

Scientific Drilling

RCVD OCT24'06

OIL CONS. DIV.

DIST. 3

North America - Onshore US - BP

Western - San Juan South

SEC32-T32N-R10W

Valentine GC #1M

OH 30-045-33218

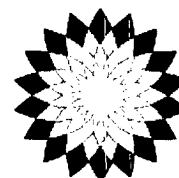
Design: ACTUAL

Standard Survey Report

21 August, 2006

Surface 350/N 2420/W
Last survey BHL 817/N 2600/W MD 2458
TVI 2388

HOLD C104 FOR Bottomhole survey at T/D



bp

Company:	North America - Onshore US - BP	Local Co-ordinate Reference:	Well Valentine GC #1M
Project:	Western - San Juan South	TVD Reference:	RKB,MSL @ 5998.00ft (AZTEC 184)
Site:	SEC32-T32N-R10W	MD Reference:	RKB,MSL @ 5998.00ft (AZTEC 184)
Well:	Valentine GC #1M	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	EDM - Houston - Production

Project	Western - San Juan South		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone	Using geodetic scale factor	

Site	SEC32-T32N-R10W				
Site Position:		Northing:	2,164,411.759 ft	Latitude:	36° 56' 52.823" N
From:	Lease	Easting:	2,701,906.589 ft	Longitude:	107° 54' 21.001" W
Position Uncertainty:	0.00 ft	Slot Radius:	0.000 in	Grid Convergence:	-0.04 °

Well	Valentine GC #1M					
Well Position	+N/-S	0.00 ft	Northing:	2,164,411.759 ft	Latitude:	36° 56' 52.823" N
	+E/-W	0.00 ft	Easting:	2,701,906.589 ft	Longitude:	107° 54' 21.001" W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,984.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2005	6/29/2006	10.62	63.77	51,351

Design	ACTUAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	158.884	

Survey Program	Date	8/21/2006			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
258.00	2,458.00	MWD Survey (OH)	MWD ISCWSA	MWD - Standard	
2,475.00	7,588.00	Extrapolated Survey (OH)	BLIND	Blind drilling	

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)	
0.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
258.00	0.650	135.060	257.99	-1.04	1.03	1.34	0.25	0.25	0.00	
304.00	0.620	116.960	303.99	-1.33	1.44	1.76	0.44	-0.07	-39.35	
334.00	1.340	151.880	333.99	-1.72	1.75	2.23	3.01	2.40	116.40	
364.00	2.010	147.370	363.97	-2.47	2.20	3.10	2.27	2.23	-15.03	
395.00	2.970	150.180	394.94	-3.62	2.89	4.42	3.12	3.10	9.06	
425.00	3.980	146.420	424.89	-5.17	3.85	6.21	3.45	3.37	-12.53	
456.00	5.040	151.940	455.79	-7.26	5.09	8.61	3.69	3.42	17.81	
487.00	6.350	152.390	486.64	-9.98	6.52	11.66	4.23	4.23	1.45	
518.00	7.550	154.990	517.41	-13.35	8.18	15.40	4.00	3.87	8.39	
549.00	8.010	157.420	548.13	-17.19	9.87	19.59	1.82	1.48	7.84	
579.00	8.820	158.640	577.80	-21.26	11.51	23.98	2.76	2.70	4.07	

Company:	North America - Onshore US - BP	Local Co-ordinate Reference:	Well Valentine GC #1M
Project:	Western - San Juan South	TVD Reference:	RKB,MSL @ 5998.00ft (AZTEC 184)
Site:	SEC32-T32N-R10W	MD Reference:	RKB,MSL @ 5998.00ft (AZTEC 184)
Well:	Valentine GC #1M	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	EDM - Houston - Production

