Petroleum Development Corp.

Mesa
NW Sec 36-T6S-R97W
Puckett 12B-36D

DD

Survey: Survey #1

Standard Survey Report

25 April, 2011

PHOENIX
TECHNOLOGY SERVICES

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 12B-36D
Project:	Mesa	**TVD Reference:**	Puckett 12B-36D KBE @ 8399.0ft (H&P 318)
Site:	NW Sec 36-T6S-R97W	**MD Reference:**	Puckett 12B-36D KBE @ 8399.0ft (H&P 318)
Well:	Puckett 12B-36D	**North Reference:**	True
Wellbore:	DD	**Survey Calculation Method:**	Minimum Curvature
Design:	DD	**Database:**	Local

Project Mesa

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site NW Sec 36-T6S-R97W

Site Position:		**Northing:**		**Latitude:**	
From:	Lat/Long	**Easting:**		**Longitude:**	
Position Uncertainty:	0.0 ft	**Slot Radius:**		**Grid Convergence:**	1.00

Well Puckett 12B-36D

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,612,614.18 ft	**Latitude:**	39.484892
	+E/-W	0.0 ft	**Easting:**	2,245,157.02 ft	**Longitude:**	-108.174811
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	8,375.0 ft

Wellbore DD

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010-14	05/27/10	10.56	65.72	52,307

Design DD

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.0	0.0	0.0	216.56

Survey Program **Date** 04/25/11

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
152.0	9,036.0	Survey #1 (DD)	MWD	Geolink MWD

Survey

Measured Depth (ft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (ft)**	**Subsea 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	-8,399.0	0.0	0.0	0.0	0.00	0.00	0.00
152.0	0.80	172.30	152.0	-8,247.0	-1.1	0.1	0.8	0.53	0.53	0.00
245.0	1.20	199.00	245.0	-8,154.0	-2.6	-0.1	2.2	0.65	0.43	28.71
339.0	1.90	219.10	338.9	-8,060.1	-4.8	-1.4	4.6	0.93	0.74	21.38
429.0	3.70	241.20	428.8	-7,970.2	-7.3	-4.9	8.8	2.30	2.00	24.56
522.0	4.00	232.90	521.6	-7,877.4	-10.7	-10.1	14.6	0.68	0.32	-8.92
613.0	5.40	219.40	612.3	-7,786.7	-15.9	-15.3	21.9	1.95	1.54	-14.84
705.0	6.20	218.30	703.9	-7,695.1	-23.2	-21.2	31.2	0.88	0.87	-1.20
800.0	7.60	212.90	798.2	-7,600.8	-32.5	-27.8	42.6	1.62	1.47	-5.68
894.0	8.60	214.70	891.2	-7,507.8	-43.5	-35.1	55.9	1.10	1.06	1.91

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 12B-36D
Project:	Mesa	**TVD Reference:**	Puckett 12B-36D KBE @ 8399.0ft (H&P 318)
Site:	NW Sec 36-T6S-R97W	**MD Reference:**	Puckett 12B-36D KBE @ 8399.0ft (H&P 318)
Well:	Puckett 12B-36D	**North Reference:**	True
Wellbore:	DD	**Survey Calculation Method:**	Minimum Curvature
Design:	DD	**Database:**	Local

