Petroleum Development Corp.

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

DD

Survey: Survey #1

Standard Survey Report

24 June, 2011

PHOENIX
TECHNOLOGY SERVICES

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

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,612,638.82 ft	**Latitude:**	39.484961
	+E/-W	0.0 ft	**Easting:**	2,245,174.13 ft	**Longitude:**	-108.174753
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	05/31/11	10.43	65.70	52,205

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	251.79

Survey Program **Date** 06/24/11

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
152.0	9,040.0	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	254.30	152.0	-8,247.0	-0.2	-0.6	0.7	0.33	0.33	0.00
276.0	1.20	233.20	276.0	-8,123.0	-1.1	-2.2	2.4	0.61	0.56	-17.02
336.0	1.70	233.30	336.0	-8,063.0	-2.0	-3.4	3.9	0.83	0.83	0.17
430.0	2.20	255.10	429.9	-7,969.1	-3.3	-6.3	7.0	0.94	0.53	23.19
522.0	3.60	260.60	521.8	-7,877.2	-4.2	-10.8	11.6	1.55	1.52	5.98
612.0	5.80	253.70	611.5	-7,787.5	-6.0	-18.0	19.0	2.52	2.44	-7.67
706.0	6.30	250.60	705.0	-7,694.0	-9.0	-27.4	28.9	0.64	0.53	-3.30
799.0	6.90	236.30	797.3	-7,601.7	-13.8	-36.9	39.3	1.88	0.65	-15.38
893.0	7.40	231.70	890.6	-7,508.4	-20.7	-46.3	50.5	0.81	0.53	-4.89

