

Project: Western - San Juan North (NAD 83)
 Site: SEC 23 -T34N-R08W
 Well: Witt 34-23 #4
 Wellbore: Wellbore #1
 Design: Plan 1 Version 3



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	150.0	0.00	0.00	150.0	0.0	0.0	0.00	0.00	0.0	
3	828.4	33.92	300.56	789.5	99.2	-167.9	5.00	300.56	193.2	
4	2197.8	33.92	300.56	1925.8	487.8	-825.9	0.00	0.00	950.3	
5	2777.3	5.00	308.37	2466.4	587.8	-988.4	5.00	178.60	1139.8	FC 34-23#4
6	3066.4	5.00	308.37	2754.4	603.4	-1008.2	0.00	0.00	1165.0	PC 34-23 #4
7	3243.0	5.00	308.37	2930.4	613.0	-1020.3	0.00	0.00	1180.4	PBHL 34-23 #4



Azimuths to Grid North
 True North: 1.34°
 Magnetic North: 11.24°

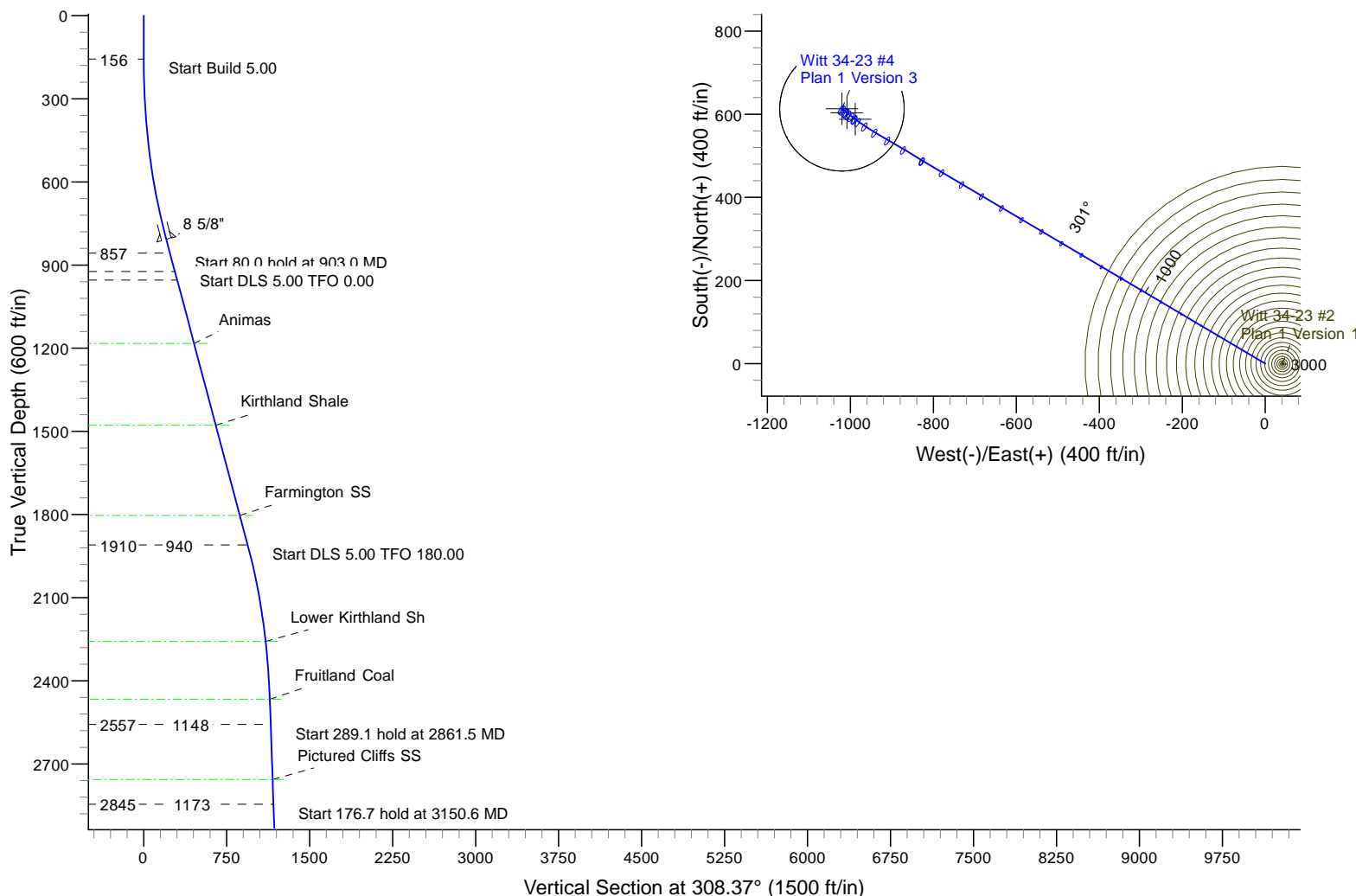
Magnetic Field
 Strength: 50956.3nT
 Dip Angle: 63.85°
 Date: 7/26/2011
 Model: BGGM2011

