

Pathfinder Energy Survey Report

30-015-34997

Company: POGO Producing Company Field: Harroun 9 #1 Site: Harroun 9 #1 Well: Harroun 9 #1 Wellpath: Original	Date: 7/5/2006 Time: 11:42:42 Page: 1 Co-ordinate(NE) Reference: Site Harroun 9 #1 Gnd North Vertical (TVD) Reference: SITE 0.0 Section (VS) Reference: Well (0.00N,0.00E,272.26Azi) Survey Calculation Method: Minimum Curvature Db: Sybase
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Field: Harroun 9 #1 Eddy County, NM Map System: US State Plane Coordinate System 1927 Geo Datum: NAD27 (Clarke 1866) Sys Datum: Mean Sea Level	Map Zone: New Mexico, Eastern Zone Coordinate System: Site Centre Geomagnetic Model: igrf2005
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Site: Harroun 9 #1 Site Position: From: Lease Line Position Uncertainty: 0.00 ft Ground Level: 2939.00 ft	Northing: ft Easting: ft Latitude: Longitude: North Reference: Grid Grid Convergence: -0.09 deg
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Well: Harroun 9 #1 Well Position: +N/-S 0.00 ft Northing: 608795.60 ft +E/-W 0.00 ft Easting: 446195.20 ft Position Uncertainty: 0.00 ft	Slot Name: Latitude: 32 40 24.807 N Longitude: 104 30 29.485 W
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Wellpath: Original Current Datum: SITE Magnetic Data: 6/20/2006 Field Strength: 49319 nT Vertical Section: Depth From (TVD) ft	Drilled From: Surface Tie-on Depth: 0.00 ft Above System Datum: Mean Sea Level Declination: 8.63 deg Mag Dip Angle: 60.56 deg +E/-W Direction ft deg
0.00	0.00 0.00 272.26

Survey: Pathfinder MWD Surveys Company: Pathfinder Energy Tool:	Start Date: 6/22/2006 Engineer: Midwellplan Tied-to: From: Definitive Path
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Survey: Pathfinder MWD Surveys

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
6475.00	0.20	40.73	6474.49	-43.48	18.40	-20.09	0.00	0.00	0.00	
6608.00	0.18	122.19	6607.49	-43.41	18.72	-20.42	0.19	-0.02	61.25	
6703.00	0.53	248.05	6702.49	-43.66	18.44	-20.15	0.69	0.37	132.48	
6799.00	0.79	233.98	6798.48	-44.21	17.50	-19.22	0.32	0.27	-14.66	
6915.00	1.32	302.71	6914.47	-43.96	15.72	-17.44	1.09	0.46	59.25	
7011.00	1.49	309.13	7010.44	-42.57	13.83	-15.49	0.24	0.18	6.69	
7107.00	1.58	325.74	7106.40	-40.69	12.11	-13.70	0.47	0.09	17.30	
7203.00	1.41	315.63	7202.37	-38.76	10.54	-12.06	0.33	-0.18	-10.53	
7236.00	1.41	307.11	7235.36	-38.22	9.93	-11.43	0.63	0.00	-25.82	
7267.00	5.28	283.91	7266.30	-37.65	8.24	-9.72	12.98	12.48	-74.84	
7299.00	10.90	282.32	7297.97	-36.65	3.86	-5.30	17.57	17.56	-4.97	
7331.00	16.27	283.29	7329.06	-34.97	-3.47	2.09	16.80	16.78	3.03	
7363.00	20.66	281.88	7359.41	-32.78	-13.36	12.06	13.79	13.72	-4.41	
7395.00	24.45	279.51	7388.96	-30.52	-25.42	24.20	12.18	11.84	-7.41	
7427.00	26.91	278.81	7417.79	-28.31	-39.11	37.96	7.75	7.69	-2.19	
7459.00	28.75	275.64	7446.09	-26.45	-53.93	52.84	7.38	5.75	-9.91	
7491.00	31.48	274.85	7473.77	-24.99	-69.91	68.88	8.62	8.53	-2.47	
7523.00	34.65	273.45	7500.59	-23.73	-87.32	86.32	10.19	9.91	-4.37	
7555.00	37.99	271.95	7526.37	-22.85	-106.25	105.27	10.80	10.44	-4.69	
7587.00	41.15	271.78	7551.03	-22.19	-126.62	125.65	9.88	9.87	-0.53	
7619.00	44.85	270.72	7574.43	-21.72	-148.44	147.47	11.78	11.56	-3.31	
7651.00	48.45	270.37	7596.39	-21.50	-171.70	170.72	11.28	11.25	-1.09	
7683.00	51.62	270.63	7616.94	-21.28	-196.22	195.23	9.93	9.91	0.81	
7715.00	54.87	271.95	7636.09	-20.70	-221.85	220.87	10.68	10.16	4.12	

