Petroleum Development Corp.

Mesa
NW Sec 36-T6S-R97W
Puckett 11B-36D

DD

Survey: Survey #1

Standard Survey Report

22 May, 2011

PHOENIX
TECHNOLOGY SERVICES

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 11B-36D
Project:	Mesa	**TVD Reference:**	Puckett 11B-36D KBE @ 8399.0ft (H&P 318)
Site:	NW Sec 36-T6S-R97W	**MD Reference:**	Puckett 11B-36D KBE @ 8399.0ft (H&P 318)
Well:	Puckett 11B-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 11B-36D

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,612,662.71 ft	**Latitude:**	39.485028
	+E/-W	0.0 ft	**Easting:**	2,245,192.05 ft	**Longitude:**	-108.174692
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	05/09/11	10.44	65.70	52,211

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	284.08

Survey Program **Date** 05/22/11

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
164.0	8,990.0	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
164.0	1.30	227.50	164.0	-8,235.0	-1.3	-1.4	1.0	0.79	0.79	0.00
245.0	1.70	247.60	245.0	-8,154.0	-2.3	-3.2	2.5	0.81	0.49	24.81
337.0	4.70	307.90	336.8	-8,062.2	-0.5	-7.4	7.0	4.49	3.26	65.54
429.0	7.20	304.30	428.3	-7,970.7	5.0	-15.1	15.9	2.75	2.72	-3.91
552.0	7.50	286.30	550.3	-7,848.7	11.6	-29.2	31.2	1.88	0.24	-14.63
613.0	9.00	279.40	610.7	-7,788.3	13.5	-37.7	39.9	2.94	2.46	-11.31
705.0	8.20	280.10	701.7	-7,697.3	15.8	-51.3	53.6	0.88	-0.87	0.76
800.0	7.70	280.80	795.7	-7,603.3	18.2	-64.2	66.7	0.54	-0.53	0.74
894.0	7.20	284.40	889.0	-7,510.0	20.9	-76.1	78.9	0.73	-0.53	3.83

