

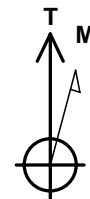
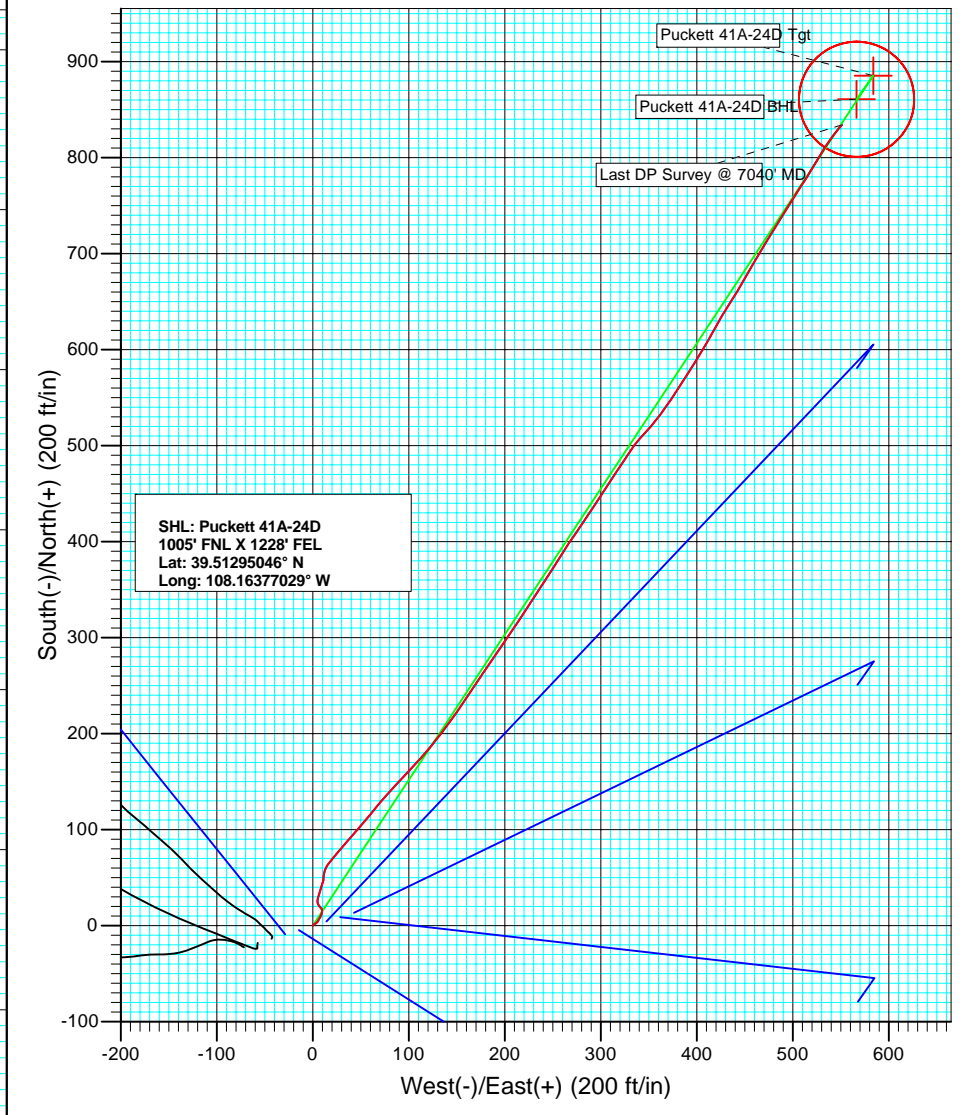