Pathfinder Energy Survey Report

Company: POGO Producing Company	Date: 7/5/2006	Time: 11:42:42	Page: 2
Field: Harroun 9#1	Co-ordinate (NE) Reference: Site Harroun 9#1, Grid North		
Site: Harroun 9#1	Vertical (TVD) Reference: SITE 00		
Well: Harroun 9#1	Section (VS) Reference: Well (0.00N,0.00E,272.26Az)		
Wellpath: Original	Survey Calculation Method: Minimum Curvature		Db: Sybase

Survey: Pathfinder MWD Surveys

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
7747.00	57.86	272.83	7653.81	-19.59	-248.47	247.50	9.62	9.34	2.75	
7779.00	60.76	271.86	7670.15	-18.46	-275.96	275.02	9.43	9.06	-3.03	
7811.00	64.28	270.90	7684.91	-17.78	-304.34	303.40	11.32	11.00	-3.00	
7843.00	66.83	270.90	7698.15	-17.33	-333.46	332.52	7.97	7.97	0.00	
7875.00	69.03	271.34	7710.17	-16.75	-363.11	362.17	6.99	6.87	1.37	
7907.00	72.11	271.78	7720.82	-15.92	-393.27	392.34	9.71	9.62	1.37	
7939.00	75.80	272.48	7729.66	-14.78	-424.00	423.09	11.72	11.53	2.19	
7971.00	78.52	273.36	7736.77	-13.19	-455.15	454.28	8.91	8.50	2.75	
8003.00	81.25	273.27	7742.39	-11.37	-486.60	485.78	8.54	8.53	-0.28	
8035.00	83.62	272.83	7746.60	-9.68	-518.28	517.49	7.53	7.41	-1.37	
8067.00	85.82	272.39	7749.55	-8.23	-550.10	549.35	7.01	6.87	-1.37	
8099.00	88.81	272.57	7751.05	-6.85	-582.04	581.32	9.36	9.34	0.56	
8131.00	90.48	273.36	7751.24	-5.19	-613.99	613.31	5.77	5.22	2.47	
8163.00	90.92	273.18	7750.85	-3.36	-645.94	645.30	1.49	1.37	-0.56	
8195.00	91.28	273.18	7750.24	-1.59	-677.88	677.29	1.12	1.12	0.00	
8259.00	91.01	272.04	7748.96	1.32	-741.80	741.28	1.83	-0.42	-1.78	
8323.00	91.71	271.78	7747.44	3.46	-805.75	805.26	1.17	1.09	-0.41	
8387.00	90.40	271.25	7746.26	5.15	-869.71	869.24	2.21	-2.05	-0.83	
8452.00	89.69	271.16	7746.21	6.51	-934.70	934.23	1.10	-1.09	-0.14	
8515.00	90.13	271.07	7746.31	7.74	-997.69	997.22	0.71	0.70	-0.14	
8580.00	89.96	271.07	7746.26	8.95	-1062.67	1062.20	0.26	-0.26	0.00	
8644.00	89.87	270.90	7746.35	10.05	-1126.66	1126.19	0.30	-0.14	-0.27	
8707.00	90.66	271.07	7746.06	11.14	-1189.65	1189.17	1.28	1.25	0.27	
8771.00	91.01	271.69	7745.13	12.68	-1253.63	1253.16	1.11	0.55	0.97	
8835.00	91.71	271.86	7743.61	14.66	-1317.58	1317.14	1.13	1.09	0.27	
8899.00	91.01	271.42	7742.09	16.49	-1381.53	1381.11	1.29	-1.09	-0.69	
8963.00	89.60	271.16	7741.75	17.93	-1445.52	1445.10	2.24	-2.20	-0.41	
9027.00	90.75	271.95	7741.56	19.67	-1509.49	1509.09	2.18	1.80	1.23	
