



#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Dekay Gas Unit A #4, Grid North  
Vertical (TVD) Reference: WELL @ 6691.9ft (h&p 291)  
Section (VS) Reference: Slot - (0.0N, 0.0E)  
Measured Depth Reference: WELL @ 6691.9ft (h&p 291)  
Calculation Method: Minimum Curvature

#### PROJECT DETAILS: Western - San Juan North (NAD 83)

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Southern Zone  
System Datum: Mean Sea Level

#### WELL DETAILS: Dekay Gas Unit A #4

Ground Level: 6675.0  
Northing: 1162864.34 Easting: 2363898.14 Latitude: 37° 5' 36.780 N Longitude: 107° 40' 51.600 W

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
150.0	0.00	360.00	150.0	0.0	0.0	0.00	360.00	0.0	
500.0	14.00	288.40	496.5	13.4	-40.4	4.00	288.40	42.5	
580.0	14.00	288.40	574.2	19.5	-58.7	0.00	0.00	61.9	
1281.3	42.05	288.44	1187.1	122.7	-368.2	4.00	0.06	388.1	
2295.9	42.05	288.44	1940.4	337.7	-1012.9	0.00	0.00	1067.7	
3222.2	5.00	288.40	2775.0	452.6	-1357.6	4.00	-179.99	1431.1	FC DEKAY 4
3565.5	5.00	288.40	3117.0	462.0	-1386.0	0.00	0.00	1461.0	PC DEKAY 4
3741.2	5.00	288.40	3292.0	466.9	-1400.5	0.00	0.00	1476.3	PBHL DEKAY 4

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1639.0	1890.0	Animas
1833.0	2151.2	Kirtland Shale
2109.0	2509.4	Farmington SS
2524.0	2966.9	Lower Kirtland Sh
2775.0	3222.2	Fruitland Coal
3117.0	3565.5	Pictured Cliffs SS

#### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
DRILL WINDOW DEKAY 4	0.0	0.0	0.0	1162864.34	2363898.14	37° 5' 36.780 N	107° 40' 51.600 W	Polygon
FC DEKAY 4	2775.0	452.6	-1357.6	1163316.95	2362540.51	37° 5' 40.940 N	107° 41' 8.482 W	Point
PC DEKAY 4	3117.0	462.0	-1386.0	1163326.35	2362512.10	37° 5' 41.026 N	107° 41' 8.835 W	Point
PBHL DEKAY 4	3292.0	466.9	-1400.5	1163331.25	2362497.60	37° 5' 41.071 N	107° 41' 9.016 W	Circle (Radius: 100.0)

# **North America - Onshore US - BP**

**Western - San Juan North (NAD 83)**

**Sec 23-T33N-R8W**

**Dekay Gas Unit A #4**

**Wellbore #1**

**Plan: Plan #1**

## **Standard Planning Report**

**12 June, 2009**

## Planning Report

<b>Database:</b>	EDM - HOU 2003.16 Prod Database	<b>Local Co-ordinate Reference:</b>	Well Decay Gas Unit A #4
<b>Company:</b>	North America - Onshore US - BP	<b>TVD Reference:</b>	WELL @ 6691.9ft (h&p 291)
<b>Project:</b>	Western - San Juan North (NAD 83)	<b>MD Reference:</b>	WELL @ 6691.9ft (h&p 291)
<b>Site:</b>	Sec 23-T33N-R8W	<b>North Reference:</b>	Grid
<b>Well:</b>	Decay Gas Unit A #4	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1		

<b>Project</b>	Western - San Juan North (NAD 83), LAPLATA COUNTY COLORADO, USA		
<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		Using geodetic scale factor

Site						Sec 23-T33N-R8W								
Site Position:			Northing:			1,163,085.72 ft			Latitude:			37° 5' 38.220 N		
From:			Easting:			2,360,664.77 ft			Longitude:			107° 41' 31.560 W		
Position Uncertainty:			Slot Radius:			"			Grid Convergence:			-1.34 °		
Lat/Long														
0.0 ft														

