Petroleum Development Corp.

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

DD

Survey: Survey #1

Standard Survey Report

01 June, 2011

PHOENIX
TECHNOLOGY SERVICES

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

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,612,674.47 ft	**Latitude:**	39.485061
	+E/-W	0.0 ft	**Easting:**	2,245,201.15 ft	**Longitude:**	-108.174661
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	2011/05/22	10.44	65.70	52,208

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	301.08

Survey Program **Date** 2011/06/01

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
152.0	9,017.0	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	0.50	156.00	152.0	-8,247.0	-0.6	0.3	-0.5	0.33	0.33	0.00
244.0	0.30	233.90	244.0	-8,155.0	-1.1	0.2	-0.8	0.57	-0.22	84.67
336.0	1.60	295.10	336.0	-8,063.0	-0.7	-1.1	0.6	1.61	1.41	66.52
428.0	2.80	301.00	427.9	-7,971.1	1.0	-4.2	4.1	1.33	1.30	6.41
520.0	3.60	302.80	519.8	-7,879.2	3.7	-8.6	9.3	0.88	0.87	1.96
613.0	4.60	299.00	612.5	-7,786.5	7.1	-14.3	15.9	1.11	1.08	-4.09
705.0	5.40	298.10	704.2	-7,694.8	10.9	-21.3	23.9	0.87	0.87	-0.98
799.0	6.20	298.80	797.7	-7,601.3	15.5	-29.7	33.4	0.85	0.85	0.74
893.0	5.70	305.30	891.2	-7,507.8	20.6	-37.9	43.1	0.89	-0.53	6.91