9091.00	92.24	272.57	7739.89	22.19	-1573.42	1573.07	2.52	2.33	0.97	
9155.00	91.89	272.83	7737.58	25.20	-1637.30	1637.03	0.68	-0.55	0.41	
9220.00	92.95	271.25	7734.84	27.52	-1702.20	1701.97	2.93	1.63	-2.43	
9284.00	94.09	271.78	7730.91	29.21	-1766.06	1765.84	1.96	1.78	0.83	
9348.00	94.09	271.42	7726.34	30.99	-1829.87	1829.67	0.56	0.00	-0.56	
9412.00	93.74	271.86	7721.97	32.82	-1893.69	1893.52	0.88	-0.55	0.69	
9476.00	91.63	271.86	7718.97	34.89	-1957.59	1957.44	3.30	-3.30	0.00	
9540.00	91.71	272.57	7717.11	37.36	-2021.51	2021.41	1.12	0.12	1.11	
9604.00	93.03	273.10	7714.46	40.52	-2085.38	2085.35	2.22	2.06	0.83	
9668.00	93.03	273.18	7711.08	44.03	-2149.19	2149.26	0.12	0.00	0.12	
9732.00	92.68	273.18	7707.89	47.57	-2213.01	2213.17	0.55	-0.55	0.00	
9795.00	93.03	273.10	7704.75	51.02	-2275.84	2276.08	0.57	0.56	-0.13	
9858.00	92.86	273.18	7701.52	54.46	-2338.66	2338.99	0.30	-0.27	0.13	
9921.00	91.80	273.27	7698.96	58.01	-2401.51	2401.93	1.69	-1.68	0.14	
9985.00	90.92	273.71	7697.44	61.90	-2465.37	2465.90	1.54	-1.37	0.69	
10049.00	90.75	273.97	7696.50	66.19	-2529.22	2529.87	0.49	-0.27	0.41	
10113.00	90.57	273.27	7695.77	70.23	-2593.09	2593.84	1.13	-0.28	-1.09	
10177.00	91.54	273.45	7694.59	73.98	-2656.97	2657.82	1.54	1.52	0.28	
10241.00	91.71	273.45	7692.77	77.83	-2720.83	2721.78	0.27	0.27	0.00	
10305.00	91.10	273.27	7691.20	81.58	-2784.70	2785.75	0.99	-0.95	-0.28	
10369.00	90.66	273.01	7690.22	85.08	-2848.59	2849.73	0.80	-0.69	-0.41	
10433.00	90.13	272.92	7689.78	88.39	-2912.50	2913.73	0.84	-0.83	-0.14	
10497.00	89.96	272.57	7689.73	91.46	-2976.43	2977.72	0.61	-0.27	-0.55	
10558.00	89.87	272.13	7689.82	93.96	-3037.38	3038.72	0.74	-0.15	-0.72	
10622.00	89.52	272.22	7690.16	96.39	-3101.33	3102.72	0.56	-0.55	0.14	

Pathfinder Energy Survey Report

Company: POGO Producing Company	Date: 7/5/2006	Time: 11:42:42	Page: 3
Field: Harroun 9 #1	Co-ordinate(NE) Reference: Site Harroun 9 #1 Grid North	Vertical (TVD) Reference: SITE 0.0	
Site: Harroun 9 #1	Section (VS) Reference: Well (0.00N;0.00E;272.26Azi)	Survey Calculation Method: Minimum Curvature	Db: Sybase
Well: Harroun 9 #1			
Wellpath: Original			

Survey: Pathfinder MWD Surveys

MD ft	Incl deg	Azim deg	TVD ft	N-S ft	E-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
10680.00	89.52	272.22	7690.65	98.63	-3159.29	3160.72	0.00	0.00	0.00	

