well Greasewood 14-29H						
Well Position	+N-S	0.0 ft	Northing:	1,410,634.32 ft	Latitude:	40° 27' 12.960 N
	+E-W	0.0 ft	Easting:	3,354,576.49 ft	Longitude:	104° 13' 32.992 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	0.0 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	5/23/2014	8.18	67.08	52,906

<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	358.97

<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	
171.5	3.43	192.23	171.4	-5.0	-1.1	2.00	2.00	0.00	192.23	
5,598.9	3.43	192.23	5,589.1	-322.4	-69.9	0.00	0.00	0.00	0.00	
5,770.5	0.00	0.00	5,760.5	-327.5	-71.0	2.00	-2.00	0.00	180.00	
6,520.5	90.00	0.00	6,238.0	150.0	-71.0	12.00	12.00	0.00	0.00	GW 14-29H LP
10,304.6	90.00	0.00	6,238.0	3,934.2	-71.0	0.00	0.00	0.00	0.00	GW 14-29H PBHL

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## Planning Report

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well Greasewood 14-29H
<b>Company:</b>	BILL BARRETT CORP	<b>TVD Reference:</b>	WELL @ 4690.0ft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	WELL @ 4690.0ft (Original Well Elev)
<b>Site:</b>	Greasewood 14-29H	<b>North Reference:</b>	True
<b>Well:</b>	Greasewood 14-29H	<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
<b>Fox Hills</b>									
100.0	2.00	192.23	100.0	-1.7	-0.4	-1.7	2.00	2.00	0.00
171.5	3.43	192.23	171.4	-5.0	-1.1	-5.0	2.00	2.00	0.00
200.0	3.43	192.23	199.8	-6.7	-1.4	-6.7	0.00	0.00	0.00
285.3	3.43	192.23	285.0	-11.7	-2.5	-11.6	0.00	0.00	0.00
<b>Pierre Shale</b>									
300.0	3.43	192.23	299.7	-12.5	-2.7	-12.5	0.00	0.00	0.00
400.0	3.43	192.23	399.5	-18.4	-4.0	-18.3	0.00	0.00	0.00
500.0	3.43	192.23	499.3	-24.2	-5.3	-24.1	0.00	0.00	0.00
600.0	3.43	192.23	599.1	-30.1	-6.5	-30.0	0.00	0.00	0.00
700.0	3.43	192.23	699.0	-35.9	-7.8	-35.8	0.00	0.00	0.00
800.0	3.43	192.23	798.8	-41.8	-9.1	-41.6	0.00	0.00	0.00
900.0	3.43	192.23	898.6	-47.6	-10.3	-47.4	0.00	0.00	0.00
1,000.0	3.43	192.23	998.4	-53.5	-11.6	-53.3	0.00	0.00	0.00
1,100.0	3.43	192.23	1,098.2	-59.3	-12.9	-59.1	0.00	0.00	0.00
1,200.0	3.43	192.23	1,198.1	-65.2	-14.1	-64.9	0.00	0.00	0.00
1,300.0	3.43	192.23	1,297.9	-71.0	-15.4	-70.7	0.00	0.00	0.00