Well	Decay Gas Unit A #4					
Well Position	+N/-S	0.0 ft	Northing:	1,162,864.34 ft	Latitude:	37° 5' 36.780 N
	+E/-W	0.0 ft	Easting:	2,363,898.14 ft	Longitude:	107° 40' 51.600 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,675.0 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>
	BGGM2007	6/12/2009	10.22	63.83	51,130

<b>Design</b>	Plan #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	288.44	

<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	
150.0	0.00	360.00	150.0	0.0	0.0	0.00	0.00	0.00	360.00	
500.0	14.00	288.40	496.5	13.4	-40.4	4.00	4.00	0.00	288.40	
580.0	14.00	288.40	574.2	19.5	-58.7	0.00	0.00	0.00	0.00	
1,281.3	42.05	288.44	1,187.1	122.7	-368.2	4.00	4.00	0.01	0.06	
2,295.9	42.05	288.44	1,940.4	337.7	-1,012.9	0.00	0.00	0.00	0.00	
3,222.2	5.00	288.40	2,775.0	452.6	-1,357.6	4.00	-4.00	0.00	-179.99	FC DEKAY 4
3,565.5	5.00	288.40	3,117.0	462.0	-1,386.0	0.00	0.00	0.00	0.00	PC DEKAY 4
3,741.2	5.00	288.40	3,292.0	466.9	-1,400.5	0.00	0.00	0.00	0.00	PBHL DEKAY 4