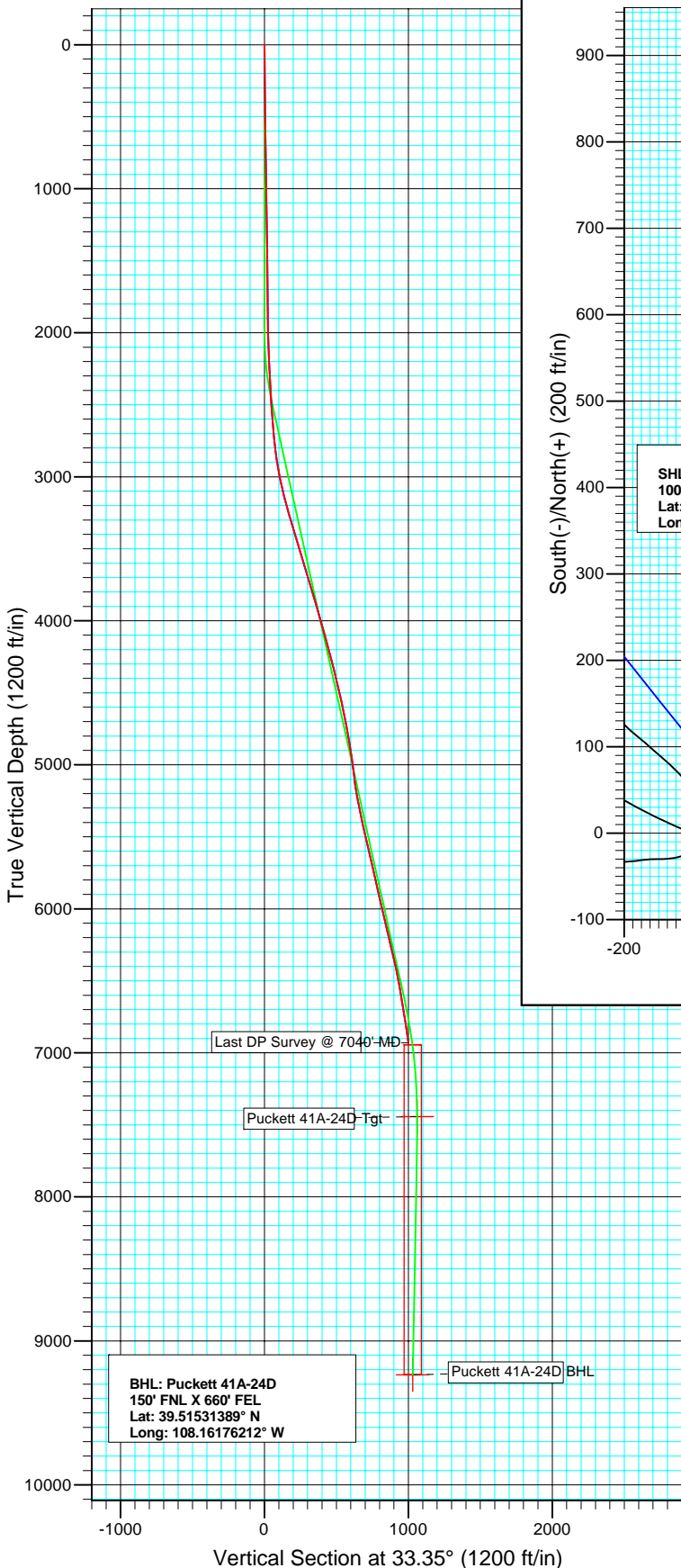