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1182.4	1301.9	Animas
1477.4	1657.5	Kirthland Shale
1803.4	2050.3	Farmington SS
2257.4	2564.5	Lower Kirthland Sh
2466.4	2777.3	Fruitland Coal
2755.4	3067.4	Pictured Cliffs SS

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
DRILLING WINDOW 34-23#3	6.4	0.0	0.0	1191740.36	2362759.64	Polygon
FC 34-23#4	2466.4	587.8	-988.4	1192328.16	2361771.21	Point
PC 34-23 #4	2754.4	603.4	-1008.2	1192343.80	2361751.43	Point
PBHL 34-23 #4	2930.4	613.0	-1020.3	1192353.40	2361739.33	Circle (Radius: 150.0)



PROJECT DETAILS: Western - San Juan North (NAD 83)	WELL DETAILS: Witt 34-23 #4	Plan: Plan 1 Version 3 (Witt 34-23 #4/Wellbore #1)	
Geodetic System: US State Plane 1983 Datum: North American Datum 1983 Ellipsoid: GRS 1980 Zone: Colorado Southern Zone System Datum: Mean Sea Level	Ground Level: 6679.4	Created By: Lucas Munisteri	Date: 16:35, July 27 2011
	Ref. Sec.: Slot - (0.0N, 0.0E)	Checked: _____	Date: _____
	North: 1191740.35 Lat: 37° 10' 21.936 N East: 2362759.64 Long: 107° 41' 13.992 W	Reviewed: _____	Date: _____
		Approved: _____	Date: _____

North America - Onshore US - BP

Western - San Juan North (NAD 83)

SEC 23 -T34N-R08W

Witt 34-23 #4

Wellbore #1

Plan: Plan 1 Version 3

Standard Planning Report

27 July, 2011

bp
Planning Report

Database:	EDM .16 Hou Prod - WH21P	Local Co-ordinate Reference:	Well Witt 34-23 #4
Company:	North America - Onshore US - BP	TVD Reference:	RKB MSL @ 6695.4ft (RIG?)
Project:	Western - San Juan North (NAD 83)	MD Reference:	RKB MSL @ 6695.4ft (RIG?)
Site:	SEC 23 -T34N-R08W	North Reference:	Grid
Well:	Witt 34-23 #4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1 Version 3		

Project	Western - San Juan North (NAD 83), LAPLATA COUNTY COLORADO, USA		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		Using geodetic scale factor

Site		SEC 23 -T34N-R08W			
Site Position:		Northing:	1,194,584.52 ft	Latitude:	37° 10' 50.448 N
From:	Lat/Long	Easting:	2,364,487.36 ft	Longitude:	107° 40' 53.472 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	-1.34 °

Well	Witt 34-23 #4					
Well Position	+N/-S	0.0 ft	Northing:	1,191,740.35 ft	Latitude:	37° 10' 21.936 N
	+E/-W	0.0 ft	Easting:	2,362,759.64 ft	Longitude:	107° 41' 13.992 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	6,679.4 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2011	7/26/2011	9.90	63.86	50,956

