Petroleum Development Corp.

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

DD

Survey: Survey #1

Standard Survey Report

09 May, 2011

PHOENIX
TECHNOLOGY SERVICES

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

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,612,650.58 ft	**Latitude:**	39.484994
	+E/-W	0.0 ft	**Easting:**	2,245,183.23 ft	**Longitude:**	-108.174722
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	262.30

Survey Program **Date** 05/09/11

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
152.0	9,020.0	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	0.60	256.60	152.0	-8,247.0	-0.2	-0.8	0.8	0.39	0.39	0.00
245.0	1.00	290.20	245.0	-8,154.0	0.0	-2.0	2.0	0.65	0.43	36.13
337.0	2.70	282.30	336.9	-8,062.1	0.7	-4.9	4.7	1.86	1.85	-8.59
429.0	3.90	273.90	428.8	-7,970.2	1.4	-10.1	9.8	1.40	1.30	-9.13
522.0	4.30	281.60	521.5	-7,877.5	2.3	-16.7	16.2	0.73	0.43	8.28
613.0	5.80	272.80	612.2	-7,786.8	3.2	-24.6	24.0	1.85	1.65	-9.67
705.0	6.70	244.80	703.7	-7,695.3	1.2	-34.1	33.7	3.42	0.98	-30.43
800.0	6.20	245.10	798.1	-7,600.9	-3.4	-43.8	43.8	0.53	-0.53	0.32
894.0	6.00	250.10	891.5	-7,507.5	-7.2	-53.0	53.5	0.60	-0.21	5.32

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Well:	Puckett 11C-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	5.50	261.80	986.1	-7,412.9	-9.5	-62.2	62.9	1.34	-0.53	12.32
1,083.0	5.80	270.90	1,079.6	-7,319.4	-10.1	-71.4	72.1	1.00	0.32	9.68
1,177.0	6.50	271.40	1,173.1	-7,225.9	-9.9	-81.5	82.1	0.75	0.74	0.53
1,272.0	6.90	260.20	1,267.4	-7,131.6	-10.7	-92.5	93.1	1.44	0.42	-11.79
1,366.0	7.20	267.80	1,360.7	-7,038.3	-11.9	-103.9	104.6	1.04	0.32	8.09
1,460.0	7.20	260.20	1,454.0	-6,945.0	-13.1	-115.6	116.3	1.01	0.00	-8.09
1,555.0	6.30	260.60	1,548.3	-6,850.7	-15.0	-126.6	127.5	0.95	-0.95	0.42
1,649.0	6.20	274.60	1,641.8	-6,757.2	-15.4	-136.8	137.6	1.62	-0.11	14.89
1,744.0	5.70	276.10	1,736.2	-6,662.8	-14.5	-146.6	147.2	0.55	-0.53	1.58
1,838.0	7.10	282.40	1,829.7	-6,569.3	-12.8	-156.9	157.2	1.66	1.49	6.70
1,932.0	6.40	290.10	1,923.0	-6,476.0	-9.7	-167.5	167.3	1.22	-0.74	8.19
2,009.0	6.50	280.80	1,999.5	-6,399.5	-7.4	-175.8	175.2	1.36	0.13	-12.08
2,124.0	7.80	281.10	2,113.6	-6,285.4	-4.7	-189.8	188.8	1.13	1.13	0.26