Petroleum Development Corporation

Project: Mesa  
Site: NENE Sec 24-T6S-R97W  
Well: Puckett 41A-24D  
Wellbore: DD  
Design: DD



**Directional Plus**  
A Division of Cathedral Energy Services Ltd.



Azimuths to True North  
Magnetic North: 10.78°

Magnetic Field  
Strength: 52530.1snT  
Dip Angle: 65.81°  
Date: 8/8/2008  
Model: IGRF200510

DESIGN DETAILS: DD

85442: JS  
Puckett 41A-24D KBE @ 8204.0ft (Ensign 68)

Target	Azimuth	Origin	Type	N/S	E/W	TVD
No Target (Freehand)	33.35	Slot		0.0	0.0	0.0

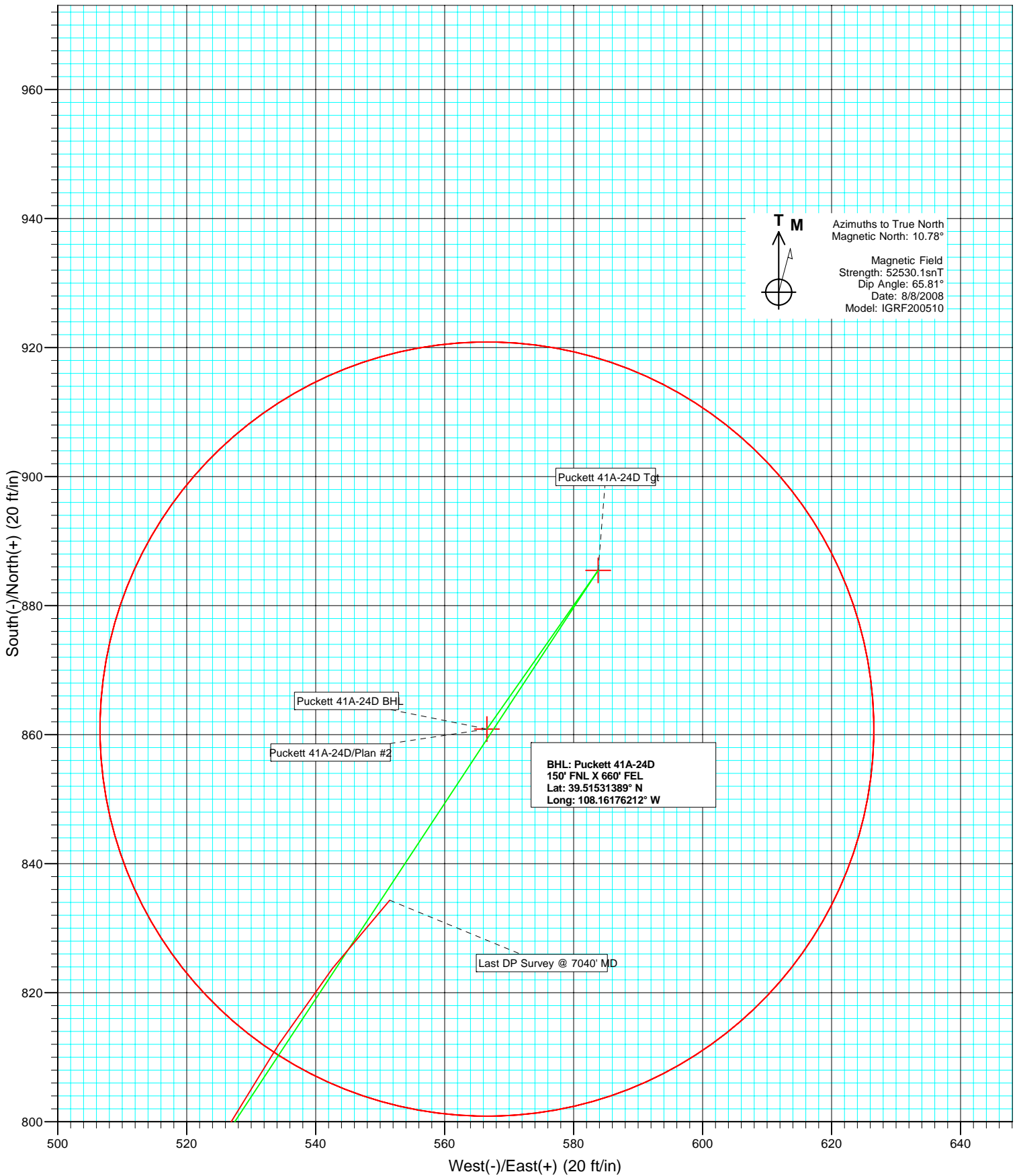


Petroleum Development Corporation

Project: Mesa  
Site: NENE Sec 24-T6S-R97W  
Well: Puckett 41A-24D  
Wellbore: DD  
Design: DD