Design	Plan 1 Version 3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	308.37

Plan Sections										
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	
150.0	0.00	0.00	150.0	0.0	0.0	0.00	0.00	0.00	0.00	
828.4	33.92	300.56	789.5	99.2	-167.9	5.00	5.00	0.00	300.56	
2,197.8	33.92	300.56	1,925.8	487.8	-825.9	0.00	0.00	0.00	0.00	
2,777.3	5.00	308.37	2,466.4	587.8	-988.4	5.00	-4.99	1.35	178.60	FC 34-23#4
3,066.4	5.00	308.37	2,754.4	603.4	-1,008.2	0.00	0.00	0.00	0.00	PC 34-23 #4
3,243.0	5.00	308.37	2,930.4	613.0	-1,020.3	0.00	0.00	0.00	0.00	PBHL 34-23 #4

bp
Planning Report

Database:	EDM .16 Hou Prod - WH21P	Local Co-ordinate Reference:	Well Witt 34-23 #4
Company:	North America - Onshore US - BP	TVD Reference:	RKB MSL @ 6695.4ft (RIG?)
Project:	Western - San Juan North (NAD 83)	MD Reference:	RKB MSL @ 6695.4ft (RIG?)
Site:	SEC 23 -T34N-R08W	North Reference:	Grid
Well:	Witt 34-23 #4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1 Version 3		

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
150.0	0.00	0.00	150.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	2.50	300.56	200.0	0.5	-0.9	1.1	5.00	5.00	0.00
300.0	7.50	300.56	299.6	5.0	-8.4	9.7	5.00	5.00	0.00
400.0	12.50	300.56	398.0	13.8	-23.4	26.9	5.00	5.00	0.00
500.0	17.50	300.56	494.6	27.0	-45.7	52.5	5.00	5.00	0.00
600.0	22.50	300.56	588.5	44.4	-75.1	86.4	5.00	5.00	0.00
700.0	27.50	300.56	679.1	65.8	-111.5	128.3	5.00	5.00	0.00
800.0	32.50	300.56	765.7	91.3	-154.5	177.8	5.00	5.00	0.00
828.4	33.92	300.56	789.5	99.2	-167.9	193.2	5.00	5.00	0.00
900.0	33.92	300.56	848.9	119.5	-202.3	232.8	0.00	0.00	0.00
1,000.0	33.92	300.56	931.9	147.9	-250.4	288.1	0.00	0.00	0.00
1,100.0	33.92	300.56	1,014.8	176.2	-298.4	343.4	0.00	0.00	0.00
1,200.0	33.92	300.56	1,097.8	204.6	-346.5	398.7	0.00	0.00	0.00
1,300.0	33.92	300.56	1,180.8	233.0	-394.5	453.9	0.00	0.00	0.00
1,400.0	33.92	300.56	1,263.8	261.4	-442.6	509.2	0.00	0.00	0.00
1,500.0	33.92	300.56	1,346.8	289.7	-490.6	564.5	0.00	0.00	0.00
1,600.0	33.92	300.56	1,429.7	318.1	-538.7	619.8	0.00	0.00	0.00
1,700.0	33.92	300.56	1,512.7	346.5	-586.7	675.1	0.00	0.00	0.00
1,800.0	33.92	300.56	1,595.7	374.9	-634.8	730.4	0.00	0.00	0.00
1,900.0	33.92	300.56	1,678.7	403.3	-682.8	785.7	0.00	0.00	0.00
2,000.0	33.92	300.56	1,761.7	431.6	-730.9	841.0	0.00	0.00	0.00
2,100.0	33.92	300.56	1,844.6	460.0	-778.9	896.3	0.00	0.00	0.00
2,197.8	33.92	300.56	1,925.8	487.8	-825.9	950.3	0.00	0.00	0.00
2,200.0	33.81	300.57	1,927.6	488.4	-827.0	951.5	5.00	-5.00	0.22
2,300.0	28.81	300.82	2,013.0	514.9	-871.7	1,003.0	5.00	-5.00	0.25
2,400.0	23.81	301.17	2,102.6	537.7	-909.7	1,047.0	5.00	-5.00	0.35
2,500.0	18.82	301.70	2,195.8	556.6	-940.7	1,083.0	5.00	-5.00	0.52
2,600.0	13.82	302.58	2,291.7	571.6	-964.5	1,111.0	5.00	-4.99	0.88
2,700.0	8.84	304.44	2,389.7	582.3	-980.9	1,130.5	5.00	-4.99	1.86
2,777.3	5.00	308.37	2,466.4	587.8	-988.4	1,139.8	5.00	-4.97	5.09
2,800.0	5.00	308.37	2,489.1	589.0	-990.0	1,141.8	0.00	0.00	0.00
2,900.0	5.00	308.37	2,588.7	594.4	-996.8	1,150.5	0.00	0.00	0.00
3,000.0	5.00	308.37	2,688.3	599.8	-1,003.6	1,159.2	0.00	0.00	0.00
3,066.4	5.00	308.37	2,754.4	603.4	-1,008.2	1,165.0	0.00	0.00	0.00
3,100.0	5.00	308.37	2,787.9	605.3	-1,010.5	1,167.9	0.00	0.00	0.00
3,200.0	5.00	308.37	2,887.5	610.7	-1,017.3	1,176.7	0.00	0.00	0.00
3,243.0	5.00	308.37	2,930.4	613.0	-1,020.3	1,180.4	0.00	0.00	0.00