1,400.0	3.43	192.23	1,397.7	-76.9	-16.7	-76.6	0.00	0.00	0.00
1,500.0	3.43	192.23	1,497.5	-82.7	-17.9	-82.4	0.00	0.00	0.00
1,600.0	3.43	192.23	1,597.3	-88.6	-19.2	-88.2	0.00	0.00	0.00
1,700.0	3.43	192.23	1,697.2	-94.4	-20.5	-94.0	0.00	0.00	0.00
1,800.0	3.43	192.23	1,797.0	-100.3	-21.7	-99.9	0.00	0.00	0.00
1,900.0	3.43	192.23	1,896.8	-106.1	-23.0	-105.7	0.00	0.00	0.00
2,000.0	3.43	192.23	1,996.6	-112.0	-24.3	-111.5	0.00	0.00	0.00
2,100.0	3.43	192.23	2,096.4	-117.8	-25.5	-117.3	0.00	0.00	0.00
2,200.0	3.43	192.23	2,196.3	-123.7	-26.8	-123.2	0.00	0.00	0.00
2,300.0	3.43	192.23	2,296.1	-129.5	-28.1	-129.0	0.00	0.00	0.00
2,400.0	3.43	192.23	2,395.9	-135.4	-29.3	-134.8	0.00	0.00	0.00
2,500.0	3.43	192.23	2,495.7	-141.2	-30.6	-140.6	0.00	0.00	0.00
2,600.0	3.43	192.23	2,595.5	-147.1	-31.9	-146.5	0.00	0.00	0.00
2,700.0	3.43	192.23	2,695.4	-152.9	-33.2	-152.3	0.00	0.00	0.00
2,800.0	3.43	192.23	2,795.2	-158.7	-34.4	-158.1	0.00	0.00	0.00
2,900.0	3.43	192.23	2,895.0	-164.6	-35.7	-163.9	0.00	0.00	0.00
3,000.0	3.43	192.23	2,994.8	-170.4	-37.0	-169.8	0.00	0.00	0.00
3,100.0	3.43	192.23	3,094.6	-176.3	-38.2	-175.6	0.00	0.00	0.00
3,195.5	3.43	192.23	3,190.0	-181.9	-39.4	-181.1	0.00	0.00	0.00
<b>Richard Sand</b>									
3,200.0	3.43	192.23	3,194.5	-182.1	-39.5	-181.4	0.00	0.00	0.00
3,300.0	3.43	192.23	3,294.3	-188.0	-40.8	-187.2	0.00	0.00	0.00
3,345.8	3.43	192.23	3,340.0	-190.7	-41.3	-189.9	0.00	0.00	0.00
<b>Hygiene</b>									
3,400.0	3.43	192.23	3,394.1	-193.8	-42.0	-193.1	0.00	0.00	0.00
3,500.0	3.43	192.23	3,493.9	-199.7	-43.3	-198.9	0.00	0.00	0.00
3,600.0	3.43	192.23	3,593.8	-205.5	-44.6	-204.7	0.00	0.00	0.00
3,700.0	3.43	192.23	3,693.6	-211.4	-45.8	-210.5	0.00	0.00	0.00
3,800.0	3.43	192.23	3,793.4	-217.2	-47.1	-216.3	0.00	0.00	0.00
3,900.0	3.43	192.23	3,893.2	-223.1	-48.4	-222.2	0.00	0.00	0.00
4,000.0	3.43	192.23	3,993.0	-228.9	-49.6	-228.0	0.00	0.00	0.00
4,100.0	3.43	192.23	4,092.9	-234.8	-50.9	-233.8	0.00	0.00	0.00
4,200.0	3.43	192.23	4,192.7	-240.6	-52.2	-239.6	0.00	0.00	0.00
4,300.0	3.43	192.23	4,292.5	-246.5	-53.4	-245.5	0.00	0.00	0.00
4,400.0	3.43	192.23	4,392.3	-252.3	-54.7	-251.3	0.00	0.00	0.00
4,500.0	3.43	192.23	4,492.1	-258.2	-56.0	-257.1	0.00	0.00	0.00