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
989.0	9.30	211.60	985.1	-7,413.9	-55.9	-43.2	70.6	0.89	0.74	-3.26
1,083.0	9.60	207.70	1,077.8	-7,321.2	-69.3	-50.8	85.9	0.75	0.32	-4.15
1,177.0	8.60	212.50	1,170.6	-7,228.4	-82.1	-58.2	100.7	1.33	-1.06	5.11
1,273.0	8.60	215.30	1,265.5	-7,133.5	-94.0	-66.3	115.0	0.44	0.00	2.92
1,366.0	9.60	210.30	1,357.4	-7,041.6	-106.4	-74.2	129.7	1.37	1.08	-5.38
1,460.0	8.80	214.80	1,450.2	-6,948.8	-119.1	-82.2	144.6	1.14	-0.85	4.79
1,555.0	9.60	211.60	1,543.9	-6,855.1	-131.8	-90.5	159.8	1.00	0.84	-3.37
1,649.0	9.50	216.00	1,636.6	-6,762.4	-144.8	-99.2	175.4	0.78	-0.11	4.68
1,744.0	10.30	222.70	1,730.2	-6,668.8	-157.3	-109.6	191.7	1.47	0.84	7.05
1,838.0	11.30	222.80	1,822.5	-6,576.5	-170.3	-121.5	209.2	1.06	1.06	0.11
1,932.0	9.90	217.70	1,914.9	-6,484.1	-183.4	-132.7	226.4	1.79	-1.49	-5.43
2,027.0	10.60	216.90	2,008.4	-6,390.6	-196.9	-143.0	243.3	0.75	0.74	-0.84
2,121.0	10.40	215.00	2,100.9	-6,298.1	-210.7	-153.0	260.4	0.43	-0.21	-2.02
2,312.0	8.50	227.70	2,289.3	-6,109.7	-234.4	-173.4	291.5	1.47	-0.99	6.65
2,406.0	9.30	217.90	2,382.1	-6,016.9	-245.0	-183.2	305.9	1.82	0.85	-10.43
2,501.0	11.30	216.80	2,475.6	-5,923.4	-258.5	-193.5	322.9	2.12	2.11	-1.16
2,595.0	13.40	215.10	2,567.4	-5,831.6	-274.8	-205.2	343.0	2.27	2.23	-1.81
2,689.0	14.00	219.70	2,658.8	-5,740.2	-292.5	-218.8	365.3	1.32	0.64	4.89
2,783.0	14.30	216.40	2,749.9	-5,649.1	-310.6	-232.9	388.2	0.92	0.32	-3.51
2,877.0	14.10	216.10	2,841.0	-5,558.0	-329.2	-246.6	411.3	0.23	-0.21	-0.32
2,972.0	13.30	216.30	2,933.3	-5,465.7	-347.3	-259.8	433.8	0.84	-0.84	0.21
3,066.0	14.00	216.70	3,024.7	-5,374.3	-365.2	-273.0	456.0	0.75	0.74	0.43
3,160.0	13.30	212.10	3,116.0	-5,283.0	-383.4	-285.6	478.1	1.37	-0.74	-4.89
3,254.0	13.90	214.60	3,207.4	-5,191.6	-401.9	-297.7	500.2	0.89	0.64	2.66
3,348.0	14.00	214.90	3,298.6	-5,100.4	-420.5	-310.7	522.8	0.13	0.11	0.32
3,443.0	14.50	214.40	3,390.7	-5,008.3	-439.8	-323.9	546.2	0.54	0.53	-0.53
3,536.0	14.10	215.50	3,480.8	-4,918.2	-458.6	-337.1	569.2	0.52	-0.43	1.18
3,630.0	13.20	213.00	3,572.2	-4,826.8	-476.9	-349.6	591.3	1.14	-0.96	-2.66
3,724.0	14.90	213.10	3,663.3	-4,735.7	-496.0	-362.0	614.1	1.81	1.81	0.11
3,818.0	14.40	212.30	3,754.3	-4,644.7	-516.0	-374.9	637.8	0.57	-0.53	-0.85
3,912.0	13.90	214.30	3,845.4	-4,553.6	-535.2	-387.5	660.7	0.74	-0.53	2.13
4,007.0	13.20	212.60	3,937.8	-4,461.2	-553.8	-399.8	683.0	0.85	-0.74	-1.79
4,101.0	14.80	214.40	4,029.0	-4,370.0	-572.8	-412.3	705.7	1.76	1.70	1.91
4,195.0	14.30	213.90	4,120.0	-4,279.0	-592.3	-425.6	729.3	0.55	-0.53	-0.53
4,289.0	15.00	221.40	4,210.9	-4,188.1	-611.1	-440.1	753.0	2.15	0.74	7.98
4,384.0	14.60	220.50	4,302.8	-4,096.2	-629.4	-456.0	777.2	0.49	-0.42	-0.95
4,478.0	14.90	222.60	4,393.7	-4,005.3	-647.3	-471.9	801.0	0.65	0.32	2.23
4,572.0	14.30	219.70	4,484.6	-3,914.4	-665.1	-487.5	824.6	1.01	-0.64	-3.09
4,667.0	14.30	218.30	4,576.7	-3,822.3	-683.4	-502.3	848.1	0.36	0.00	-1.47
4,761.0	14.50	219.30	4,667.8	-3,731.2	-701.6	-516.9	871.4	0.34	0.21	1.06
4,855.0	13.50	219.10	4,759.0	-3,640.0	-719.2	-531.3	894.2	1.07	-1.06	-0.21
4,950.0	12.00	220.70	4,851.6	-3,547.4	-735.3	-544.7	915.1	1.62	-1.58	1.68
5,044.0	12.20	211.60	4,943.5	-3,455.5	-751.2	-556.3	934.7	2.04	0.21	-9.68

