Petroleum Development Corp.

Mesa
NWNW Sec 24-T6S-R97W
Puckett 11C-24D

DD

Survey: Production

Standard Survey Report

12 April, 2011

PHOENIX
TECHNOLOGY SERVICES

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 11C-24D
Project:	Mesa	**TVD Reference:**	Puckett 11C-24D KBE @ 8399.0ft (Original Well Elev)
Site:	NWNW Sec 24-T6S-R97W	**MD Reference:**	Puckett 11C-24D KBE @ 8399.0ft (Original Well Elev)
Well:	Puckett 11C-24D	**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 NWNW Sec 24-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-24D

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,622,946.42 ft	**Latitude:**	39.513290
	+E/-W	0.0 ft	**Easting:**	2,245,697.18 ft	**Longitude:**	-108.173976
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	8,381.0 ft

Wellbore DD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010-14	06/01/10	10.57	65.75	52,321

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	283.49

Survey Program **Date** 04/12/11

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
160.0	2,612.0	Surface (DD)	MWD	Geolink MWD
2,786.0	9,196.0	Production (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)
2,612.0	5.60	287.30	2,604.3	-5,794.8	45.8	-177.9	183.7	0.00	0.00	0.00
2,786.0	5.80	289.00	2,777.4	-5,621.6	51.2	-194.3	200.9	0.15	0.11	0.98
2,880.0	6.20	286.90	2,870.9	-5,528.1	54.2	-203.7	210.7	0.49	0.43	-2.23
2,974.0	5.40	285.90	2,964.4	-5,434.6	56.9	-212.8	220.2	0.86	-0.85	-1.06
3,068.0	5.30	284.20	3,058.0	-5,341.0	59.2	-221.2	228.9	0.20	-0.11	-1.81
3,163.0	4.80	284.20	3,152.6	-5,246.4	61.2	-229.3	237.3	0.53	-0.53	0.00
3,257.0	5.30	291.20	3,246.3	-5,152.8	63.8	-237.2	245.5	0.84	0.53	7.45
3,351.0	5.30	288.00	3,339.9	-5,059.2	66.7	-245.4	254.2	0.31	0.00	-3.40

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 11C-24D
Project:	Mesa	**TVD Reference:**	Puckett 11C-24D KBE @ 8399.0ft (Original Well Elev)
Site:	NWNW Sec 24-T6S-R97W	**MD Reference:**	Puckett 11C-24D KBE @ 8399.0ft (Original Well Elev)
Well:	Puckett 11C-24D	**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)
3,445.0	5.30	288.60	3,433.4	-4,965.6	69.4	-253.6	262.8	0.06	0.00	0.64
3,538.0	5.30	286.80	3,526.1	-4,873.0	72.0	-261.8	271.4	0.18	0.00	-1.94
3,632.0	5.00	289.20	3,619.7	-4,779.3	74.6	-269.8	279.8	0.39	-0.32	2.55
3,727.0	5.00	281.60	3,714.3	-4,684.7	76.8	-277.8	288.0	0.70	0.00	-8.00
3,820.0	4.20	296.60	3,807.0	-4,592.0	79.1	-284.8	295.4	1.55	-0.86	16.13
3,915.0	4.50	296.10	3,901.7	-4,497.3	82.3	-291.3	302.4	0.32	0.32	-0.53
4,009.0	4.40	291.20	3,995.5	-4,403.6	85.3	-297.9	309.6	0.42	-0.11	-5.21
4,103.0	5.00	295.90	4,089.1	-4,309.9	88.4	-305.0	317.2	0.76	0.64	5.00
4,197.0	4.60	293.40	4,182.8	-4,216.2	91.6	-312.1	324.9	0.48	-0.43	-2.66
4,292.0	4.90	291.30	4,277.5	-4,121.5	94.6	-319.4	332.7	0.36	0.32	-2.21
4,386.0	4.70	287.60	4,371.2	-4,027.9	97.2	-326.8	340.5	0.39	-0.21	-3.94
4,480.0	4.90	284.40	4,464.8	-3,934.2	99.4	-334.4	348.3	0.36	0.21	-3.40
4,575.0	4.90	286.70	4,559.5	-3,839.5	101.6	-342.2	356.5	0.21	0.00	2.42
4,669.0	4.70	284.40	4,653.1	-3,745.9	103.7	-349.8	364.3	0.30	-0.21	-2.45
4,764.0	4.50	282.20	4,747.8	-3,651.2	105.5	-357.2	371.9	0.28	-0.21	-2.32
4,858.0	4.30	278.70	4,841.6	-3,557.5	106.8	-364.3	379.1	0.36	-0.21	-3.72
4,952.0	4.90	284.20	4,935.3	-3,463.8	108.3	-371.7	386.7	0.79	0.64	5.85
5,046.0	5.40	265.60	5,028.9	-3,370.1	108.9	-380.0	394.9	1.84	0.53	-19.79
5,141.0	5.00	273.60	5,123.5	-3,275.5	108.8	-388.5	403.2	0.87	-0.42	8.42
5,235.0	3.80	295.30	5,217.2	-3,181.8	110.4	-395.4	410.3	2.16	-1.28	23.09
5,330.0	3.80	300.40	5,312.0	-3,087.0	113.4	-401.0	416.4	0.36	0.00	5.37
5,424.0	3.80	299.60	5,405.8	-2,993.2	116.5	-406.4	422.4	0.06	0.00	-0.85
5,518.0	3.80	298.20	5,499.6	-2,899.4	119.5	-411.9	428.4	0.10	0.00	-1.49
5,612.0	3.80	296.60	5,593.4	-2,805.6	122.4	-417.4	434.4	0.11	0.00	-1.70
5,707.0	4.20	294.00	5,688.2	-2,710.8	125.2	-423.4	440.9	0.46	0.42	-2.74
5,801.0	4.50	287.60	5,781.9	-2,617.1	127.7	-430.0	448.0	0.61	0.32	-6.81
5,895.0	4.60	281.20	5,875.6	-2,523.4	129.6	-437.3	455.4	0.55	0.11	-6.81
5,990.0	3.40	264.50	5,970.4	-2,428.6	130.0	-443.8	461.9	1.75	-1.26	-17.58
6,084.0	2.00	245.90	6,064.3	-2,334.7	129.1	-448.1	465.8	1.74	-1.49	-19.79
6,178.0	1.00	259.80	6,158.2	-2,240.8	128.3	-450.4	467.9	1.12	-1.06	14.79
6,273.0	1.50	246.40	6,253.2	-2,145.8	127.6	-452.3	469.6	0.61	0.53	-14.11
6,367.0	0.60	237.60	6,347.2	-2,051.8	126.9	-453.9	470.9	0.97	-0.96	-9.36
6,461.0	0.70	231.70	6,441.2	-1,957.8	126.2	-454.7	471.6	0.13	0.11	-6.28
6,555.0	1.10	217.50	6,535.2	-1,863.8	125.2	-455.7	472.4	0.48	0.43	-15.11
6,650.0	0.90	109.40	6,630.2	-1,768.8	124.2	-455.6	472.0	1.71	-0.21	-113.79
6,744.0	1.00	134.60	6,724.2	-1,674.9	123.4	-454.3	470.6	0.45	0.11	26.81
6,838.0	0.60	184.20	6,818.1	-1,580.9	122.3	-453.8	469.8	0.81	-0.43	52.77
6,932.0	0.80	196.40	6,912.1	-1,486.9	121.2	-454.0	469.7	0.26	0.21	12.98
7,027.0	0.80	192.60	7,007.1	-1,391.9	119.9	-454.3	469.7	0.06	0.00	-4.00
7,121.0	0.70	204.10	7,101.1	-1,297.9	118.7	-454.7	469.8	0.19	-0.11	12.23
7,216.0	1.20	226.80	7,196.1	-1,202.9	117.5	-455.7	470.5	0.65	0.53	23.89
7,310.0	1.20	230.60	7,290.1	-1,108.9	116.2	-457.1	471.6	0.08	0.00	4.04