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Site:	NW Sec 36-T6S-R97W	**MD Reference:**	Puckett 11D-36D KBE @ 8399.0ft (H&P 318)
Well:	Puckett 11D-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)
987.0	8.10	237.60	983.8	-7,415.2	-28.0	-56.7	62.6	1.13	0.74	6.28
1,082.0	8.50	248.10	1,077.8	-7,321.2	-34.2	-68.8	76.1	1.65	0.42	11.05
1,176.0	9.00	255.90	1,170.7	-7,228.3	-38.6	-82.4	90.3	1.37	0.53	8.30
1,270.0	7.50	267.70	1,263.7	-7,135.3	-40.6	-95.7	103.6	2.40	-1.60	12.55
1,365.0	7.30	259.80	1,357.9	-7,041.1	-41.9	-107.8	115.5	1.09	-0.21	-8.32
1,459.0	7.40	249.30	1,451.2	-6,947.8	-45.1	-119.3	127.5	1.43	0.11	-11.17
1,553.0	7.80	241.10	1,544.3	-6,854.7	-50.4	-130.6	139.8	1.23	0.43	-8.72
1,648.0	7.60	240.60	1,638.5	-6,760.5	-56.6	-141.7	152.3	0.22	-0.21	-0.53
1,742.0	7.80	238.10	1,731.6	-6,667.4	-63.0	-152.5	164.6	0.41	0.21	-2.66
1,837.0	8.70	233.40	1,825.6	-6,573.4	-70.7	-163.8	177.7	1.18	0.95	-4.95
1,931.0	7.70	235.40	1,918.7	-6,480.3	-78.5	-174.7	190.5	1.11	-1.06	2.13
2,026.0	7.90	233.70	2,012.8	-6,386.2	-86.0	-185.2	202.8	0.32	0.21	-1.79
2,120.0	8.10	235.60	2,105.9	-6,293.1	-93.5	-195.8	215.3	0.35	0.21	2.02
2,214.0	7.80	239.60	2,199.0	-6,200.0	-100.5	-206.8	227.9	0.67	-0.32	4.26
2,308.0	8.00	239.20	2,292.1	-6,106.9	-107.1	-217.9	240.5	0.22	0.21	-0.43
2,403.0	8.70	238.40	2,386.1	-6,012.9	-114.2	-229.7	253.9	0.75	0.74	-0.84
2,497.0	9.00	237.30	2,479.0	-5,920.0	-121.9	-242.0	268.0	0.37	0.32	-1.17
2,591.0	8.60	233.00	2,571.9	-5,827.1	-130.1	-253.8	281.7	0.82	-0.43	-4.57
2,650.0	8.70	234.30	2,630.2	-5,768.8	-135.4	-260.9	290.2	0.37	0.17	2.20
2,782.0	8.40	227.00	2,760.7	-5,638.3	-147.8	-276.1	308.4	0.85	-0.23	-5.53
2,877.0	7.90	237.70	2,854.8	-5,544.2	-156.0	-286.7	321.1	1.68	-0.53	11.26
2,971.0	7.30	235.80	2,947.9	-5,451.1	-162.8	-297.1	333.1	0.69	-0.64	-2.02
3,065.0	7.90	249.50	3,041.1	-5,357.9	-168.4	-308.1	345.3	2.02	0.64	14.57
3,159.0	7.60	247.70	3,134.3	-5,264.7	-173.1	-319.9	357.9	0.41	-0.32	-1.91
3,254.0	8.70	254.10	3,228.3	-5,170.7	-177.4	-332.6	371.4	1.50	1.16	6.74
3,348.0	8.60	253.50	3,321.2	-5,077.8	-181.4	-346.2	385.5	0.14	-0.11	-0.64
3,442.0	8.20	253.60	3,414.2	-4,984.8	-185.2	-359.3	399.2	0.43	-0.43	0.11
3,535.0	7.70	251.90	3,506.3	-4,892.7	-189.1	-371.6	412.1	0.59	-0.54	-1.83
3,629.0	8.20	251.00	3,599.4	-4,799.6	-193.2	-383.9	425.1	0.55	0.53	-0.96
3,723.0	9.40	242.60	3,692.3	-4,706.7	-198.9	-397.1	439.4	1.87	1.28	-8.94
3,817.0	9.60	243.30	3,785.0	-4,614.0	-206.0	-410.9	454.7	0.25	0.21	0.74
3,911.0	9.20	246.40	3,877.8	-4,521.2	-212.5	-424.8	469.9	0.69	-0.43	3.30
4,006.0	9.40	242.40	3,971.5	-4,427.5	-219.1	-438.6	485.1	0.71	0.21	-4.21
4,100.0	9.40	241.70	4,064.3	-4,334.7	-226.3	-452.2	500.3	0.12	0.00	-0.74
4,194.0	9.20	242.40	4,157.0	-4,242.0	-233.4	-465.6	515.3	0.24	-0.21	0.74
4,288.0	9.00	239.80	4,249.9	-4,149.1	-240.6	-478.6	529.9	0.49	-0.21	-2.77
4,383.0	9.00	241.70	4,343.7	-4,055.3	-247.9	-491.6	544.4	0.31	0.00	2.00
4,477.0	9.10	242.30	4,436.5	-3,962.5	-254.8	-504.6	559.0	0.15	0.11	0.64
4,572.0	8.20	242.40	4,530.4	-3,868.6	-261.5	-517.3	573.1	0.95	-0.95	0.11
4,666.0	7.80	239.90	4,623.5	-3,775.5	-267.8	-528.8	586.0	0.56	-0.43	-2.66
4,760.0	7.40	237.10	4,716.7	-3,682.3	-274.2	-539.4	598.1	0.58	-0.43	-2.98
4,855.0	8.40	242.00	4,810.8	-3,588.2	-280.8	-550.6	610.8	1.27	1.05	5.16
4,949.0	8.00	241.40	4,903.8	-3,495.2	-287.2	-562.4	624.0	0.44	-0.43	-0.64

