Petroleum Development Corp.

Mesa
SWSE Sec 7-T7S-R96W
Puckett 44B-7D

DD

Survey: Survey #1

Standard Survey Report

21 July, 2011

PHOENIX
TECHNOLOGY SERVICES

Company:	Petroleum Development Corp.	**Local Co-ordinate Reference:**	Well Puckett 44B-7D
Project:	Mesa	**TVD Reference:**	Puckett 44B-7D KBE @ 8384.0ft (H&P 318)
Site:	SWSE Sec 7-T7S-R96W	**MD Reference:**	Puckett 44B-7D KBE @ 8384.0ft (H&P 318)
Well:	Puckett 44B-7D	**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 SWSE Sec 7-T7S-R96W

Site Position:		**Northing:**		**Latitude:**	
From:	Lat/Long	**Easting:**		**Longitude:**	
Position Uncertainty:	0.0 ft	**Slot Radius:**		**Grid Convergence:**	1.00

Well Puckett 44B-7D

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,598,600.83 ft	**Latitude:**	39.447006
	+E/-W	0.0 ft	**Easting:**	2,252,253.67 ft	**Longitude:**	-108.148231
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	8,360.0 ft

Wellbore DD

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010-14	07/11/11	10.40	65.67	52,177

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	91.65

Survey Program **Date** 07/21/11

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
185.0	8,980.0	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	-8,384.0	0.0	0.0	0.0	0.00	0.00	0.00
185.0	1.10	123.60	185.0	-8,199.0	-1.0	1.5	1.5	0.59	0.59	0.00
276.0	2.30	71.90	276.0	-8,108.0	-0.9	3.9	4.0	2.02	1.32	-56.81
338.0	2.80	40.40	337.9	-8,046.1	0.6	6.1	6.1	2.36	0.81	-50.81
399.0	2.70	43.10	398.8	-7,985.2	2.8	8.1	8.0	0.27	-0.16	4.43
461.0	2.30	56.20	460.8	-7,923.2	4.6	10.1	9.9	1.12	-0.65	21.13
522.0	2.00	79.10	521.7	-7,862.3	5.5	12.1	12.0	1.48	-0.49	37.54
614.0	1.80	149.70	613.7	-7,770.3	4.5	14.5	14.3	2.39	-0.22	76.74
706.0	2.60	148.60	705.6	-7,678.4	1.5	16.3	16.2	0.87	0.87	-1.20
801.0	3.10	139.40	800.5	-7,583.5	-2.3	19.1	19.1	0.71	0.53	-9.68