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## Planning Report

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well Greasewood 14-29H
<b>Company:</b>	BILL BARRETT CORP	<b>TVD Reference:</b>	WELL @ 4690.0ft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	WELL @ 4690.0ft (Original Well Elev)
<b>Site:</b>	Greasewood 14-29H	<b>North Reference:</b>	True
<b>Well:</b>	Greasewood 14-29H	<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)
4,600.0	3.43	192.23	4,592.0	-264.0	-57.2	-262.9	0.00	0.00	0.00
4,700.0	3.43	192.23	4,691.8	-269.9	-58.5	-268.8	0.00	0.00	0.00
4,800.0	3.43	192.23	4,791.6	-275.7	-59.8	-274.6	0.00	0.00	0.00
4,900.0	3.43	192.23	4,891.4	-281.6	-61.0	-280.4	0.00	0.00	0.00
5,000.0	3.43	192.23	4,991.2	-287.4	-62.3	-286.2	0.00	0.00	0.00
5,100.0	3.43	192.23	5,091.1	-293.3	-63.6	-292.1	0.00	0.00	0.00
5,200.0	3.43	192.23	5,190.9	-299.1	-64.9	-297.9	0.00	0.00	0.00
5,300.0	3.43	192.23	5,290.7	-305.0	-66.1	-303.7	0.00	0.00	0.00
5,400.0	3.43	192.23	5,390.5	-310.8	-67.4	-309.5	0.00	0.00	0.00
5,500.0	3.43	192.23	5,490.3	-316.7	-68.7	-315.4	0.00	0.00	0.00
5,598.9	3.43	192.23	5,589.1	-322.4	-69.9	-321.1	0.00	0.00	0.00
5,600.0	3.41	192.23	5,590.2	-322.5	-69.9	-321.2	2.00	-2.00	0.00
5,700.0	1.41	192.23	5,690.1	-326.6	-70.8	-325.3	2.00	-2.00	0.00
5,770.5	0.00	0.00	5,760.5	-327.5	-71.0	-326.1	2.00	-2.00	0.00
5,800.0	3.54	0.00	5,790.0	-326.6	-71.0	-325.2	12.00	12.00	0.00
5,900.0	15.54	0.00	5,888.5	-310.0	-71.0	-308.7	12.00	12.00	0.00
6,000.0	27.54	0.00	5,981.3	-273.3	-71.0	-272.0	12.00	12.00	0.00
6,094.2	38.84	0.00	6,060.0	-221.9	-71.0	-220.6	12.00	12.00	0.00
<b>Sharon Springs</b>									
6,100.0	39.54	0.00	6,064.5	-218.2	-71.0	-216.9	12.00	12.00	0.00
6,177.5	48.84	0.00	6,120.0	-164.3	-71.0	-162.9	12.00	12.00	0.00
<b>Niobrara</b>									
6,200.0	51.54	0.00	6,134.4	-146.9	-71.0	-145.6	12.00	12.00	0.00
6,300.0	63.54	0.00	6,188.0	-62.7	-71.0	-61.4	12.00	12.00	0.00
6,328.7	66.99	0.00	6,200.0	-36.7	-71.0	-35.4	12.00	12.00	0.00
<b>Niobrara B Chalk</b>									
6,400.0	75.54	0.00	6,222.9	30.8	-71.0	32.1	12.00	12.00	0.00
6,500.0	87.54	0.00	6,237.6	129.5	-71.0	130.8	12.00	12.00	0.00
6,520.0	89.94	0.00	6,238.0	149.5	-71.0	150.8	12.00	12.00	0.00
<b>7" Csg</b>									
6,520.5	90.00	0.00	6,238.0	150.0	-71.0	151.3	12.00	12.00	0.00
<b>GW 14-29H LP</b>									
6,600.0	90.00	0.00	6,238.0	229.5	-71.0	230.8	0.00	0.00	0.00
6,700.0	90.00	0.00	6,238.0	329.5	-71.0	330.8	0.00	0.00	0.00
6,800.0	90.00	0.00	6,238.0	429.5	-71.0	430.7	0.00	0.00	0.00
6,900.0	90.00	0.00	6,238.0	529.5	-71.0	530.7	0.00	0.00	0.00
7,000.0	90.00	0.00	6,238.0	629.5	-71.0	630.7	0.00	0.00	0.00
7,100.0	90.00	0.00	6,238.0	729.5	-71.0	730.7	0.00	0.00	0.00
7,200.0	90.00	0.00	6,238.0	829.5	-71.0	830.7	0.00	0.00	0.00
7,300.0	90.00	0.00	6,238.0	929.5	-71.0	930.7	0.00	0.00	0.00
7,400.0	90.00	0.00	6,238.0	1,029.5	-71.0	1,030.6	0.00	0.00	0.00
7,500.0	90.00	0.00	6,238.0	1,129.5	-71.0	1,130.6	0.00	0.00	0.00
7,600.0	90.00	0.00	6,238.0	1,229.5	-71.0	1,230.6	0.00	0.00	0.00
7,700.0	90.00	0.00	6,238.0	1,329.5	-71.0	1,330.6	0.00	0.00	0.00
7,800.0	90.00	0.00	6,238.0	1,429.5	-71.0	1,430.6	0.00	0.00	0.00
7,900.0	90.00	0.00	6,238.0	1,529.5	-71.0	1,530.6	0.00	0.00	0.00
8,000.0	90.00	0.00	6,238.0	1,629.5	-71.0	1,630.5	0.00	0.00	0.00
8,100.0	90.00	0.00	6,238.0	1,729.5	-71.0	1,730.5	0.00	0.00	0.00
8,200.0	90.00	0.00	6,238.0	1,829.5	-71.0	1,830.5	0.00	0.00	0.00
8,300.0	90.00	0.00	6,238.0	1,929.5	-71.0	1,930.5	0.00	0.00	0.00
8,400.0	90.00	0.00	6,238.0	2,029.5	-71.0	2,030.5	0.00	0.00	0.00
8,500.0	90.00	0.00	6,238.0	2,129.5	-71.0	2,130.5	0.00	0.00	0.00
8,600.0	90.00	0.00	6,238.0	2,229.5	-71.0	2,230.4	0.00	0.00	0.00