bp
Planning Report

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Company:	North America - Onshore US - BP	TVD Reference:	RKB MSL @ 6695.4ft (RIG?)
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Well:	Witt 34-23 #4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1 Version 3		

Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PC 34-23 #4 - plan hits target center - Point	0.00	0.00	2,754.4	603.4	-1,008.2	1,192,343.80	2,361,751.43	37° 10' 27.667 N	107° 41' 26.620 W
DRILLING WINDOW : - plan hits target center - Polygon	0.00	360.00	6.4	0.0	0.0	1,191,740.36	2,362,759.64	37° 10' 21.936 N	107° 41' 13.992 W
Point 1			6.4	780.1	-1,872.6	1,192,520.47	2,360,887.02		
Point 2			6.4	666.7	2,105.7	1,192,407.07	2,364,865.37		
Point 3			6.4	-652.9	2,076.0	1,191,087.45	2,364,835.67		
Point 4			6.4	-539.4	-1,906.3	1,191,200.95	2,360,853.32		
PBHL 34-23 #4 - plan hits target center - Circle (radius 150.0)	0.00	360.00	2,930.4	613.0	-1,020.3	1,192,353.40	2,361,739.33	37° 10' 27.759 N	107° 41' 26.772 W
FC 34-23#4 - plan hits target center - Point	0.00	360.00	2,466.4	587.8	-988.4	1,192,328.16	2,361,771.21	37° 10' 27.517 N	107° 41' 26.371 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
850.0	807.4	8 5/8"	8-5/8	8-5/8

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,301.9	1,182.4	Animas		0.00	359.97
1,657.5	1,477.4	Kirthland Shale		0.00	359.97
2,050.3	1,803.4	Farmington SS		0.00	359.97
2,564.5	2,257.4	Lower Kirthland Sh		0.00	359.97
2,777.3	2,466.4	Fruitland Coal		0.00	359.97
3,067.4	2,755.4	Pictured Cliffs SS		0.00	359.97

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
156.4	156.4	0.0	0.0	Start Build 5.00
909.5	856.7	122.2	-206.9	Start 80.0 hold at 903.0 MD
989.5	923.1	144.9	-245.3	Start DLS 5.00 TFO 0.00
1,026.0	953.4	155.2	-262.9	Start 1152.3 hold at 1019.6 MD
2,178.3	1,909.6	482.2	-816.6	Start DLS 5.00 TFO 180.00
2,867.9	2,556.7	592.7	-994.6	Start 289.1 hold at 2861.5 MD
3,157.0	2,844.7	608.3	-1,014.4	Start 176.7 hold at 3150.6 MD
3,333.6				TD at 3327.2