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 12B-36D
Project:	Mesa	**TVD Reference:**	Puckett 12B-36D KBE @ 8399.0ft (H&P 318)
Site:	NW Sec 36-T6S-R97W	**MD Reference:**	Puckett 12B-36D KBE @ 8399.0ft (H&P 318)
Well:	Puckett 12B-36D	**North Reference:**	True
Wellbore:	DD	**Survey Calculation Method:**	Minimum Curvature
Design:	DD	**Database:**	Local

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,138.0	13.40	210.40	5,035.2	-3,363.8	-769.0	-567.0	955.4	1.31	1.28	-1.28
5,233.0	13.90	219.50	5,127.5	-3,271.5	-787.3	-579.8	977.8	2.32	0.53	9.58
5,327.0	14.40	220.80	5,218.7	-3,180.3	-804.9	-594.7	1,000.7	0.63	0.53	1.38
5,421.0	14.60	220.50	5,309.7	-3,089.3	-822.7	-610.0	1,024.2	0.23	0.21	-0.32
5,516.0	14.30	219.00	5,401.7	-2,997.3	-841.0	-625.2	1,047.9	0.50	-0.32	-1.58
5,610.0	14.60	221.30	5,492.7	-2,906.3	-858.9	-640.3	1,071.3	0.69	0.32	2.45
5,704.0	13.20	218.00	5,583.9	-2,815.1	-876.2	-654.7	1,093.8	1.71	-1.49	-3.51
5,799.0	12.90	213.40	5,676.5	-2,722.5	-893.6	-667.2	1,115.2	1.14	-0.32	-4.84
5,893.0	13.40	212.40	5,768.0	-2,631.0	-911.6	-678.8	1,136.6	0.58	0.53	-1.06
5,987.0	12.60	212.60	5,859.6	-2,539.4	-929.4	-690.2	1,157.7	0.85	-0.85	0.21
6,081.0	11.60	210.00	5,951.5	-2,447.5	-946.3	-700.4	1,177.3	1.21	-1.06	-2.77
6,176.0	10.10	217.00	6,044.8	-2,354.2	-961.2	-710.2	1,195.1	2.10	-1.58	7.37
6,270.0	10.00	216.40	6,137.4	-2,261.6	-974.3	-720.0	1,211.5	0.15	-0.11	-0.64
6,364.0	7.40	210.80	6,230.3	-2,168.7	-986.1	-728.0	1,225.7	2.91	-2.77	-5.96
6,459.0	6.10	218.40	6,324.6	-2,074.4	-995.3	-734.2	1,236.8	1.66	-1.37	8.00
6,553.0	5.30	218.40	6,418.2	-1,980.8	-1,002.6	-740.0	1,246.2	0.85	-0.85	0.00
6,647.0	4.10	231.70	6,511.9	-1,887.1	-1,008.1	-745.4	1,253.7	1.72	-1.28	14.15
6,741.0	1.40	200.50	6,605.8	-1,793.2	-1,011.3	-748.4	1,258.1	3.18	-2.87	-33.19
6,836.0	2.70	199.40	6,700.7	-1,698.3	-1,014.5	-749.6	1,261.4	1.37	1.37	-1.16
6,930.0	2.90	203.60	6,794.6	-1,604.4	-1,018.7	-751.3	1,265.8	0.30	0.21	4.47
7,024.0	2.00	200.30	6,888.5	-1,510.5	-1,022.5	-752.8	1,269.7	0.97	-0.96	-3.51
7,119.0	1.90	215.70	6,983.4	-1,415.6	-1,025.3	-754.3	1,272.8	0.56	-0.11	16.21
7,214.0	1.00	237.20	7,078.4	-1,320.6	-1,027.0	-755.9	1,275.2	1.09	-0.95	22.63