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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)
988.0	6.40	306.70	985.7	-7,413.3	26.5	-46.0	53.1	0.75	0.74	1.47
1,082.0	7.00	301.20	1,079.0	-7,320.0	32.6	-55.1	64.0	0.93	0.64	-5.85
1,176.0	7.70	299.60	1,172.2	-7,226.8	38.7	-65.5	76.1	0.78	0.74	-1.70
1,271.0	8.30	297.20	1,266.3	-7,132.7	44.9	-77.1	89.3	0.72	0.63	-2.53
1,365.0	8.50	303.40	1,359.3	-7,039.7	51.9	-89.0	103.0	0.99	0.21	6.60
1,459.0	9.20	303.70	1,452.2	-6,946.8	59.9	-101.0	117.4	0.75	0.74	0.32
1,554.0	10.10	304.70	1,545.9	-6,853.1	68.8	-114.2	133.3	0.96	0.95	1.05
1,648.0	10.80	307.40	1,638.3	-6,760.7	78.9	-128.0	150.3	0.91	0.74	2.87
1,743.0	9.90	307.40	1,731.7	-6,667.3	89.2	-141.5	167.3	0.95	-0.95	0.00
1,837.0	10.00	307.90	1,824.3	-6,574.7	99.2	-154.4	183.4	0.14	0.11	0.53
1,931.0	10.30	309.70	1,916.9	-6,482.1	109.5	-167.3	199.8	0.46	0.32	1.91
2,026.0	10.10	313.70	2,010.4	-6,388.6	120.7	-179.8	216.3	0.77	-0.21	4.21
2,120.0	10.10	313.50	2,102.9	-6,296.1	132.1	-191.8	232.4	0.04	0.00	-0.21
2,170.0	9.80	312.90	2,152.2	-6,246.8	138.0	-198.1	240.9	0.63	-0.60	-1.20
2,311.0	9.30	311.00	2,291.2	-6,107.8	153.6	-215.5	263.8	0.42	-0.35	-1.35
2,405.0	8.70	307.40	2,384.0	-6,015.0	162.9	-226.8	278.4	0.88	-0.64	-3.83
2,500.0	10.30	308.80	2,477.7	-5,921.3	172.6	-239.2	294.0	1.70	1.68	1.47
2,594.0	10.40	307.70	2,570.2	-5,828.8	183.1	-252.4	310.7	0.24	0.11	-1.17
2,688.0	10.20	307.50	2,662.7	-5,736.3	193.3	-265.8	327.4	0.22	-0.21	-0.21
2,782.0	9.60	305.60	2,755.3	-5,643.7	203.0	-278.7	343.5	0.73	-0.64	-2.02
2,877.0	9.00	303.10	2,849.0	-5,550.0	211.6	-291.4	358.8	0.76	-0.63	-2.63
2,971.0	8.50	302.10	2,941.9	-5,457.1	219.3	-303.4	373.1	0.56	-0.53	-1.06
3,065.0	9.20	303.60	3,034.8	-5,364.2	227.2	-315.6	387.6	0.78	0.74	1.60
3,159.0	8.60	301.20	3,127.7	-5,271.3	235.0	-327.9	402.1	0.75	-0.64	-2.55
3,254.0	8.40	301.80	3,221.7	-5,177.3	242.3	-339.8	416.1	0.23	-0.21	0.63
3,348.0	10.00	301.40	3,314.4	-5,084.6	250.2	-352.6	431.2	1.70	1.70	-0.43
3,442.0	9.70	301.00	3,407.1	-4,991.9	258.5	-366.4	447.2	0.33	-0.32	-0.43
3,535.0	9.30	300.70	3,498.8	-4,900.2	266.4	-379.6	462.6	0.43	-0.43	-0.32
3,629.0	8.90	301.10	3,591.6	-4,807.4	274.0	-392.3	477.5	0.43	-0.43	0.43
3,723.0	8.60	298.10	3,684.5	-4,714.5	281.1	-404.7	491.8	0.58	-0.32	-3.19
3,817.0	9.10	302.50	3,777.4	-4,621.6	288.4	-417.2	506.2	0.89	0.53	4.68
3,911.0	8.80	301.60	3,870.2	-4,528.8	296.2	-429.6	520.8	0.35	-0.32	-0.96
4,006.0	10.40	309.80	3,963.9	-4,435.1	305.5	-442.4	536.6	2.21	1.68	8.63
4,100.0	10.40	312.50	4,056.4	-4,342.6	316.6	-455.2	553.3	0.52	0.00	2.87
4,196.0	9.70	311.30	4,150.9	-4,248.1	327.8	-467.6	569.7	0.76	-0.73	-1.25
4,288.0	9.30	309.30	4,241.6	-4,157.4	337.6	-479.2	584.7	0.56	-0.43	-2.17
4,383.0	8.90	307.40	4,335.4	-4,063.6	347.0	-491.0	599.6	0.53	-0.42	-2.00
4,477.0	9.30	307.50	4,428.3	-3,970.7	356.0	-502.8	614.4	0.43	0.43	0.11
4,572.0	8.60	307.70	4,522.1	-3,876.9	365.0	-514.5	629.1	0.74	-0.74	0.21
4,666.0	10.20	300.70	4,614.8	-3,784.2	373.6	-527.2	644.4	2.09	1.70	-7.45
4,760.0	10.10	301.20	4,707.4	-3,691.6	382.1	-541.4	660.9	0.14	-0.11	0.53
4,854.0	9.20	297.90	4,800.0	-3,599.0	389.9	-555.1	676.7	1.12	-0.96	-3.51
4,949.0	8.30	290.30	4,893.9	-3,505.1	395.8	-568.2	691.0	1.54	-0.95	-8.00