2,218.0	8.00	263.90	2,206.7	-6,192.3	-4.2	-202.6	201.3	2.51	0.21	-18.30
2,312.0	7.40	252.90	2,299.9	-6,099.1	-6.6	-214.9	213.9	1.69	-0.64	-11.70
2,406.0	6.30	245.00	2,393.2	-6,005.8	-10.6	-225.4	224.8	1.54	-1.17	-8.40
2,501.0	8.10	257.10	2,487.5	-5,911.5	-14.3	-236.6	236.4	2.47	1.89	12.74
2,595.0	8.40	256.60	2,580.5	-5,818.5	-17.4	-249.7	249.8	0.33	0.32	-0.53
2,689.0	8.10	261.10	2,673.5	-5,725.5	-20.0	-263.0	263.3	0.76	-0.32	4.79
2,783.0	8.40	263.40	2,766.6	-5,632.4	-21.8	-276.3	276.8	0.47	0.32	2.45
2,877.0	7.30	258.80	2,859.7	-5,539.3	-23.8	-289.0	289.6	1.35	-1.17	-4.89
2,972.0	7.00	253.60	2,953.9	-5,445.1	-26.6	-300.5	301.3	0.75	-0.32	-5.47
3,066.0	7.20	255.10	3,047.2	-5,351.8	-29.7	-311.7	312.8	0.29	0.21	1.60
3,160.0	6.70	264.40	3,140.5	-5,258.5	-31.7	-322.8	324.2	1.31	-0.53	9.89
3,254.0	7.40	265.60	3,233.8	-5,165.2	-32.7	-334.3	335.7	0.76	0.74	1.28
3,349.0	6.70	260.60	3,328.1	-5,070.9	-34.1	-345.9	347.3	0.98	-0.74	-5.26
3,443.0	7.10	267.20	3,421.4	-4,977.6	-35.3	-357.1	358.6	0.94	0.43	7.02
3,536.0	7.10	272.60	3,513.7	-4,885.3	-35.3	-368.6	370.0	0.72	0.00	5.81
3,630.0	6.20	270.40	3,607.1	-4,791.9	-35.0	-379.5	380.7	0.99	-0.96	-2.34
3,724.0	7.60	262.10	3,700.4	-4,698.6	-35.8	-390.7	392.0	1.82	1.49	-8.83
3,818.0	7.70	259.90	3,793.6	-4,605.4	-37.8	-403.0	404.5	0.33	0.11	-2.34
3,912.0	8.20	270.80	3,886.7	-4,512.3	-38.8	-416.0	417.4	1.69	0.53	11.60
4,007.0	8.00	267.60	3,980.7	-4,418.3	-39.0	-429.3	430.7	0.52	-0.21	-3.37
4,101.0	8.20	272.90	4,073.8	-4,325.2	-38.9	-442.6	443.8	0.82	0.21	5.64
4,195.0	7.80	268.10	4,166.9	-4,232.1	-38.8	-455.6	456.7	0.83	-0.43	-5.11
4,289.0	8.10	275.30	4,260.0	-4,139.0	-38.4	-468.6	469.5	1.11	0.32	7.66
4,384.0	7.20	262.90	4,354.1	-4,044.9	-38.5	-481.2	482.0	1.97	-0.95	-13.05
4,478.0	7.10	260.80	4,447.4	-3,951.6	-40.2	-492.8	493.7	0.30	-0.11	-2.23
4,572.0	6.80	265.60	4,540.7	-3,858.3	-41.5	-504.0	505.1	0.70	-0.32	5.11
4,667.0	7.20	256.40	4,635.0	-3,764.0	-43.4	-515.4	516.6	1.25	0.42	-9.68
4,761.0	7.40	254.10	4,728.2	-3,670.8	-46.4	-527.0	528.4	0.38	0.21	-2.45
4,855.0	7.00	249.20	4,821.5	-3,577.5	-50.1	-538.2	540.0	0.78	-0.43	-5.21
4,950.0	6.90	248.90	4,915.8	-3,483.2	-54.2	-548.9	551.2	0.11	-0.11	-0.32

