



Company: BOPCO
Lease/Well: Poker Lake Unit / No. 423H

Rig Name: McVay 5
State/County: New Mexico / Eddy
Latitude: 32.11, Longitude: -103.91
GRID North is 0.22 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 19.5'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 6/26/2013 / 15:30

Vaughn Energy Services

Midland, Texas

432-563-5444

Surveyor: Danny Spring

Poker Lake Unit No. 423H / API 30-015-40710

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
127.57	0.51	66.37	127.57	0.23	0.52	0.23	0.57	66.37	0.40
222.04	0.38	118.67	222.04	0.25	1.18	0.25	1.20	78.11	0.43
316.51	0.27	109.14	316.50	0.03	1.66	0.03	1.66	89.08	0.13
410.98	0.54	140.20	410.97	-0.39	2.15	-0.39	2.19	100.25	0.36
505.45	0.57	131.90	505.44	-1.04	2.79	-1.04	2.98	110.54	0.09
599.92	1.02	125.11	599.90	-1.84	3.82	-1.84	4.24	115.70	0.49
694.39	1.22	116.94	694.35	-2.78	5.41	-2.78	6.09	117.21	0.27
788.86	1.42	115.30	788.79	-3.74	7.37	-3.74	8.26	116.90	0.22
883.33	1.61	111.82	883.23	-4.73	9.66	-4.73	10.76	116.10	0.23
977.80	2.14	128.87	977.65	-6.34	12.27	-6.34	13.81	117.31	0.81
1072.27	2.25	139.32	1072.05	-8.85	14.85	-8.85	17.29	120.79	0.44
1166.74	2.42	144.04	1166.44	-11.87	17.23	-11.87	20.92	124.56	0.27
1261.21	2.19	143.42	1260.84	-14.93	19.48	-14.93	24.54	127.47	0.25
1355.68	2.47	144.66	1355.23	-18.04	21.73	-18.04	28.24	129.70	0.31
1450.15	2.27	145.69	1449.62	-21.25	23.97	-21.25	32.03	131.56	0.22
1544.62	2.00	157.36	1544.02	-24.32	25.66	-24.32	35.35	133.47	0.54
1639.09	1.32	152.70	1638.45	-26.81	26.79	-26.81	37.90	135.02	0.74
1733.56	0.89	146.53	1732.91	-28.39	27.69	-28.39	39.66	135.71	0.46
1828.03	0.63	128.57	1827.37	-29.33	28.51	-29.33	40.90	135.81	0.37
1922.50	0.56	114.24	1921.83	-29.84	29.34	-29.84	41.85	135.49	0.17

