



Company: Exxon Mobil

Lease/Well: FRU 197-33/A-9

Location:

Rig Name: Production

State/County: Colorado/Rio Blanco

Latitude: 39.90

GRID North is 1.79 Degrees West of True North

VS-Azi: 331.15 Degrees



Depth Reference : Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01.ut

Minimum Curvature Method

Report Date/Time: 5/6/2010 / 22:55

Vaughn Energy Services

Rifle Colorado

970-456-2071

Surveyor Ryan Lewis

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	****
200.00	0.72	329.87	199.99	1.09	-0.63	1.26	1.26	329.87	0.36
400.00	2.76	328.17	399.89	6.27	-3.80	7.33	7.33	328.76	1.02
600.00	6.18	331.18	599.26	19.79	-11.53	22.90	22.90	329.77	1.71
800.00	9.40	331.92	797.38	43.63	-24.41	49.99	49.99	330.78	1.61
1000.00	12.12	330.59	993.85	76.33	-42.41	87.32	87.32	330.95	1.36
1200.00	12.71	332.02	1189.17	114.05	-63.04	130.32	130.32	331.07	0.34
1400.00	13.13	332.90	1384.11	153.72	-83.72	175.04	175.04	331.43	0.23
1600.00	13.32	332.48	1578.80	194.38	-104.72	220.78	220.79	331.69	0.10
1800.00	13.64	331.87	1773.29	235.60	-126.48	267.39	267.41	331.77	0.18
2000.00	13.50	331.50	1967.71	276.92	-148.74	314.32	314.34	331.76	0.08
2200.00	13.03	330.21	2162.37	317.02	-171.09	360.22	360.24	331.65	0.28
2400.00	12.62	331.49	2357.38	355.79	-192.72	404.62	404.63	331.56	0.25
2600.00	12.85	330.22	2552.46	394.29	-214.19	448.71	448.72	331.49	0.18
2800.00	13.65	330.71	2747.13	434.18	-236.79	494.55	494.55	331.39	0.40
3000.00	13.45	331.79	2941.56	475.26	-259.34	541.41	541.42	331.38	0.16
3200.00	13.29	332.67	3136.14	516.18	-280.88	587.65	587.66	331.45	0.13
3400.00	12.29	332.83	3331.18	555.54	-301.16	631.91	631.92	331.54	0.50
3600.00	13.00	331.46	3526.32	594.24	-321.63	675.68	675.70	331.58	0.38
3800.00	12.96	331.63	3721.22	633.72	-343.02	720.58	720.60	331.57	0.03
4000.00	12.80	331.91	3916.19	673.00	-364.11	765.16	765.18	331.59	0.08
4200.00	12.23	330.71	4111.43	711.03	-384.91	808.51	808.53	331.57	0.31
4400.00	11.35	330.99	4307.21	746.73	-404.83	849.39	849.41	331.54	0.44
4600.00	8.21	331.24	4504.27	776.47	-421.25	883.36	883.38	331.52	1.57
4800.00	4.67	333.15	4702.98	796.27	-431.80	905.79	905.81	331.53	1.77
5000.00	0.74	26.75	4902.73	804.70	-434.90	914.67	914.70	331.61	2.14
5200.00	0.33	81.82	5102.72	805.93	-433.75	915.20	915.24	331.71	0.31
5400.00	0.03	208.80	5302.72	805.97	-433.21	914.97	915.02	331.74	0.17
5600.00	0.25	68.68	5502.72	806.09	-432.82	914.89	914.94	331.77	0.14
5800.00	0.53	98.63	5702.72	806.11	-431.49	914.27	914.33	331.84	0.17
6000.00	1.49	126.15	5902.69	804.44	-428.49	911.35	911.44	331.96	0.52
6200.00	2.79	111.76	6102.54	801.10	-421.86	905.23	905.39	332.23	0.70
6400.00	2.27	112.09	6302.35	797.80	-413.66	898.38	898.67	332.59	0.26
6600.00	0.89	117.18	6502.27	795.60	-408.60	894.02	894.39	332.82	0.70
6800.00	0.87	128.26	6702.24	793.96	-406.03	891.33	891.76	332.91	0.09

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
7000.00	0.97	131.36	6902.22	791.90	-403.58	888.35	888.81	333.00	0.06
7200.00	1.08	121.94	7102.18	789.79	-400.71	885.12	885.63	333.10	0.10
7400.00	0.82	126.67	7302.16	787.94	-397.97	882.17	882.74	333.20	0.13
7600.00	0.17	181.65	7502.15	786.78	-396.82	880.60	881.19	333.24	0.37
7800.00	0.10	220.75	7702.15	786.35	-396.94	880.28	880.85	333.22	0.06
8000.00	0.27	178.80	7902.15	785.75	-397.05	879.81	880.37	333.19	0.10
8200.00	0.59	140.37	8102.14	784.50	-396.38	878.40	878.95	333.19	0.21
8400.00	0.65	176.69	8302.13	782.58	-395.67	876.37	876.92	333.18	0.20
8600.00	0.97	189.30	8502.11	779.78	-395.87	874.02	874.52	333.08	0.18
8800.00	0.83	155.68	8702.09	776.80	-395.55	871.24	871.70	333.01	0.27
9000.00	1.45	131.92	8902.05	773.78	-393.07	867.41	867.90	333.07	0.38
9200.00	1.50	137.20	9101.98	770.18	-389.41	862.48	863.02	333.18	0.07
9400.00	1.71	145.23	9301.90	765.81	-385.93	856.98	857.56	333.25	0.15
9600.00	2.01	148.38	9501.80	760.37	-382.39	850.51	851.11	333.30	0.16
9800.00	2.10	145.17	9701.67	754.38	-378.46	843.36	843.99	333.36	0.07
10000.00	2.10	147.14	9901.54	748.30	-374.39	836.07	836.73	333.42	0.04
10200.00	1.66	133.90	10101.43	743.22	-370.31	829.65	830.36	333.51	0.31
10400.00	2.28	133.85	10301.31	738.45	-365.36	823.09	823.89	333.68	0.31
10600.00	2.63	135.91	10501.13	732.41	-359.30	814.87	815.79	333.87	0.18
10800.00	2.58	133.64	10700.92	726.01	-352.86	806.16	807.22	334.08	0.06
11000.00	2.05	141.89	10900.76	720.09	-347.39	798.34	799.51	334.25	0.31
11200.00	1.33	141.93	11100.67	715.44	-343.75	792.51	793.74	334.34	0.36
11400.00	1.53	149.55	11300.61	711.30	-340.96	787.54	788.80	334.39	0.14
11600.00	1.47	160.36	11500.54	706.58	-338.74	782.33	783.58	334.39	0.14
11800.00	2.11	172.99	11700.44	700.51	-337.43	776.38	777.54	334.28	0.37
12000.00	3.15	188.55	11900.23	691.42	-337.80	768.60	769.53	333.96	0.63
12100.00	3.15	181.78	12000.08	685.96	-338.29	764.06	764.84	333.75	0.37

HORIZONTAL DISPLACEMENT IS 764.84 FEET AT 333.75 DEGREES									
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