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Well:	Puckett 11B-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)
988.0	7.30	276.80	982.2	-7,416.8	23.0	-87.7	90.7	1.03	0.11	-8.09
1,083.0	7.50	274.10	1,076.4	-7,322.6	24.2	-99.9	102.8	0.42	0.21	-2.84
1,177.0	6.80	277.90	1,169.7	-7,229.3	25.4	-111.6	114.4	0.90	-0.74	4.04
1,271.0	6.30	288.60	1,263.1	-7,135.9	27.8	-122.0	125.1	1.40	-0.53	11.38
1,366.0	6.50	290.80	1,357.5	-7,041.5	31.4	-131.9	135.6	0.33	0.21	2.32
1,460.0	6.10	290.80	1,450.9	-6,948.1	35.1	-141.6	145.8	0.43	-0.43	0.00
1,554.0	6.60	290.10	1,544.3	-6,854.7	38.7	-151.3	156.2	0.54	0.53	-0.74
1,649.0	7.20	293.60	1,638.6	-6,760.4	42.9	-161.9	167.5	0.77	0.63	3.68
1,743.0	7.20	280.30	1,731.9	-6,667.1	46.4	-173.1	179.2	1.77	0.00	-14.15
1,838.0	7.10	273.10	1,826.2	-6,572.8	47.7	-184.8	190.9	0.95	-0.11	-7.58
1,932.0	6.70	277.60	1,919.5	-6,479.5	48.8	-196.0	202.0	0.72	-0.43	4.79
2,027.0	6.60	287.20	2,013.9	-6,385.1	51.1	-206.8	213.0	1.17	-0.11	10.11
2,121.0	6.30	294.10	2,107.3	-6,291.7	54.8	-216.6	223.4	0.88	-0.32	7.34
2,190.0	6.30	294.80	2,175.8	-6,223.2	58.0	-223.5	230.9	0.11	0.00	1.01
2,310.0	6.50	301.60	2,295.1	-6,103.9	64.3	-235.3	243.8	0.65	0.17	5.67
2,405.0	7.00	290.40	2,389.4	-6,009.6	69.1	-245.3	254.7	1.48	0.53	-11.79
2,499.0	6.90	289.80	2,482.8	-5,916.2	73.0	-256.0	266.0	0.13	-0.11	-0.64
2,593.0	8.70	288.10	2,575.9	-5,823.1	77.1	-268.0	278.7	1.93	1.91	-1.81
2,687.0	8.20	289.30	2,668.9	-5,730.1	81.6	-281.1	292.5	0.56	-0.53	1.28
2,781.0	8.50	286.80	2,761.9	-5,637.1	85.8	-294.1	306.1	0.50	0.32	-2.66
2,876.0	7.10	286.40	2,856.0	-5,543.0	89.5	-306.4	319.0	1.47	-1.47	-0.42
2,970.0	7.20	284.60	2,949.3	-5,449.7	92.6	-317.7	330.7	0.26	0.11	-1.91
3,064.0	6.20	281.10	3,042.6	-5,356.4	95.1	-328.4	341.7	1.15	-1.06	-3.72
3,158.0	7.60	285.60	3,135.9	-5,263.1	97.7	-339.4	352.9	1.60	1.49	4.79
3,253.0	7.00	286.10	3,230.2	-5,168.8	101.0	-351.0	365.0	0.64	-0.63	0.53
3,347.0	7.30	288.80	3,323.4	-5,075.6	104.5	-362.1	376.7	0.48	0.32	2.87
3,441.0	7.40	283.90	3,416.7	-4,982.3	107.9	-373.7	388.7	0.68	0.11	-5.21
3,534.0	6.10	283.80	3,509.0	-4,890.0	110.5	-384.3	399.6	1.40	-1.40	-0.11
3,628.0	8.50	282.20	3,602.2	-4,796.8	113.2	-395.9	411.6	2.56	2.55	-1.70
3,722.0	8.80	279.60	3,695.2	-4,703.8	115.8	-409.8	425.7	0.52	0.32	-2.77
3,816.0	8.30	287.10	3,788.1	-4,610.9	119.0	-423.4	439.6	1.30	-0.53	7.98
3,911.0	8.10	284.80	3,882.2	-4,516.8	122.8	-436.4	453.2	0.40	-0.21	-2.42
4,005.0	7.40	283.10	3,975.3	-4,423.7	125.8	-448.7	465.8	0.78	-0.74	-1.81
4,099.0	8.00	287.60	4,068.5	-4,330.5	129.2	-460.8	478.4	0.90	0.64	4.79
4,193.0	8.40	296.80	4,161.5	-4,237.5	134.3	-473.2	491.6	1.46	0.43	9.79
4,288.0	8.60	301.80	4,255.5	-4,143.5	141.1	-485.4	505.2	0.81	0.21	5.26
4,382.0	7.40	290.30	4,348.5	-4,050.5	146.9	-497.1	517.9	2.12	-1.28	-12.23
4,476.0	7.60	286.40	4,441.7	-3,957.3	150.8	-508.7	530.1	0.58	0.21	-4.15
4,571.0	6.50	286.30	4,536.0	-3,863.0	154.1	-519.9	541.8	1.16	-1.16	-0.11
4,665.0	8.20	283.10	4,629.2	-3,769.8	157.1	-531.5	553.8	1.86	1.81	-3.40
4,759.0	7.20	280.80	4,722.4	-3,676.6	159.7	-543.9	566.4	1.11	-1.06	-2.45
4,854.0	7.50	280.60	4,816.6	-3,582.4	162.0	-555.8	578.5	0.32	0.32	-0.21
4,948.0	7.10	279.90	4,909.9	-3,489.1	164.1	-567.6	590.4	0.44	-0.43	-0.74