7,308.0	1.10	262.40	7,172.4	-1,226.6	-1,027.6	-757.5	1,276.6	0.50	0.11	26.81
7,402.0	0.60	245.50	7,266.4	-1,132.6	-1,027.9	-758.8	1,277.6	0.59	-0.53	-17.98
7,497.0	1.30	52.30	7,361.4	-1,037.6	-1,027.5	-758.4	1,277.0	1.99	0.74	175.58
7,591.0	1.40	69.70	7,455.3	-943.7	-1,026.4	-756.5	1,275.1	0.45	0.11	18.51
7,685.0	0.60	103.10	7,549.3	-849.7	-1,026.1	-754.9	1,273.9	1.02	-0.85	35.53
7,780.0	0.40	191.10	7,644.3	-754.7	-1,026.6	-754.5	1,274.0	0.75	-0.21	92.63
7,874.0	1.70	219.90	7,738.3	-660.7	-1,027.9	-755.5	1,275.7	1.45	1.38	30.64
7,968.0	1.20	172.50	7,832.3	-566.7	-1,030.0	-756.2	1,277.8	1.33	-0.53	-50.43
8,063.0	0.90	117.50	7,927.3	-471.7	-1,031.3	-755.5	1,278.4	1.06	-0.32	-57.89
8,157.0	1.50	157.90	8,021.3	-377.7	-1,032.8	-754.3	1,278.9	1.07	0.64	42.98
8,251.0	1.10	137.60	8,115.2	-283.8	-1,034.6	-753.3	1,279.7	0.64	-0.43	-21.60
8,346.0	0.20	113.00	8,210.2	-188.8	-1,035.3	-752.5	1,279.9	0.97	-0.95	-25.89
8,440.0	0.80	192.80	8,304.2	-94.8	-1,036.1	-752.5	1,280.4	0.84	0.64	84.89
8,534.0	1.40	224.90	8,398.2	-0.8	-1,037.5	-753.4	1,282.2	0.89	0.64	34.15
8,629.0	1.80	231.70	8,493.2	94.2	-1,039.3	-755.4	1,284.7	0.47	0.42	7.16
8,723.0	2.50	242.50	8,587.1	188.1	-1,041.1	-758.4	1,288.0	0.86	0.74	11.49
8,818.0	3.20	241.50	8,682.0	283.0	-1,043.3	-762.6	1,292.3	0.74	0.74	-1.05
8,912.0	3.10	228.40	8,775.8	376.8	-1,046.3	-766.8	1,297.1	0.77	-0.11	-13.94
8,986.0	3.00	236.40	8,849.7	450.7	-1,048.7	-769.9	1,300.9	0.59	-0.14	10.81

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 12B-36D
Project:	Mesa	**TVD Reference:**	Puckett 12B-36D KBE @ 8399.0ft (H&P 318)
Site:	NW Sec 36-T6S-R97W	**MD Reference:**	Puckett 12B-36D KBE @ 8399.0ft (H&P 318)
Well:	Puckett 12B-36D	**North Reference:**	True
Wellbore:	DD	**Survey Calculation Method:**	Minimum Curvature
Design:	DD	**Database:**	Local

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Projection to Bit										
9,036.0	3.00	236.40	8,899.7	500.7	-1,050.1	-772.1	1,303.4	0.00	0.00	0.00

Survey Annotations

Measured Depth ()	Vertical Depth ()	Local Coordinates +N/-S ()	Local Coordinates +E/-W ()	Comment
9,036.0	8,899.7	-1,050.1	-772.1	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____