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Well:	Puckett 44B-7D	**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)
895.0	3.10	109.20	894.4	-7,489.6	-5.1	23.1	23.3	1.72	0.00	-32.13
989.0	4.20	100.90	988.2	-7,395.8	-6.5	28.9	29.1	1.30	1.17	-8.83
1,083.0	5.00	87.80	1,081.9	-7,302.1	-7.0	36.4	36.6	1.40	0.85	-13.94
1,178.0	6.80	84.60	1,176.4	-7,207.6	-6.4	46.1	46.3	1.93	1.89	-3.37
1,272.0	7.20	80.40	1,269.7	-7,114.3	-4.8	57.5	57.6	0.69	0.43	-4.47
1,366.0	7.20	79.10	1,362.9	-7,021.1	-2.8	69.1	69.1	0.17	0.00	-1.38
1,461.0	7.70	80.20	1,457.1	-6,926.9	-0.5	81.2	81.2	0.55	0.53	1.16
1,555.0	7.90	86.30	1,550.3	-6,833.7	0.9	93.8	93.8	0.91	0.21	6.49
1,649.0	8.10	95.00	1,643.3	-6,740.7	0.8	106.9	106.8	1.30	0.21	9.26
1,743.0	8.40	93.90	1,736.4	-6,647.6	-0.3	120.3	120.3	0.36	0.32	-1.17
1,838.0	9.60	92.90	1,830.2	-6,553.8	-1.1	135.1	135.1	1.27	1.26	-1.05
1,932.0	11.10	92.30	1,922.7	-6,461.3	-1.9	152.0	152.0	1.60	1.60	-0.64
2,026.0	12.70	92.60	2,014.6	-6,369.4	-2.7	171.4	171.4	1.70	1.70	0.32
2,121.0	13.10	90.40	2,107.2	-6,276.8	-3.3	192.6	192.6	0.67	0.42	-2.32
2,180.0	13.30	90.80	2,164.7	-6,219.3	-3.4	206.1	206.1	0.37	0.34	0.68
2,313.0	11.80	90.80	2,294.5	-6,089.5	-3.8	234.9	235.0	1.13	-1.13	0.00
2,408.0	13.50	89.20	2,387.2	-5,996.8	-3.8	255.7	255.8	1.83	1.79	-1.68
2,502.0	15.90	92.80	2,478.1	-5,905.9	-4.3	279.6	279.6	2.73	2.55	3.83
2,597.0	17.70	94.00	2,569.1	-5,814.9	-5.9	307.0	307.0	1.93	1.89	1.26
2,691.0	19.30	90.50	2,658.2	-5,725.8	-7.1	336.8	336.8	2.07	1.70	-3.72
2,785.0	18.60	87.60	2,747.1	-5,636.9	-6.6	367.3	367.3	1.25	-0.74	-3.09
2,879.0	19.20	88.90	2,836.0	-5,548.0	-5.6	397.7	397.7	0.78	0.64	1.38
2,974.0	19.70	88.40	2,925.6	-5,458.4	-4.9	429.4	429.3	0.55	0.53	-0.53
3,068.0	20.10	88.90	3,014.0	-5,370.0	-4.1	461.3	461.3	0.46	0.43	0.53
3,162.0	21.60	92.20	3,101.8	-5,282.2	-4.5	494.8	494.7	2.03	1.60	3.51
3,257.0	21.10	90.20	3,190.3	-5,193.7	-5.2	529.4	529.3	0.93	-0.53	-2.11
3,351.0	20.80	87.50	3,278.1	-5,105.9	-4.6	562.9	562.8	1.08	-0.32	-2.87
3,445.0	19.80	88.00	3,366.3	-5,017.7	-3.3	595.5	595.4	1.08	-1.06	0.53
3,540.0	21.60	88.10	3,455.1	-4,928.9	-2.1	629.1	628.9	1.90	1.89	0.11
3,634.0	21.10	86.90	3,542.7	-4,841.3	-0.6	663.3	663.0	0.71	-0.53	-1.28
3,728.0	20.30	85.60	3,630.6	-4,753.4	1.5	696.4	696.1	0.98	-0.85	-1.38
3,823.0	20.20	89.00	3,719.8	-4,664.2	3.1	729.3	728.9	1.24	-0.11	3.58
3,917.0	19.60	88.70	3,808.1	-4,575.9	3.7	761.3	760.8	0.65	-0.64	-0.32
4,011.0	19.10	88.20	3,896.8	-4,487.2	4.6	792.4	791.9	0.56	-0.53	-0.53
4,106.0	19.20	91.80	3,986.6	-4,397.4	4.6	823.5	823.1	1.25	0.11	3.79
4,200.0	18.80	92.20	4,075.5	-4,308.5	3.5	854.1	853.7	0.45	-0.43	0.43
4,294.0	18.10	91.50	4,164.6	-4,219.4	2.5	883.9	883.4	0.78	-0.74	-0.74
4,389.0	18.50	93.00	4,254.8	-4,129.2	1.4	913.7	913.2	0.65	0.42	1.58
4,483.0	18.00	95.40	4,344.1	-4,039.9	-0.8	943.0	942.6	0.96	-0.53	2.55
4,577.0	19.20	93.10	4,433.2	-3,950.8	-3.0	972.9	972.6	1.50	1.28	-2.45
4,672.0	18.60	91.90	4,523.1	-3,860.9	-4.3	1,003.6	1,003.4	0.75	-0.63	-1.26
4,766.0	17.20	89.90	4,612.5	-3,771.5	-4.8	1,032.5	1,032.2	1.63	-1.49	-2.13
4,860.0	15.50	91.80	4,702.7	-3,681.3	-5.2	1,059.0	1,058.7	1.90	-1.81	2.02