**Directional Plus**  
A Division of Cathedral Energy Services Ltd.



## Survey Report

<b>Company:</b> Petroleum Development Corp.	<b>Local Co-ordinate Reference:</b> Well Puckett 41A-24D
<b>Project:</b> Mesa	<b>TVD Reference:</b> Puckett 41A-24D KBE @ 8204.0ft (Ensign 68)
<b>Site:</b> NENE Sec 24-T6S-R97W	<b>MD Reference:</b> Puckett 41A-24D KBE @ 8204.0ft (Ensign 68)
<b>Well:</b> Puckett 41A-24D	<b>North Reference:</b> True
<b>Wellbore:</b> DD	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> DD	<b>Database:</b> US EDM 2003.21 Multi User Db

<b>Project</b> Mesa		
<b>Map System:</b> US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b> North American Datum 1983		
<b>Map Zone:</b> Colorado Central Zone		

<b>Site</b> NENE Sec 24-T6S-R97W				
<b>Site Position:</b>	<b>Northing:</b>	1,622,750.42 ft	<b>Latitude:</b>	39.512987
<b>From:</b> Lat/Long	<b>Easting:</b>	2,248,614.82 ft	<b>Longitude:</b>	-108.163618
<b>Position Uncertainty:</b> 0.0 ft	<b>Slot Radius:</b> "		<b>Grid Convergence:</b>	-1.68 °

<b>Well</b> Puckett 41A-24D				
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,622,738.26 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,248,571.49 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft
			<b>Latitude:</b>	39.512950
			<b>Longitude:</b>	-108.163770
			<b>Ground Level:</b>	8,186.0 ft

<b>Wellbore</b> DD					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	8/8/2008	10.78	65.81	52,530

<b>Design</b> DD				
<b>Audit Notes:</b>				
<b>Version:</b> 1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	33.35

<b>Survey Program</b>		<b>Date</b> 8/27/2008
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>
140.0	7,040.0	Survey #1 (DD)
		<b>Tool Name</b>
		MWD
		<b>Description</b>
		Geolink MWD

<b>Survey</b>									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
140.0	0.50	32.90	140.0	0.5	0.3	0.6	0.36	0.36	
201.0	0.90	49.50	201.0	1.0	0.8	1.3	0.73	0.66	
262.0	0.70	67.10	262.0	1.5	1.5	2.1	0.52	-0.33	
324.0	1.30	63.30	324.0	2.0	2.5	3.0	0.97	0.97	
385.0	0.70	40.00	385.0	2.6	3.4	4.0	1.17	-0.98	
446.0	0.30	79.90	446.0	2.9	3.8	4.5	0.83	-0.66	
508.0	0.70	41.50	508.0	3.2	4.2	5.0	0.81	0.65	
569.0	0.70	53.80	569.0	3.7	4.7	5.7	0.25	0.00	
631.0	0.70	24.60	631.0	4.3	5.2	6.4	0.57	0.00	
692.0	1.20	27.60	691.9	5.2	5.7	7.4	0.82	0.82	
754.0	1.10	27.70	753.9	6.3	6.2	8.7	0.16	-0.16	
815.0	0.80	32.00	814.9	7.1	6.7	9.7	0.51	-0.49	