# Planning Report

<b>Database:</b>	EDM - HOU 2003.16 Prod Database	<b>Local Co-ordinate Reference:</b>	Well Decay Gas Unit A #4
<b>Company:</b>	North America - Onshore US - BP	<b>TVD Reference:</b>	WELL @ 6691.9ft (h&p 291)
<b>Project:</b>	Western - San Juan North (NAD 83)	<b>MD Reference:</b>	WELL @ 6691.9ft (h&p 291)
<b>Site:</b>	Sec 23-T33N-R8W	<b>North Reference:</b>	Grid
<b>Well:</b>	Decay Gas Unit A #4	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #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>DRILL WINDOW DEKAY 4</b>									
100.0	0.00	360.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
150.0	0.00	360.00	150.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>Start Build 4.00</b>									
200.0	2.00	288.40	200.0	0.3	-0.8	0.9	4.00	4.00	0.00
300.0	6.00	288.40	299.7	2.5	-7.4	7.8	4.00	4.00	0.00
400.0	10.00	288.40	398.7	6.9	-20.6	21.8	4.00	4.00	0.00
500.0	14.00	288.40	496.5	13.4	-40.4	42.5	4.00	4.00	0.00
<b>Start 80.0 hold at 500.0 MD - 8 5/8"</b>									
580.0	14.00	288.40	574.2	19.5	-58.7	61.9	0.00	0.00	0.00
<b>Start DLS 4.00 TFO 0.06</b>									
600.0	14.80	288.40	593.5	21.1	-63.5	66.9	4.00	4.00	0.02
700.0	18.80	288.42	689.2	30.2	-90.9	95.8	4.00	4.00	0.01
800.0	22.80	288.42	782.7	41.5	-124.6	131.3	4.00	4.00	0.01
900.0	26.80	288.43	873.5	54.7	-164.3	173.2	4.00	4.00	0.01
1,000.0	30.80	288.43	961.1	69.9	-210.0	221.4	4.00	4.00	0.00
1,100.0	34.80	288.44	1,045.1	87.1	-261.4	275.5	4.00	4.00	0.00
1,200.0	38.80	288.44	1,125.2	106.0	-318.2	335.4	4.00	4.00	0.00
1,281.3	42.05	288.44	1,187.1	122.7	-368.2	388.1	4.00	4.00	0.00
<b>Start 1014.6 hold at 1281.3 MD</b>									
1,300.0	42.05	288.44	1,200.9	126.7	-380.1	400.7	0.00	0.00	0.00
1,400.0	42.05	288.44	1,275.2	147.8	-443.7	467.6	0.00	0.00	0.00
1,500.0	42.05	288.44	1,349.4	169.0	-507.2	534.6	0.00	0.00	0.00
1,600.0	42.05	288.44	1,423.7	190.2	-570.7	601.6	0.00	0.00	0.00
1,700.0	42.05	288.44	1,497.9	211.4	-634.3	668.6	0.00	0.00	0.00
1,800.0	42.05	288.44	1,572.2	232.6	-697.8	735.6	0.00	0.00	0.00
1,890.0	42.05	288.44	1,639.0	251.7	-755.0	795.8	0.00	0.00	0.00
<b>Animas</b>									
1,900.0	42.05	288.44	1,646.5	253.8	-761.4	802.6	0.00	0.00	0.00
2,000.0	42.05	288.44	1,720.7	275.0	-824.9	869.5	0.00	0.00	0.00
2,100.0	42.05	288.44	1,795.0	296.2	-888.4	936.5	0.00	0.00	0.00
2,151.2	42.05	288.44	1,833.0	307.0	-921.0	970.8	0.00	0.00	0.00
<b>Kirtland Shale</b>									
2,200.0	42.05	288.44	1,869.2	317.4	-952.0	1,003.5	0.00	0.00	0.00
2,295.9	42.05	288.44	1,940.4	337.7	-1,012.9	1,067.7	0.00	0.00	0.00
<b>Start DLS 4.00 TFO -179.99</b>									
2,300.0	41.89	288.44	1,943.5	338.6	-1,015.5	1,070.5	4.00	-4.00	0.00
2,400.0	37.89	288.44	2,020.2	358.8	-1,076.3	1,134.6	4.00	-4.00	0.00
2,500.0	33.89	288.44	2,101.2	377.4	-1,131.9	1,193.2	4.00	-4.00	0.00
2,509.4	33.51	288.44	2,109.0	379.0	-1,136.9	1,198.4	4.00	-4.00	0.00
<b>Farmington SS</b>									
2,600.0	29.89	288.44	2,186.1	394.1	-1,182.0	1,246.0	4.00	-4.00	0.00
2,700.0	25.89	288.44	2,274.4	408.9	-1,226.4	1,292.8	4.00	-4.00	0.00
2,800.0	21.89	288.44	2,365.9	421.7	-1,264.8	1,333.3	4.00	-4.00	0.00
2,900.0	17.89	288.43	2,459.9	432.4	-1,297.1	1,367.3	4.00	-4.00	0.00
2,966.9	15.21	288.43	2,524.0	438.5	-1,315.2	1,386.3	4.00	-4.00	0.00
<b>Lower Kirtland Sh</b>									
3,000.0	13.89	288.43	2,556.0	441.1	-1,323.0	1,394.6	4.00	-4.00	0.00
3,100.0	9.89	288.42	2,653.9	447.6	-1,342.6	1,415.2	4.00	-4.00	-0.01
3,200.0	5.89	288.41	2,752.9	451.9	-1,355.6	1,429.0	4.00	-4.00	-0.02
3,222.2	5.00	288.40	2,775.0	452.6	-1,357.6	1,431.1	4.00	-4.00	-0.03

## Planning Report

<b>Database:</b>	EDM - HOU 2003.16 Prod Database	<b>Local Co-ordinate Reference:</b>	Well Dekay Gas Unit A #4
<b>Company:</b>	North America - Onshore US - BP	<b>TVD Reference:</b>	WELL @ 6691.9ft (h&p 291)
<b>Project:</b>	Western - San Juan North (NAD 83)	<b>MD Reference:</b>	WELL @ 6691.9ft (h&p 291)
<b>Site:</b>	Sec 23-T33N-R8W	<b>North Reference:</b>	Grid
<b>Well:</b>	Dekay Gas Unit A #4	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #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)	
<b>Start 343.3 hold at 3222.2 MD - Fruitland Coal - FC DEKAY 4</b>										
3,300.0	5.00	288.40	2,852.5	454.7	-1,364.0	1,437.8	0.00	0.00	0.00	
3,400.0	5.00	288.40	2,952.1	457.5	-1,372.3	1,446.6	0.00	0.00	0.00	
3,500.0	5.00	288.40	3,051.8	460.2	-1,380.6	1,455.3	0.00	0.00	0.00	
3,565.5	5.00	288.40	3,117.0	462.0	-1,386.0	1,461.0	0.00	0.00	0.00	
<b>Start 175.7 hold at 3565.5 MD - Pictured Cliffs SS - PC DEKAY 4</b>										
3,600.0	5.00	288.40	3,151.4	463.0	-1,388.8	1,464.0	0.00	0.00	0.00	
3,700.0	5.00	288.40	3,251.0	465.7	-1,397.1	1,472.7	0.00	0.00	0.00	
3,741.2	5.00	288.40	3,292.0	466.9	-1,400.5	1,476.3	0.00	0.00	0.00	
<b>PBHL DEKAY 4</b>										