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 11C-24D
Project:	Mesa	**TVD Reference:**	Puckett 11C-24D KBE @ 8399.0ft (Original Well Elev)
Site:	NWNW Sec 24-T6S-R97W	**MD Reference:**	Puckett 11C-24D KBE @ 8399.0ft (Original Well Elev)
Well:	Puckett 11C-24D	**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)
7,404.0	1.40	238.90	7,384.1	-1,015.0	115.0	-458.9	473.0	0.29	0.21	8.83
7,498.0	0.80	241.90	7,478.0	-921.0	114.1	-460.4	474.4	0.64	-0.64	3.19
7,593.0	0.90	239.30	7,573.0	-826.0	113.4	-461.7	475.4	0.11	0.11	-2.74
7,687.0	1.00	226.10	7,667.0	-732.0	112.5	-462.9	476.4	0.26	0.11	-14.04
7,781.0	1.30	240.00	7,761.0	-638.0	111.4	-464.4	477.6	0.43	0.32	14.79
7,876.0	1.70	228.00	7,856.0	-543.0	109.9	-466.4	479.2	0.53	0.42	-12.63
7,970.0	1.40	216.70	7,949.9	-449.1	108.0	-468.1	480.4	0.45	-0.32	-12.02
8,065.0	0.80	186.00	8,044.9	-354.1	106.5	-468.9	480.8	0.86	-0.63	-32.32
8,159.0	1.10	169.10	8,138.9	-260.1	104.9	-468.8	480.3	0.43	0.32	-17.98
8,253.0	1.30	183.00	8,232.9	-166.1	103.0	-468.7	479.7	0.37	0.21	14.79
8,348.0	1.50	201.20	8,327.9	-71.2	100.7	-469.2	479.7	0.51	0.21	19.16
8,442.0	2.50	210.70	8,421.8	22.8	97.8	-470.6	480.5	1.12	1.06	10.11
8,536.0	3.20	227.00	8,515.7	116.7	94.3	-473.6	482.5	1.13	0.74	17.34
8,631.0	3.40	214.80	8,610.5	211.5	90.1	-477.2	485.0	0.77	0.21	-12.84
8,725.0	3.20	197.60	8,704.4	305.4	85.4	-479.5	486.2	1.07	-0.21	-18.30
8,819.0	2.20	205.40	8,798.3	399.3	81.2	-481.1	486.8	1.13	-1.06	8.30
8,914.0	2.40	221.00	8,893.2	494.2	78.1	-483.2	488.1	0.69	0.21	16.42
9,008.0	2.70	236.70	8,987.1	588.1	75.4	-486.3	490.5	0.81	0.32	16.70
9,103.0	2.80	240.80	9,082.0	683.0	73.0	-490.2	493.7	0.23	0.11	4.32
9,146.0	2.90	252.70	9,124.9	725.9	72.2	-492.2	495.5	1.39	0.23	27.67
Projection to Bit										
9,196.0	2.90	252.70	9,174.9	775.9	71.4	-494.6	497.6	0.00	0.00	0.00

Survey Annotations

Measured Depth ()	Vertical Depth ()	Local Coordinates +N/-S ()	Local Coordinates +E/-W ()	Comment
9,196.0	9,174.9	71.4	-494.6	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____