## Survey Report

<b>Company:</b>	Petroleum Development Corp.	<b>Local Co-ordinate Reference:</b>	Well Puckett 41A-24D
<b>Project:</b>	Mesa	<b>TVD Reference:</b>	Puckett 41A-24D KBE @ 8204.0ft (Ensign 68)
<b>Site:</b>	NENE Sec 24-T6S-R97W	<b>MD Reference:</b>	Puckett 41A-24D KBE @ 8204.0ft (Ensign 68)
<b>Well:</b>	Puckett 41A-24D	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	US EDM 2003.21 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
877.0	1.00	37.80	876.9	7.9	7.3	10.6	0.35	0.32	
938.0	1.00	23.70	937.9	8.8	7.8	11.7	0.40	0.00	
1,030.0	0.80	21.90	1,029.9	10.2	8.4	13.1	0.22	-0.22	
1,126.0	1.10	23.60	1,125.9	11.6	9.0	14.7	0.31	0.31	
1,221.0	0.90	14.00	1,220.9	13.2	9.6	16.3	0.27	-0.21	
1,316.0	1.00	359.50	1,315.9	14.8	9.7	17.7	0.27	0.11	
1,411.0	0.90	355.30	1,410.8	16.3	9.7	18.9	0.13	-0.11	
1,506.0	0.60	326.70	1,505.8	17.5	9.3	19.7	0.50	-0.32	
1,601.0	1.10	317.20	1,600.8	18.6	8.4	20.1	0.55	0.53	
1,696.0	1.00	315.00	1,695.8	19.8	7.2	20.5	0.11	-0.11	
1,791.0	1.50	331.70	1,790.8	21.5	6.1	21.3	0.65	0.53	
1,885.0	1.50	342.10	1,884.8	23.8	5.1	22.6	0.29	0.00	
1,980.0	1.50	8.00	1,979.7	26.2	4.9	24.5	0.71	0.00	
2,075.0	2.20	16.10	2,074.7	29.2	5.6	27.4	0.78	0.74	
2,169.0	2.40	16.10	2,168.6	32.8	6.6	31.0	0.21	0.21	
2,264.0	3.00	15.00	2,263.5	37.1	7.8	35.3	0.63	0.63	
2,359.0	3.40	23.80	2,358.3	42.1	9.6	40.4	0.67	0.42	
2,453.0	3.40	9.60	2,452.2	47.4	11.2	45.7	0.89	0.00	
2,488.0	3.50	0.10	2,487.1	49.5	11.3	47.6	1.66	0.29	
2,583.0	4.60	12.30	2,581.9	56.1	12.2	53.5	1.46	1.16	
2,678.0	5.20	36.10	2,676.5	63.3	15.5	61.4	2.21	0.63	
2,772.0	6.50	39.90	2,770.0	70.8	21.4	70.9	1.44	1.38	
2,867.0	8.30	40.60	2,864.2	80.1	29.3	83.1	1.90	1.89	
2,962.0	9.80	40.80	2,958.1	91.5	39.1	97.9	1.58	1.58	
3,057.0	12.60	40.20	3,051.2	105.5	51.1	116.2	2.95	2.95	
3,152.0	14.60	39.80	3,143.6	122.6	65.4	138.4	2.11	2.11	
3,247.0	16.70	42.40	3,235.1	141.9	82.3	163.8	2.33	2.21	
3,342.0	16.40	43.70	3,326.1	161.7	100.8	190.5	0.50	-0.32	
3,436.0	16.50	39.90	3,416.3	181.5	118.5	216.8	1.15	0.11	
3,531.0	16.90	37.80	3,507.3	202.8	135.6	243.9	0.76	0.42	
3,625.0	17.10	34.20	3,597.2	225.0	151.8	271.4	1.14	0.21	
3,720.0	16.80	34.40	3,688.0	247.9	167.4	299.1	0.32	-0.32	
3,814.0	16.60	33.70	3,778.1	270.3	182.5	326.1	0.30	-0.21	
3,909.0	16.30	34.40	3,869.2	292.6	197.5	353.0	0.38	-0.32	
4,004.0	16.30	33.30	3,960.4	314.7	212.4	379.6	0.32	0.00	
4,099.0	16.10	34.40	4,051.6	336.7	227.2	406.1	0.39	-0.21	
4,194.0	15.30	31.90	4,143.1	358.2	241.2	431.8	1.10	-0.84	
4,289.0	14.10	32.10	4,234.9	378.7	254.0	455.9	1.26	-1.26	
4,384.0	13.90	34.10	4,327.1	397.9	266.5	478.9	0.55	-0.21	
4,479.0	13.40	34.20	4,419.4	416.5	279.1	501.3	0.53	-0.53	
4,574.0	12.70	33.90	4,512.0	434.2	291.1	522.8	0.74	-0.74	
4,668.0	12.10	33.40	4,603.8	451.0	302.3	543.0	0.65	-0.64	
4,763.0	11.60	32.60	4,696.8	467.4	313.0	562.5	0.55	-0.53	
4,858.0	11.10	33.70	4,789.9	483.1	323.2	581.2	0.57	-0.53	
4,952.0	8.40	34.10	4,882.5	496.3	332.0	597.1	2.87	-2.87	
5,047.0	7.40	41.50	4,976.6	506.6	340.0	610.1	1.50	-1.05	
5,142.0	6.70	42.80	5,070.9	515.2	347.8	621.6	0.76	-0.74	
5,237.0	8.70	39.70	5,165.1	524.8	356.2	634.2	2.15	2.11	
5,332.0	10.90	34.40	5,258.7	537.8	365.8	650.3	2.50	2.32	
5,426.0	12.80	34.70	5,350.7	553.7	376.8	669.6	2.02	2.02	
5,521.0	12.60	32.70	5,443.3	571.1	388.4	690.5	0.51	-0.21	
5,616.0	12.90	31.40	5,536.0	588.8	399.5	711.5	0.44	0.32	
5,710.0	12.60	30.00	5,627.7	606.7	410.1	732.2	0.46	-0.32	