POGO Producing Company

Field: Harroun 9 #1
 Site: Harroun 9 #1
 Well: Harroun 9 #1

Wellpath: Original
 Survey: Pathfinder MWD Surveys

COMPANY DETAILS

POGO Producing Company
 300 North Maricfield, Ste. 600
 Midland, TX 79701

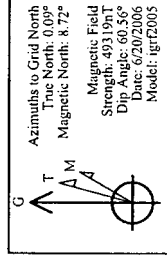
Calculation Method: Minimum Curvature
 Error System: Systematic Ellipse
 Scan Method: Closest Approach 3D
 Error Surface: Elliptical-Comic
 Warning Method: Error Ratio

SITE DETAILS

Harroun 9 #1
 Ground Level: 2939.00
 Positional Uncertainty: 0.00
 Convergence: -0.09

ANNOTATIONS

No.	TVD	MD	Amortition
1	6474.49	6475.00	Tie In
2	7251.35	7252.00	KOP @ 7252' MD / TVD Build 11.49°/100'
3	7748.25	8051.19	EOC @ 8009' MD / 7729' TVD
4	7748.25	8051.19	Hold Inc 91°



WELLPATH DETAILS

Original

Rig:	Ref. Datum:	SITE	SITE	0.00R
		Origin +N/S	Origin +E/W	Starting From TVD
		Angle		
		272.26°	0.00	0.00

Survey: Pathfinder MWD Surveys (Harroun 9 #1/Original)

No	MD	Inc	Az	TVD	+N/S	+E/W	DLeg	TFace	VSec
55	9220.00	92.95	271.25	7734.84	27.52	-1702.20	2.93	-56.09	1701.97
56	9284.00	94.09	271.78	7730.91	29.21	-1766.06	1.96	24.88	1765.84
57	9348.00	94.09	271.42	7726.34	30.99	-1829.87	0.56	-89.99	1829.67
58	9412.00	93.74	271.86	7721.97	32.82	-1893.69	0.88	128.55	1893.52
59	9476.00	91.63	271.86	7718.97	34.89	-1957.59	3.30	180.00	1957.44
60	9540.00	91.71	-272.57	7717.51	37.36	-2021.51	1.12	83.56	2021.41
61	9604.00	93.03	273.10	7714.46	40.52	-2085.38	2.22	21.85	2085.35
62	9668.00	93.03	273.18	7711.08	44.03	-2149.19	0.12	90.00	2149.26
63	9732.00	92.68	273.18	7707.89	47.57	-2213.01	0.55	180.00	2213.17
64	9795.00	93.03	273.10	7704.75	51.02	-2276.84	0.57	-12.86	2276.08
65	9858.00	92.86	273.18	7701.52	54.46	-2338.66	0.30	154.83	2338.99
66	9921.00	91.80	273.27	7698.96	58.01	-2401.51	1.69	175.15	2401.93
67	9985.00	90.92	273.71	7697.44	61.90	-2465.37	1.54	153.44	2465.90
68	10049.00	90.75	273.97	7696.50	66.19	-2529.22	0.49	123.18	2529.87
69	10113.00	90.57	273.27	7695.77	70.23	-2593.09	1.13	-104.42	2593.84
70	10177.00	91.54	273.45	7694.59	73.98	-2656.97	1.54	10.51	2657.82
71	10241.00	91.71	273.45	7692.77	77.83	-2720.83	0.27	0.00	2721.78
72	10305.00	90.10	273.27	7691.20	81.58	-2784.70	0.99	-163.56	2785.75
73	10369.00	90.16	273.27	7689.56	85.33	-2848.56	0.80	170.32	2849.53
74	10433.00	90.13	272.92	7688.56	88.99	-2912.50	0.84	-170.32	2913.73
75	10497.00	89.96	272.57	7688.73	91.46	-2976.43	0.61	-115.91	2977.72
76	10558.00	89.87	272.13	7689.82	93.96	-3037.38	0.74	-101.56	3038.72
77	10622.00	89.52	272.22	7690.16	96.39	-3101.33	0.56	165.58	3102.72
78	10680.00	89.52	272.22	7690.65	98.63	-3159.29	0.00	0.00	3160.72