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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)
5,044.0	7.60	250.30	5,009.1	-3,389.9	-58.3	-560.0	562.8	0.77	0.74	1.49
5,138.0	7.60	250.40	5,102.2	-3,296.8	-62.5	-571.7	574.9	0.01	0.00	0.11
5,233.0	8.20	256.20	5,196.3	-3,202.7	-66.2	-584.2	587.8	1.05	0.63	6.11
5,327.0	8.40	262.20	5,289.3	-3,109.7	-68.8	-597.5	601.4	0.95	0.21	6.38
5,421.0	8.10	265.60	5,382.4	-3,016.6	-70.2	-610.9	614.8	0.61	-0.32	3.62
5,516.0	7.90	273.80	5,476.4	-2,922.6	-70.3	-624.1	627.9	1.22	-0.21	8.63
5,610.0	8.30	276.80	5,569.5	-2,829.5	-69.1	-637.3	640.8	0.62	0.43	3.19
5,704.0	7.50	274.60	5,662.6	-2,736.4	-67.8	-650.2	653.4	0.91	-0.85	-2.34
5,799.0	7.30	272.60	5,756.8	-2,642.2	-67.0	-662.4	665.4	0.34	-0.21	-2.11
5,893.0	7.10	269.20	5,850.1	-2,548.9	-66.8	-674.1	677.0	0.50	-0.21	-3.62
5,987.0	6.60	269.20	5,943.4	-2,455.6	-67.0	-685.4	688.1	0.53	-0.53	0.00
6,082.0	6.70	270.60	6,037.8	-2,361.2	-67.0	-696.4	699.0	0.20	0.11	1.47
6,176.0	6.10	267.10	6,131.2	-2,267.8	-67.2	-706.8	709.5	0.76	-0.64	-3.72
6,270.0	6.20	262.60	6,224.6	-2,174.4	-68.1	-716.8	719.5	0.52	0.11	-4.79
6,366.0	6.40	261.40	6,320.1	-2,078.9	-69.5	-727.3	730.0	0.25	0.21	-1.25
6,459.0	5.50	252.20	6,412.6	-1,986.4	-71.7	-736.6	739.6	1.41	-0.97	-9.89
6,553.0	4.20	257.40	6,506.2	-1,892.8	-73.8	-744.3	747.5	1.46	-1.38	5.53
6,647.0	1.90	244.10	6,600.1	-1,798.9	-75.2	-749.1	752.4	2.54	-2.45	-14.15
6,741.0	1.80	235.00	6,694.0	-1,705.0	-76.8	-751.7	755.2	0.33	-0.11	-9.68
6,836.0	1.60	310.80	6,789.0	-1,610.0	-76.8	-753.9	757.4	2.20	-0.21	79.79
6,930.0	1.00	326.60	6,883.0	-1,516.0	-75.2	-755.3	758.6	0.74	-0.64	16.81
7,024.0	0.30	323.40	6,977.0	-1,422.0	-74.3	-755.9	759.1	0.75	-0.74	-3.40
7,119.0	0.10	216.50	7,072.0	-1,327.0	-74.2	-756.1	759.3	0.36	-0.21	-112.53
7,213.0	0.30	259.60	7,166.0	-1,233.0	-74.3	-756.4	759.6	0.25	0.21	45.85
7,307.0	1.50	223.20	7,260.0	-1,139.0	-75.2	-757.5	760.8	1.35	1.28	-38.72
7,402.0	0.60	202.80	7,355.0	-1,044.0	-76.6	-758.6	762.0	1.01	-0.95	-21.47
7,496.0	0.80	193.30	7,448.9	-950.1	-77.7	-758.9	762.5	0.25	0.21	-10.11
7,590.0	1.60	208.20	7,542.9	-856.1	-79.5	-759.7	763.5	0.91	0.85	15.85
7,685.0	1.30	200.40	7,637.9	-761.1	-81.7	-760.7	764.8	0.38	-0.32	-8.21
7,779.0	1.20	206.80	7,731.9	-667.1	-83.6	-761.5	765.8	0.18	-0.11	6.81
7,873.0	1.50	210.10	7,825.8	-573.2	-85.5	-762.5	767.1	0.33	0.32	3.51
7,968.0	2.00	221.20	7,920.8	-478.2	-87.8	-764.3	769.1	0.63	0.53	11.68
8,062.0	0.30	211.40	8,014.8	-384.2	-89.3	-765.5	770.5	1.81	-1.81	-10.43
8,156.0	1.10	241.90	8,108.8	-290.2	-89.9	-766.4	771.5	0.91	0.85	32.45
8,251.0	1.30	225.60	8,203.7	-195.3	-91.1	-768.0	773.2	0.41	0.21	-17.16
8,345.0	1.80	212.60	8,297.7	-101.3	-93.1	-769.5	775.1	0.65	0.53	-13.83
8,439.0	2.30	203.10	8,391.7	-7.3	-96.1	-771.1	777.0	0.64	0.53	-10.11
8,534.0	2.10	215.50	8,486.6	87.6	-99.2	-772.8	779.1	0.54	-0.21	13.05
8,628.0	2.30	218.50	8,580.5	181.5	-102.1	-775.0	781.7	0.25	0.21	3.19
8,723.0	2.30	227.60	8,675.4	276.4	-104.9	-777.6	784.6	0.38	0.00	9.58
8,817.0	1.90	216.50	8,769.4	370.4	-107.4	-779.9	787.3	0.61	-0.43	-11.81
8,911.0	2.00	213.00	8,863.3	464.3	-110.0	-781.7	789.4	0.17	0.11	-3.72

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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)
8,970.0	2.20	228.30	8,922.3	523.3	-111.7	-783.1	791.0	1.01	0.34	25.93
Projection to bit										
9,020.0	2.37	228.30	8,972.2	573.2	-113.0	-784.6	792.7	0.34	0.34	0.00

Survey Annotations

Measured Depth ()	Vertical Depth ()	Local Coordinates +N/-S ()	Local Coordinates +E/-W ()	Comment
9,020.0	8,972.2	-113.0	-784.6	Projection to bit

Checked By: _____ Approved By: _____ Date: _____