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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)
5,043.0	9.10	295.30	4,986.8	-3,412.2	401.3	-581.3	705.1	1.17	0.85	5.32
5,137.0	10.00	307.40	5,079.6	-3,319.4	409.5	-594.5	720.6	2.33	0.96	12.87
5,232.0	10.00	307.70	5,173.1	-3,225.9	419.5	-607.6	737.0	0.05	0.00	0.32
5,326.0	9.80	305.10	5,265.7	-3,133.3	429.1	-620.6	753.1	0.52	-0.21	-2.77
5,421.0	9.50	305.90	5,359.4	-3,039.6	438.4	-633.6	768.9	0.35	-0.32	0.84
5,515.0	9.30	305.40	5,452.1	-2,946.9	447.3	-646.1	784.2	0.23	-0.21	-0.53
5,609.0	9.40	305.10	5,544.9	-2,854.1	456.1	-658.5	799.5	0.12	0.11	-0.32
5,703.0	9.60	304.10	5,637.6	-2,761.4	464.9	-671.3	815.0	0.28	0.21	-1.06
5,797.0	8.90	304.90	5,730.3	-2,668.7	473.5	-683.8	830.0	0.76	-0.74	0.85
5,892.0	8.30	301.90	5,824.3	-2,574.7	481.3	-695.6	844.2	0.79	-0.63	-3.16
5,986.0	8.00	303.90	5,917.3	-2,481.7	488.6	-706.8	857.5	0.44	-0.32	2.13
6,081.0	7.70	300.90	6,011.4	-2,387.6	495.5	-717.7	870.5	0.53	-0.32	-3.16
6,175.0	7.30	299.40	6,104.6	-2,294.4	501.7	-728.4	882.8	0.47	-0.43	-1.60
6,269.0	7.00	296.50	6,197.9	-2,201.1	507.2	-738.7	894.5	0.50	-0.32	-3.09
6,363.0	5.20	298.60	6,291.4	-2,107.6	511.8	-747.5	904.4	1.93	-1.91	2.23
6,458.0	4.10	306.70	6,386.1	-2,012.9	515.8	-754.0	912.1	1.35	-1.16	8.53
6,552.0	2.70	304.10	6,479.9	-1,919.1	519.1	-758.6	917.7	1.50	-1.49	-2.77
6,646.0	1.60	206.80	6,573.8	-1,825.2	519.2	-761.0	919.8	3.52	-1.17	-103.51
6,741.0	1.20	128.00	6,668.8	-1,730.2	517.4	-760.8	918.7	1.90	-0.42	-82.95
6,835.0	1.50	136.30	6,762.8	-1,636.2	515.9	-759.2	916.5	0.38	0.32	8.83
6,929.0	1.00	79.20	6,856.8	-1,542.2	515.1	-757.5	914.7	1.35	-0.53	-60.74
7,023.0	0.90	98.90	6,950.8	-1,448.2	515.2	-756.0	913.4	0.36	-0.11	20.96
7,118.0	0.30	107.80	7,045.8	-1,353.2	515.0	-755.0	912.5	0.64	-0.63	9.37
7,212.0	0.30	193.80	7,139.8	-1,259.2	514.7	-754.9	912.2	0.44	0.00	91.49
7,307.0	0.60	210.90	7,234.8	-1,164.2	514.0	-755.2	912.1	0.34	0.32	18.00
7,401.0	0.90	231.50	7,328.7	-1,070.3	513.1	-756.0	912.4	0.42	0.32	21.91
7,495.0	1.20	233.60	7,422.7	-976.3	512.1	-757.4	913.0	0.32	0.32	2.23
7,589.0	0.20	90.60	7,516.7	-882.3	511.5	-758.0	913.2	1.45	-1.06	-152.13
7,684.0	0.10	167.40	7,611.7	-787.3	511.4	-757.8	913.0	0.21	-0.11	80.84
7,778.0	0.60	220.90	7,705.7	-693.3	511.0	-758.1	913.1	0.58	0.53	56.92
7,872.0	1.00	229.60	7,799.7	-599.3	510.1	-759.1	913.4	0.44	0.43	9.26
7,967.0	1.10	216.30	7,894.7	-504.3	508.8	-760.2	913.7	0.28	0.11	-14.00
8,061.0	1.60	212.30	7,988.7	-410.3	506.9	-761.5	913.9	0.54	0.53	-4.26
8,156.0	1.80	208.90	8,083.6	-315.4	504.5	-762.9	913.8	0.24	0.21	-3.58
8,250.0	2.20	212.10	8,177.6	-221.4	501.7	-764.6	913.8	0.44	0.43	3.40
8,344.0	2.40	208.00	8,271.5	-127.5	498.4	-766.5	913.7	0.28	0.21	-4.36
8,439.0	0.80	206.30	8,366.5	-32.5	496.1	-767.7	913.6	1.68	-1.68	-1.79
8,533.0	1.00	207.50	8,460.4	61.4	494.8	-768.4	913.5	0.21	0.21	1.28
8,627.0	1.30	214.10	8,554.4	155.4	493.2	-769.3	913.5	0.35	0.32	7.02
8,722.0	1.30	210.90	8,649.4	250.4	491.3	-770.5	913.5	0.08	0.00	-3.37
8,816.0	1.70	227.90	8,743.4	344.4	489.5	-772.1	913.9	0.63	0.43	18.09
8,911.0	2.10	235.80	8,838.3	439.3	487.6	-774.6	915.1	0.50	0.42	8.32

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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)
8,967.0	1.90	234.80	8,894.3	495.3	486.5	-776.2	915.9	0.36	-0.36	-1.79
Projection to Bit										
9,017.0	1.90	234.80	8,944.3	545.3	485.5	-777.5	916.5	0.00	0.00	0.00

Survey Annotations

Measured Depth ()	Vertical Depth ()	Local Coordinates +N/-S ()	Local Coordinates +E/-W ()	Comment
9,017.0	8,944.3	485.5	-777.5	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____