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Well:	Puckett 11D-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)
5,043.0	7.70	239.60	4,996.9	-3,402.1	-293.5	-573.6	636.6	0.41	-0.32	-1.91
5,137.0	8.20	234.50	5,090.0	-3,309.0	-300.6	-584.5	649.2	0.92	0.53	-5.43
5,232.0	9.30	242.90	5,183.9	-3,215.1	-308.0	-596.8	663.2	1.77	1.16	8.84
5,326.0	9.00	243.70	5,276.7	-3,122.3	-314.7	-610.2	678.0	0.35	-0.32	0.85
5,421.0	8.50	241.40	5,370.6	-3,028.4	-321.4	-623.0	692.3	0.64	-0.53	-2.42
5,515.0	8.10	243.30	5,463.7	-2,935.3	-327.7	-635.0	705.6	0.52	-0.43	2.02
5,609.0	7.50	239.90	5,556.8	-2,842.2	-333.7	-646.3	718.2	0.80	-0.64	-3.62
5,703.0	6.90	238.70	5,650.0	-2,749.0	-339.7	-656.4	729.7	0.66	-0.64	-1.28
5,798.0	6.30	244.30	5,744.4	-2,654.6	-345.0	-666.0	740.4	0.93	-0.63	5.89
5,892.0	7.00	246.40	5,837.8	-2,561.2	-349.5	-675.9	751.2	0.79	0.74	2.23
5,986.0	7.00	247.30	5,931.1	-2,467.9	-354.0	-686.4	762.7	0.12	0.00	0.96
6,081.0	6.80	246.00	6,025.4	-2,373.6	-358.5	-696.9	774.0	0.27	-0.21	-1.37
6,175.0	6.60	248.30	6,118.8	-2,280.2	-362.8	-707.0	785.0	0.36	-0.21	2.45
6,269.0	4.50	232.40	6,212.3	-2,186.7	-367.0	-714.9	793.8	2.75	-2.23	-16.91
6,363.0	4.50	231.00	6,306.0	-2,093.0	-371.6	-720.7	800.8	0.12	0.00	-1.49
6,458.0	2.70	259.50	6,400.8	-1,998.2	-374.4	-725.8	806.5	2.62	-1.89	30.00
6,552.0	2.80	251.10	6,494.7	-1,904.3	-375.5	-730.2	810.9	0.44	0.11	-8.94
6,646.0	1.60	233.20	6,588.7	-1,810.3	-377.0	-733.4	814.5	1.46	-1.28	-19.04
6,741.0	2.70	184.00	6,683.6	-1,715.4	-380.1	-734.6	816.6	2.16	1.16	-51.79
6,835.0	3.10	193.90	6,777.5	-1,621.5	-384.7	-735.4	818.8	0.68	0.43	10.53
6,929.0	0.40	111.80	6,871.4	-1,527.6	-387.3	-735.7	819.9	3.27	-2.87	-87.34
7,023.0	0.30	125.80	6,965.4	-1,433.6	-387.6	-735.2	819.5	0.14	-0.11	14.89
7,118.0	0.60	219.30	7,060.4	-1,338.6	-388.1	-735.3	819.8	0.72	0.32	98.42
7,212.0	1.20	215.80	7,154.4	-1,244.6	-389.3	-736.2	821.0	0.64	0.64	-3.72
7,307.0	1.60	219.30	7,249.4	-1,149.6	-391.1	-737.6	822.9	0.43	0.42	3.68
7,401.0	1.60	211.60	7,343.3	-1,055.7	-393.3	-739.1	825.0	0.23	0.00	-8.19
7,495.0	1.90	210.90	7,437.3	-961.7	-395.7	-740.6	827.2	0.32	0.32	-0.74
7,589.0	0.50	173.90	7,531.3	-867.7	-397.5	-741.4	828.4	1.63	-1.49	-39.36
7,684.0	1.00	182.90	7,626.3	-772.7	-398.7	-741.3	828.8	0.54	0.53	9.47
7,778.0	1.30	196.20	7,720.3	-678.7	-400.6	-741.7	829.7	0.43	0.32	14.15
7,872.0	1.20	199.20	7,814.2	-584.8	-402.5	-742.3	830.9	0.13	-0.11	3.19
7,967.0	1.20	205.60	7,909.2	-489.8	-404.3	-743.1	832.2	0.14	0.00	6.74
8,061.0	1.10	219.30	8,003.2	-395.8	-405.9	-744.1	833.7	0.31	-0.11	14.57
8,156.0	1.60	235.50	8,098.2	-300.8	-407.4	-745.7	835.7	0.66	0.53	17.05
8,250.0	1.80	223.00	8,192.1	-206.9	-409.2	-747.8	838.3	0.45	0.21	-13.30
8,344.0	2.00	222.20	8,286.1	-112.9	-411.5	-749.9	841.0	0.21	0.21	-0.85
8,439.0	3.00	217.50	8,381.0	-18.0	-414.7	-752.6	844.5	1.07	1.05	-4.95
8,533.0	1.80	236.50	8,474.9	75.9	-417.5	-755.3	847.9	1.52	-1.28	20.21
8,627.0	2.30	237.90	8,568.8	169.8	-419.3	-758.1	851.2	0.53	0.53	1.49
8,723.0	2.90	239.80	8,664.7	265.7	-421.5	-761.8	855.4	0.63	0.63	1.98
8,816.0	3.20	236.60	8,757.6	358.6	-424.1	-766.0	860.2	0.37	0.32	-3.44
8,911.0	3.10	233.10	8,852.5	453.5	-427.1	-770.3	865.2	0.23	-0.11	-3.68

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Well:	Puckett 11D-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)
8,990.0	3.70	227.20	8,931.3	532.3	-430.2	-773.9	869.6	0.88	0.76	-7.47
Projection to Bit										
9,040.0	4.00	223.40	8,981.2	582.2	-432.5	-776.3	872.6	0.79	0.60	-7.60

Survey Annotations

Measured Depth ()	Vertical Depth ()	Local Coordinates +N/-S ()	Local Coordinates +E/-W ()	Comment
9,040.0	8,981.2	-432.5	-776.3	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____