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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)
5,042.0	8.10	289.30	5,003.0	-3,396.0	167.3	-579.5	602.8	1.69	1.06	10.00
5,137.0	7.40	283.10	5,097.2	-3,301.8	170.9	-591.8	615.6	1.15	-0.74	-6.53
5,231.0	7.10	285.30	5,190.4	-3,208.6	173.8	-603.3	627.5	0.43	-0.32	2.34
5,325.0	8.30	283.10	5,283.6	-3,115.4	176.9	-615.5	640.1	1.31	1.28	-2.34
5,420.0	8.40	284.80	5,377.6	-3,021.4	180.2	-628.9	653.8	0.28	0.11	1.79
5,514.0	8.30	283.30	5,470.6	-2,928.4	183.5	-642.1	667.5	0.25	-0.11	-1.60
5,608.0	7.50	279.20	5,563.7	-2,835.3	186.0	-654.8	680.4	1.04	-0.85	-4.36
5,703.0	6.70	295.30	5,657.9	-2,741.1	189.4	-665.9	692.0	2.25	-0.84	16.95
5,797.0	6.30	289.90	5,751.3	-2,647.7	193.5	-675.7	702.5	0.78	-0.43	-5.74
5,891.0	6.50	289.60	5,844.8	-2,554.2	197.0	-685.6	712.9	0.22	0.21	-0.32
5,986.0	6.70	287.60	5,939.1	-2,459.9	200.5	-696.0	723.8	0.32	0.21	-2.11
6,080.0	6.60	285.10	6,032.5	-2,366.5	203.6	-706.4	734.7	0.33	-0.11	-2.66
6,174.0	6.40	281.20	6,125.9	-2,273.1	206.0	-716.8	745.3	0.52	-0.21	-4.15
6,269.0	4.90	293.60	6,220.4	-2,178.6	208.7	-725.7	754.6	2.03	-1.58	13.05
6,363.0	4.60	286.10	6,314.1	-2,084.9	211.3	-733.0	762.4	0.73	-0.32	-7.98
6,457.0	3.00	279.10	6,407.9	-1,991.1	212.7	-739.0	768.6	1.77	-1.70	-7.45
6,551.0	2.90	273.10	6,501.8	-1,897.2	213.3	-743.8	773.4	0.35	-0.11	-6.38
6,646.0	3.00	272.10	6,596.6	-1,802.4	213.5	-748.7	778.1	0.12	0.11	-1.05
6,740.0	1.60	269.40	6,690.6	-1,708.4	213.6	-752.5	781.8	1.49	-1.49	-2.87
6,834.0	0.20	240.20	6,784.6	-1,614.4	213.5	-753.9	783.2	1.52	-1.49	-31.06
6,928.0	0.50	305.90	6,878.6	-1,520.4	213.6	-754.4	783.7	0.48	0.32	69.89
7,023.0	0.70	276.90	6,973.6	-1,425.4	213.9	-755.3	784.7	0.38	0.21	-30.53
7,117.0	0.70	251.60	7,067.5	-1,331.5	213.8	-756.4	785.7	0.33	0.00	-26.91
7,211.0	1.00	249.80	7,161.5	-1,237.5	213.4	-757.7	786.9	0.32	0.32	-1.91
7,306.0	0.90	239.00	7,256.5	-1,142.5	212.7	-759.2	788.1	0.22	-0.11	-11.37
7,400.0	1.00	207.20	7,350.5	-1,048.5	211.6	-760.2	788.8	0.56	0.11	-33.83
7,494.0	1.50	216.00	7,444.5	-954.5	209.9	-761.3	789.4	0.57	0.53	9.36
7,589.0	1.10	279.10	7,539.5	-859.5	209.0	-762.9	790.8	1.48	-0.42	66.42
7,683.0	0.50	313.80	7,633.5	-765.5	209.4	-764.1	792.1	0.79	-0.64	36.91
7,777.0	0.60	259.60	7,727.5	-671.5	209.6	-764.9	792.9	0.54	0.11	-57.66
7,872.0	0.50	241.40	7,822.4	-576.6	209.3	-765.7	793.6	0.21	-0.11	-19.16
7,966.0	0.70	260.40	7,916.4	-482.6	209.0	-766.6	794.5	0.30	0.21	20.21
8,060.0	1.40	239.90	8,010.4	-388.6	208.4	-768.2	795.8	0.83	0.74	-21.81
8,155.0	0.30	241.20	8,105.4	-293.6	207.7	-769.4	796.8	1.16	-1.16	1.37
8,249.0	0.50	237.30	8,199.4	-199.6	207.3	-770.0	797.3	0.21	0.21	-4.15
8,343.0	0.90	204.10	8,293.4	-105.6	206.4	-770.6	797.7	0.59	0.43	-35.32
8,438.0	2.10	211.80	8,388.4	-10.6	204.3	-771.9	798.4	1.28	1.26	8.11
8,532.0	1.70	201.80	8,482.3	83.3	201.5	-773.3	799.1	0.55	-0.43	-10.64
8,627.0	1.80	195.60	8,577.3	178.3	198.8	-774.2	799.3	0.23	0.11	-6.53
8,721.0	2.60	202.20	8,671.2	272.2	195.4	-775.4	799.6	0.89	0.85	7.02
8,815.0	2.60	211.50	8,765.1	366.1	191.6	-777.3	800.6	0.45	0.00	9.89
8,910.0	2.80	212.30	8,860.0	461.0	187.8	-779.7	801.9	0.21	0.21	0.84

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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)
8,940.0	2.80	213.50	8,890.0	491.0	186.5	-780.5	802.4	0.20	0.00	4.00
Projection to Bit										
8,990.0	2.80	215.50	8,939.9	540.9	184.5	-781.9	803.3	0.20	0.00	4.00

Survey Annotations

Measured Depth ()	Vertical Depth ()	Local Coordinates +N/-S ()	Local Coordinates +E/-W ()	Comment
8,990.0	8,939.9	184.5	-781.9	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____