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
2016.97	0.59	116.25	2016.30	-30.25	30.20	-30.25	42.74	135.05	0.04
2111.44	0.38	123.02	2110.76	-30.64	30.90	-30.64	43.51	134.75	0.24
2205.91	0.53	117.97	2205.23	-31.01	31.55	-31.01	44.24	134.51	0.17
2300.38	0.25	187.28	2299.70	-31.42	31.91	-31.42	44.78	134.55	0.53
2394.85	0.36	111.71	2394.17	-31.73	32.16	-31.73	45.18	134.61	0.40
2489.32	0.58	133.72	2488.63	-32.17	32.79	-32.17	45.93	134.46	0.30
2583.79	0.54	139.53	2583.10	-32.84	33.42	-32.84	46.85	134.50	0.08
2678.26	0.37	147.92	2677.57	-33.43	33.87	-33.43	47.59	134.63	0.19
2772.73	0.60	139.31	2772.03	-34.07	34.35	-34.07	48.38	134.76	0.25
2867.20	0.60	128.40	2866.50	-34.75	35.07	-34.75	49.37	134.74	0.12
2961.67	0.83	121.35	2960.96	-35.42	36.04	-35.42	50.53	134.50	0.26
3056.14	1.08	119.20	3055.42	-36.21	37.41	-36.21	52.06	134.07	0.27
3150.61	1.31	125.28	3149.87	-37.27	39.07	-37.27	54.00	133.65	0.28
3245.08	1.33	122.43	3244.31	-38.49	40.88	-38.49	56.15	133.27	0.07
3339.55	1.18	122.80	3338.76	-39.60	42.63	-39.60	58.19	132.89	0.16
3434.02	1.13	151.86	3433.21	-40.95	43.89	-40.95	60.03	133.02	0.62
3528.49	0.84	197.32	3527.67	-42.44	44.12	-42.44	61.22	133.89	0.86
3622.96	0.87	188.61	3622.13	-43.81	43.81	-43.81	61.95	135.00	0.14
3717.43	0.95	225.59	3716.59	-45.06	43.15	-45.06	62.39	136.24	0.61
3811.90	0.28	300.41	3811.05	-45.49	42.39	-45.49	62.18	137.02	0.97
3906.37	0.17	332.55	3905.52	-45.25	42.13	-45.25	61.83	137.05	0.17
4000.84	0.19	341.38	3999.99	-44.98	42.01	-44.98	61.55	136.95	0.04
4095.31	0.16	349.08	4094.46	-44.70	41.94	-44.70	61.29	136.82	0.04
4189.78	0.72	33.59	4188.93	-44.07	42.24	-44.07	61.05	136.21	0.66
4284.25	0.33	321.24	4283.39	-43.36	42.40	-43.36	60.65	135.64	0.74
4378.72	0.16	275.13	4377.86	-43.14	42.10	-43.14	60.28	135.70	0.26
4473.19	0.29	292.17	4472.33	-43.04	41.74	-43.04	59.96	135.87	0.16
4567.66	0.62	273.23	4566.80	-42.92	41.01	-42.92	59.36	136.30	0.37
4662.13	0.79	294.76	4661.26	-42.62	39.92	-42.62	58.39	136.87	0.33
4756.60	0.53	261.24	4755.73	-42.41	38.90	-42.41	57.55	137.48	0.48
4851.07	0.58	273.67	4850.19	-42.45	37.99	-42.45	56.96	138.17	0.14
4945.54	0.61	282.06	4944.66	-42.31	37.02	-42.31	56.22	138.82	0.09
5040.01	1.21	280.24	5039.11	-42.03	35.55	-42.03	55.05	139.78	0.64
5134.48	0.83	279.81	5133.57	-41.74	33.88	-41.74	53.76	140.93	0.40
5228.95	0.79	240.80	5228.03	-41.94	32.64	-41.94	53.14	142.11	0.58
5323.42	0.70	248.72	5322.49	-42.47	31.53	-42.47	52.89	143.41	0.15
5417.89	0.87	210.34	5416.95	-43.29	30.63	-43.29	53.03	144.72	0.57
5512.36	0.84	215.95	5511.41	-44.48	29.86	-44.48	53.57	146.13	0.09
5606.83	0.85	223.24	5605.87	-45.55	28.97	-45.55	53.98	147.55	0.11
5701.30	1.26	264.06	5700.33	-46.17	27.45	-46.17	53.72	149.27	0.88
5795.77	1.34	253.63	5794.77	-46.59	25.36	-46.59	53.05	151.44	0.26
5890.24	1.33	224.71	5889.22	-47.68	23.53	-47.68	53.17	153.74	0.71

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5984.71	1.10	227.07	5983.67	-49.08	22.09	-49.08	53.82	155.77	0.25
6079.18	0.87	234.69	6078.12	-50.11	20.84	-50.11	54.27	157.42	0.28
6173.65	0.89	257.22	6172.58	-50.69	19.54	-50.69	54.33	158.92	0.37
6268.12	1.20	266.51	6267.04	-50.91	17.83	-50.91	53.95	160.70	0.37
6362.59	1.09	229.17	6361.49	-51.56	16.16	-51.56	54.04	162.60	0.79
6457.06	1.18	226.30	6455.94	-52.83	14.78	-52.83	54.85	164.37	0.11
6551.53	1.28	220.10	6550.39	-54.30	13.40	-54.30	55.93	166.14	0.18
6646.00	1.07	218.72	6644.84	-55.79	12.17	-55.79	57.10	167.70	0.23
6729.00	1.08	213.27	6727.82	-57.05	11.25	-57.05	58.15	168.84	0.12