## Survey Report

<b>Company:</b> Petroleum Development Corp.	<b>Local Co-ordinate Reference:</b> Well Puckett 41A-24D
<b>Project:</b> Mesa	<b>TVD Reference:</b> Puckett 41A-24D KBE @ 8204.0ft (Ensign 68)
<b>Site:</b> NENE Sec 24-T6S-R97W	<b>MD Reference:</b> Puckett 41A-24D KBE @ 8204.0ft (Ensign 68)
<b>Well:</b> Puckett 41A-24D	<b>North Reference:</b> True
<b>Wellbore:</b> DD	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> DD	<b>Database:</b> US EDM 2003.21 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
5,804.0	12.40	28.70	5,719.4	624.4	420.1	752.5	0.37	-0.21	
5,898.0	13.30	32.70	5,811.1	642.3	430.7	773.4	1.35	0.96	
5,994.0	13.40	30.80	5,904.5	661.2	442.4	795.5	0.47	0.10	
6,088.0	13.00	29.10	5,996.0	679.8	453.1	816.9	0.59	-0.43	
6,183.0	13.10	31.00	6,088.6	698.3	463.9	838.4	0.46	0.11	
6,278.0	13.40	32.10	6,181.0	716.9	475.3	860.1	0.41	0.32	
6,372.0	13.20	31.40	6,272.5	735.3	486.6	881.7	0.27	-0.21	
6,467.0	12.70	31.90	6,365.1	753.4	497.8	903.0	0.54	-0.53	
6,566.0	11.50	33.40	6,461.9	770.9	509.0	923.8	1.25	-1.21	
6,661.0	9.80	31.40	6,555.3	785.7	518.4	941.3	1.83	-1.79	
6,756.0	9.30	30.00	6,648.9	799.2	526.5	957.1	0.58	-0.53	
6,850.0	9.00	32.90	6,741.7	812.0	534.3	972.0	0.59	-0.32	
6,945.0	8.50	37.90	6,835.6	823.8	542.6	986.4	0.96	-0.53	
7,040.0	8.20	42.30	6,929.6	834.3	551.5	1,000.1	0.74	-0.32	Last DP Survey @ 7040' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Puckett 41A-24D BHL - hit/miss target - Shape	0.00	0.00	9,235.0	860.9	566.6	1,623,582.15	2,249,163.04	39.515314	-108.161762
- survey misses target center by 2305.6ft at 7040.0ft MD (6929.6 TVD, 834.3 N, 551.5 E)									
- Circle (radius 60.0)									
Puckett 41A-24D Tgt - survey misses target center by 516.9ft at 7040.0ft MD (6929.6 TVD, 834.3 N, 551.5 E) - Point	0.00	0.00	7,443.0	885.5	583.8	1,623,606.24	2,249,181.01	39.515381	-108.161701

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
7,040.0	6,929.6	834.3	551.5	Last DP Survey @ 7040' MD

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------