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Survey

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4,954.0	16.00	89.60	4,793.2	-3,590.8	-5.5	1,084.5	1,084.2	0.83	0.53	-2.34
5,049.0	16.40	90.60	4,884.4	-3,499.6	-5.5	1,111.0	1,110.7	0.51	0.42	1.05
5,143.0	19.40	90.10	4,973.8	-3,410.2	-5.7	1,139.9	1,139.6	3.20	3.19	-0.53
5,237.0	21.10	92.50	5,062.0	-3,322.0	-6.5	1,172.4	1,172.1	2.01	1.81	2.55
5,332.0	20.30	93.70	5,150.9	-3,233.1	-8.3	1,205.9	1,205.7	0.95	-0.84	1.26
5,426.0	19.90	93.60	5,239.2	-3,144.8	-10.3	1,238.2	1,238.0	0.43	-0.43	-0.11
5,521.0	18.70	94.00	5,328.8	-3,055.2	-12.4	1,269.5	1,269.3	1.27	-1.26	0.42
5,615.0	17.90	93.30	5,418.1	-2,965.9	-14.3	1,299.0	1,298.8	0.88	-0.85	-0.74
5,709.0	17.00	92.90	5,507.8	-2,876.2	-15.8	1,327.1	1,327.0	0.97	-0.96	-0.43
5,804.0	16.30	95.90	5,598.8	-2,785.2	-17.9	1,354.2	1,354.2	1.17	-0.74	3.16
5,898.0	15.10	98.20	5,689.3	-2,694.7	-21.0	1,379.5	1,379.5	1.44	-1.28	2.45
5,992.0	13.30	97.50	5,780.4	-2,603.6	-24.2	1,402.3	1,402.4	1.92	-1.91	-0.74
6,086.0	12.00	98.60	5,872.1	-2,511.9	-27.0	1,422.7	1,422.9	1.41	-1.38	1.17
6,181.0	10.60	98.90	5,965.3	-2,418.7	-29.9	1,441.1	1,441.4	1.47	-1.47	0.32
6,275.0	9.20	102.20	6,057.9	-2,326.1	-32.8	1,457.0	1,457.3	1.61	-1.49	3.51
6,369.0	7.60	107.30	6,150.8	-2,233.2	-36.2	1,470.3	1,470.7	1.88	-1.70	5.43
6,464.0	6.30	108.30	6,245.1	-2,138.9	-39.7	1,481.2	1,481.7	1.37	-1.37	1.05
6,558.0	5.40	109.30	6,338.7	-2,045.3	-42.8	1,490.3	1,490.9	0.96	-0.96	1.06
6,653.0	4.20	101.00	6,433.3	-1,950.7	-44.9	1,497.9	1,498.6	1.46	-1.26	-8.74
6,747.0	2.90	89.90	6,527.1	-1,856.9	-45.6	1,503.7	1,504.4	1.56	-1.38	-11.81
6,841.0	1.60	85.00	6,621.1	-1,762.9	-45.5	1,507.4	1,508.0	1.40	-1.38	-5.21
6,935.0	0.80	297.20	6,715.1	-1,668.9	-45.1	1,508.1	1,508.8	2.46	-0.85	-157.23
7,030.0	0.80	276.40	6,810.0	-1,574.0	-44.7	1,506.8	1,507.5	0.30	0.00	-21.89
7,124.0	0.90	224.40	6,904.0	-1,480.0	-45.1	1,505.7	1,506.3	0.80	0.11	-55.32
7,218.0	1.40	217.40	6,998.0	-1,386.0	-46.6	1,504.5	1,505.2	0.55	0.53	-7.45
7,313.0	1.10	188.50	7,093.0	-1,291.0	-48.4	1,503.6	1,504.4	0.72	-0.32	-30.42
7,407.0	1.40	145.80	7,187.0	-1,197.0	-50.3	1,504.1	1,504.9	1.01	0.32	-45.43
7,501.0	1.10	145.10	7,281.0	-1,103.0	-51.9	1,505.3	1,506.2	0.32	-0.32	-0.74
7,596.0	1.00	184.10	7,375.9	-1,008.1	-53.5	1,505.7	1,506.7	0.74	-0.11	41.05
7,690.0	1.10	196.60	7,469.9	-914.1	-55.2	1,505.4	1,506.4	0.27	0.11	13.30
7,784.0	1.40	207.30	7,563.9	-820.1	-57.1	1,504.6	1,505.7	0.40	0.32	11.38
7,879.0	0.10	221.40	7,658.9	-725.1	-58.2	1,504.1	1,505.1	1.37	-1.37	14.84
7,973.0	0.30	136.00	7,752.9	-631.1	-58.4	1,504.2	1,505.2	0.33	0.21	-90.85
8,067.0	0.80	192.50	7,846.9	-537.1	-59.2	1,504.2	1,505.3	0.73	0.53	60.11
8,161.0	1.60	213.20	7,940.9	-443.1	-61.0	1,503.3	1,504.5	0.95	0.85	22.02
8,256.0	0.40	199.30	8,035.8	-348.2	-62.4	1,502.5	1,503.7	1.28	-1.26	-14.63
8,350.0	0.90	172.80	8,129.8	-254.2	-63.4	1,502.5	1,503.7	0.61	0.53	-28.19
8,444.0	1.40	178.10	8,223.8	-160.2	-65.3	1,502.6	1,503.9	0.54	0.53	5.64
8,539.0	0.90	219.00	8,318.8	-65.2	-67.1	1,502.2	1,503.5	0.98	-0.53	43.05
8,633.0	0.90	217.80	8,412.8	28.8	-68.2	1,501.3	1,502.6	0.02	0.00	-1.28
8,728.0	1.30	216.40	8,507.8	123.8	-69.7	1,500.2	1,501.6	0.42	0.42	-1.47
8,822.0	1.30	221.30	8,601.8	217.8	-71.3	1,498.8	1,500.3	0.12	0.00	5.21

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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)
8,916.0	1.20	197.60	8,695.7	311.7	-73.1	1,497.8	1,499.3	0.56	-0.11	-25.21
8,930.0	1.50	212.70	8,709.7	325.7	-73.4	1,497.7	1,499.2	3.31	2.14	107.86
Projection to Bit										
8,980.0	2.57	266.60	8,759.7	375.7	-74.0	1,496.2	1,497.7	4.15	2.14	107.80

Survey Annotations

Measured Depth ()	Vertical Depth ()	Local Coordinates +N/-S ()	Local Coordinates +E/-W ()	Comment
8,980.0	8,759.7	-74.0	1,496.2	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____