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)
	609.00	9.490	161.540	607.42	-25.75	13.13	28.75	2.71	2.23	9.67
	640.00	10.710	161.630	637.94	-30.91	14.85	34.18	3.94	3.94	0.29
	670.00	11.850	159.800	667.36	-36.44	16.79	40.05	3.98	3.80	-6.10
	701.00	12.760	161.170	697.65	-42.67	18.99	46.65	3.08	2.94	4.42
	732.00	13.610	157.940	727.83	-49.29	21.47	53.72	3.63	2.74	-10.42
	762.00	14.800	158.100	756.91	-56.12	24.22	61.08	3.97	3.97	0.53
	792.00	15.720	157.550	785.85	-63.43	27.21	68.97	3.10	3.07	-1.83
	822.00	16.480	156.570	814.68	-71.09	30.45	77.29	2.69	2.53	-3.27
	853.00	17.630	156.770	844.31	-79.44	34.05	86.37	3.71	3.71	0.65
	883.00	18.350	158.700	872.85	-88.01	37.56	95.63	3.12	2.40	6.43
	947.00	18.690	157.550	933.53	-106.88	45.13	115.96	0.78	0.53	-1.80
	1,010.00	18.790	156.960	993.19	-125.54	52.96	136.19	0.34	0.16	-0.94
	1,075.00	18.680	158.450	1,054.75	-144.86	60.88	157.06	0.76	-0.17	2.29
	1,138.00	18.630	161.050	1,114.44	-163.76	67.85	177.21	1.32	-0.08	4.13
	1,202.00	18.730	161.570	1,175.07	-183.18	74.42	197.69	0.30	0.16	0.81
	1,265.00	18.210	162.330	1,234.82	-202.15	80.61	217.62	0.91	-0.83	1.21
	1,328.00	17.560	161.610	1,294.78	-220.55	86.59	236.94	1.09	-1.03	-1.14
	1,392.00	17.910	159.310	1,355.74	-238.92	93.12	256.42	1.22	0.55	-3.59
	1,455.00	18.730	160.680	1,415.54	-257.53	99.88	276.22	1.47	1.30	2.17
	1,518.00	18.880	161.260	1,475.18	-276.72	106.51	296.51	0.38	0.24	0.92
	1,581.00	18.760	159.790	1,534.81	-295.88	113.28	316.83	0.78	-0.19	-2.33
	1,645.00	18.810	161.980	1,595.41	-315.35	120.03	337.42	1.10	0.08	3.42
	1,740.00	18.570	162.490	1,685.40	-344.34	129.32	367.81	0.31	-0.25	0.54
	1,772.00	18.580	161.670	1,715.73	-354.04	132.45	377.99	0.82	0.03	-2.56
	1,804.00	18.440	161.780	1,746.07	-363.69	135.64	388.13	0.45	-0.44	0.34
	1,835.00	17.910	162.050	1,775.53	-372.88	138.64	397.79	1.73	-1.71	0.87
	1,867.00	17.030	160.750	1,806.05	-381.99	141.70	407.39	3.01	-2.75	-4.06
	1,898.00	16.240	159.930	1,835.75	-390.34	144.69	416.26	2.66	-2.55	-2.65
	1,930.00	15.630	157.120	1,866.52	-398.52	147.90	425.04	3.07	-1.91	-8.78
	1,962.00	15.070	157.400	1,897.38	-406.33	151.17	433.51	1.77	-1.75	0.87
	1,993.00	14.180	155.480	1,927.38	-413.50	154.30	441.33	3.27	-2.87	-6.19
	2,025.00	13.100	153.510	1,958.47	-420.32	157.54	448.85	3.67	-3.37	-6.16
	2,057.00	12.180	153.880	1,989.70	-426.59	160.65	455.82	2.89	-2.87	1.16
	2,088.00	11.390	154.100	2,020.05	-432.28	163.42	462.13	2.55	-2.55	0.71
	2,120.00	10.350	154.550	2,051.47	-437.72	166.04	468.15	3.26	-3.25	1.41
	2,153.00	9.440	154.990	2,083.98	-442.85	168.46	473.80	2.77	-2.76	1.33
	2,184.00	8.320	154.230	2,114.61	-447.17	170.51	478.57	3.63	-3.61	-2.45
	2,216.00	7.400	153.140	2,146.31	-451.10	172.44	482.93	2.91	-2.87	-3.41
	2,248.00	6.600	153.590	2,178.07	-454.58	174.19	486.81	2.51	-2.50	1.41
	2,280.00	5.800	155.220	2,209.88	-457.70	175.69	490.26	2.56	-2.50	5.09
	2,311.00	5.150	154.440	2,240.74	-460.38	176.95	493.21	2.11	-2.10	-2.52
	2,343.00	4.230	155.040	2,272.63	-462.74	178.06	495.82	2.88	-2.87	1.87
	2,375.00	3.320	158.200	2,304.56	-464.67	178.91	497.92	2.92	-2.84	9.87
	2,400.00	2.370	154.960	2,329.53	-465.81	179.39	499.16	3.85	-3.80	-12.96
	2,450.00	0.473	152.634	2,379.51	-466.93	179.93	500.40	3.80	-3.79	-4.65
7 5/8										
	2,452.49	0.378	151.909	2,382.00	-466.95	179.93	500.42	3.80	-3.79	-29.14
CSG PT-VALENTINE										
	2,458.00	0.170	147.440	2,387.51	-466.97	179.95	500.44	3.80	-3.78	-81.07
	2,475.00	0.000	0.000	2,404.51	-466.99	179.96	500.47	1.00	-1.00	0.00
	2,502.49	0.000	0.000	2,432.00	-466.99	179.96	500.47	0.00	0.00	0.00
FC-VALENTINE										
	6,680.00	0.000	0.000	6,609.51	-466.99	179.96	500.47	0.00	0.00	0.00
5 1/2"										