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	
PBHL DEKAY 4 - plan hits target center - Circle (radius 100.0)	0.00	0.00	3,292.0	466.9	-1,400.5	1,163,331.25	2,362,497.60	37° 5' 41.071 N	107° 41' 9.016 W	
DRILL WINDOW DEK - plan hits target center - Polygon	0.00	360.00	0.0	0.0	0.0	1,162,864.34	2,363,898.14	37° 5' 36.780 N	107° 40' 51.600 W	
Point 1			0.0	495.3	365.5	1,163,359.65	2,364,263.65			
Point 2			0.0	564.4	-3,601.2	1,163,428.75	2,360,296.84			
Point 3			0.0	-745.1	-3,627.8	1,162,119.22	2,360,270.24			
Point 4			0.0	-806.9	334.2	1,162,057.41	2,364,232.35			
PC DEKAY 4 - plan hits target center - Point	0.00	360.00	3,117.0	462.0	-1,386.0	1,163,326.35	2,362,512.10	37° 5' 41.026 N	107° 41' 8.835 W	
FC DEKAY 4 - plan hits target center - Point	0.00	0.00	2,775.0	452.6	-1,357.6	1,163,316.95	2,362,540.51	37° 5' 40.940 N	107° 41' 8.482 W	

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name			Casing Diameter (")	Hole Diameter (")
500.0	496.5	8 5/8"			8-5/8	12-1/4

## Planning Report

<b>Database:</b>	EDM - HOU 2003.16 Prod Database	<b>Local Co-ordinate Reference:</b>	Well Dekay Gas Unit A #4
<b>Company:</b>	North America - Onshore US - BP	<b>TVD Reference:</b>	WELL @ 6691.9ft (h&p 291)
<b>Project:</b>	Western - San Juan North (NAD 83)	<b>MD Reference:</b>	WELL @ 6691.9ft (h&p 291)
<b>Site:</b>	Sec 23-T33N-R8W	<b>North Reference:</b>	Grid
<b>Well:</b>	Dekay Gas Unit A #4	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,890.0	1,639.0	Animas		0.00	0.16
2,151.2	1,833.0	Kirtland Shale		0.00	0.16
2,509.4	2,109.0	Farmington SS		0.00	0.16
2,966.9	2,524.0	Lower Kirtland Sh		0.00	0.16
3,222.2	2,775.0	Fruitland Coal		0.00	0.16
3,565.5	3,117.0	Pictured Cliffs SS		0.00	0.16

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
150.0	150.0	0.0	0.0	Start Build 4.00
500.0	496.5	13.4	-40.4	Start 80.0 hold at 500.0 MD
580.0	574.2	19.5	-58.7	Start DLS 4.00 TFO 0.06
1,281.3	1,187.1	122.7	-368.2	Start 1014.6 hold at 1281.3 MD
2,295.9	1,940.4	337.7	-1,012.9	Start DLS 4.00 TFO -179.99
3,222.2	2,775.0	452.6	-1,357.6	Start 343.3 hold at 3222.2 MD
3,565.5	3,117.0	462.0	-1,386.0	Start 175.7 hold at 3565.5 MD
3,741.2	3,292.0	466.9	-1,400.5	TD at 3741.2