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## Planning Report

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well Greasewood 14-29H
<b>Company:</b>	BILL BARRETT CORP	<b>TVD Reference:</b>	WELL @ 4690.0ft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	WELL @ 4690.0ft (Original Well Elev)
<b>Site:</b>	Greasewood 14-29H	<b>North Reference:</b>	True
<b>Well:</b>	Greasewood 14-29H	<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)
8,700.0	90.00	0.00	6,238.0	2,329.5	-71.0	2,330.4	0.00	0.00	0.00
8,800.0	90.00	0.00	6,238.0	2,429.5	-71.0	2,430.4	0.00	0.00	0.00
8,900.0	90.00	0.00	6,238.0	2,529.5	-71.0	2,530.4	0.00	0.00	0.00
9,000.0	90.00	0.00	6,238.0	2,629.5	-71.0	2,630.4	0.00	0.00	0.00
9,100.0	90.00	0.00	6,238.0	2,729.5	-71.0	2,730.4	0.00	0.00	0.00
9,200.0	90.00	0.00	6,238.0	2,829.5	-71.0	2,830.4	0.00	0.00	0.00
9,300.0	90.00	0.00	6,238.0	2,929.5	-71.0	2,930.3	0.00	0.00	0.00
9,400.0	90.00	0.00	6,238.0	3,029.5	-71.0	3,030.3	0.00	0.00	0.00
9,500.0	90.00	0.00	6,238.0	3,129.5	-71.0	3,130.3	0.00	0.00	0.00
9,600.0	90.00	0.00	6,238.0	3,229.5	-71.0	3,230.3	0.00	0.00	0.00
9,700.0	90.00	0.00	6,238.0	3,329.5	-71.0	3,330.3	0.00	0.00	0.00
9,800.0	90.00	0.00	6,238.0	3,429.5	-71.0	3,430.3	0.00	0.00	0.00
9,900.0	90.00	0.00	6,238.0	3,529.5	-71.0	3,530.2	0.00	0.00	0.00
10,000.0	90.00	0.00	6,238.0	3,629.5	-71.0	3,630.2	0.00	0.00	0.00
10,100.0	90.00	0.00	6,238.0	3,729.5	-71.0	3,730.2	0.00	0.00	0.00
10,200.0	90.00	0.00	6,238.0	3,829.5	-71.0	3,830.2	0.00	0.00	0.00
10,300.0	90.00	0.00	6,238.0	3,929.5	-71.0	3,930.2	0.00	0.00	0.00
10,304.6	90.00	0.00	6,238.0	3,934.2	-71.0	3,934.8	0.00	0.00	0.00
GW 14-29H PBHL									

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
6,520.0	6,238.0	7" Csg	7	8-3/4

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
0.0	0.0	Fox Hills		0.00	
285.3	285.0	Pierre Shale		0.00	
3,195.5	3,190.0	Richard Sand		0.00	
3,345.8	3,340.0	Hygiene		0.00	
6,094.2	6,060.0	Sharon Springs		0.00	
6,177.5	6,120.0	Niobrara		0.00	
6,328.7	6,200.0	Niobrara B Chalk		0.00	