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Well:	Valentine GC #1M	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	EDM - Houston - Production

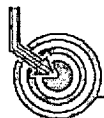
Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,525.49	0.000	0.000	7,455.00	-466.99	179.96	500.47	0.00	0.00	0.00
PBHL-VALENTINE									
7,588.00	0.000	0.000	7,517.51	-466.99	179.96	500.47	0.00	0.00	0.00
TD									

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S ft	+E/-W ft	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL-VALENTINE	0.00	0.00	7,455.00	-465.00	180.00	2,163,946.797	2,702,086.574	36° 56' 48.227" N	107° 54' 18.779" W
- actual wellpath misses by 1.99ft at 7525.49ft MD (7455.00 TVD, -466.99 N, 179.96 E)									
- Circle (radius 100.00)									
CSG PT-VALENTINE	0.00	0.00	2,382.00	-465.00	180.00	2,163,946.797	2,702,086.574	36° 56' 48.227" N	107° 54' 18.779" W
- actual wellpath misses by 1.95ft at 2452.49ft MD (2382.00 TVD, -466.95 N, 179.93 E)									
- Point									
FC-VALENTINE	0.00	0.00	2,432.00	-465.00	180.00	2,163,946.797	2,702,086.574	36° 56' 48.227" N	107° 54' 18.779" W
- actual wellpath misses by 1.99ft at 2502.49ft MD (2432.00 TVD, -466.99 N, 179.96 E)									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (in)	Hole Diameter (in)
2,450.00	2,379.51	7 5/8		7.625	7.625
6,680.00	6,609.51	5 1/2"		5.500	6.000

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,588.00	7,517.51	-466.99	179.96	TD

Checked By: _____	Approved By: _____	Date: _____
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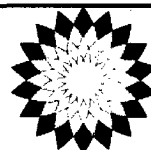


Scientific Drilling

Project: Western - San Juan South
Site: SEC32-T32N-R10W
Well: Valentine GC #1M
Wellbore: OH
Design: ACTUAL

RCVD OCT24'06
OIL CONS DIV.

DIST. 3



bp

SURVEY PROGRAM

Date: 2006-08-21T00:00:00 Validated: Yes Version:

Depth From	Depth To	Survey/Plan	Tool
258.00	2458.00		MWD ISCWSA
2475.00	7588.00		BLIND

LEGEND

- Valentine GC #1M, OH, plan 2 V4
- ACTUAL



Azimuths to Grid North
True North: 0.04°
Magnetic North: 10.66°

Magnetic Field
Strength: 51351.4nT
Dip Angle: 63.77°
Date: 6/29/2006
Model: BGGM2005

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
CSG PT-VALENTINE	2382.00	-465.00	180.00	2163946.797	2702086.574	36°56'48.227N	107°54'18.779W	Point
FC-VALENTINE	2432.00	-465.00	180.00	2163946.797	2702086.574	36°56'48.227N	107°54'18.779W	Point
PBHL-VALENTINE	7455.00	-465.00	180.00	2163946.797	2702086.574	36°56'48.227N	107°54'18.779W	Circle (Radius: 100.00)

WELL DETAILS: Valentine GC #1M

Ground Level:	5984.00		
Northing	Easting	Latitude	Longitude
2164411.759	2701906.589	36°56'52.823N	107°54'21.001W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Valentine GC #1M, Grid North
Vertical (TVD) Reference: RKB,MSL @ 5998.00ft (AZTEC 184)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: RKB,MSL @ 5998.00ft (AZTEC 184)
Calculation Method: Minimum Curvature

