



Company: EXXON MOBIL

Lease/Well: FRU197-33B4

Rig Name: PRODUCTION

State/County: COLORADO/RIO BLANCO

Latitude: 39.92

GRID North is 1.80 Degrees West of True North

VS-Azi: 0.00 Degrees



DEPTH REFERENCE : GL = 0'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: fru197-33b4raw.ut

Minimum Curvature Method

Report Date/Time: 9/27/2010 / 08:13

Vaughn Energy Services
Rifle, Colorado

970 456 2071

Surveyor: S. Anderson

FRU 197-33B4

Duplicate Copy
USP DR # 52421.005

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	0.56	336.28	200.00	0.90	-0.40	0.90	0.99	336.28	0.28
400.00	3.69	170.66	399.88	-4.54	0.25	-4.54	4.55	176.84	2.12
600.00	7.48	154.51	598.90	-22.65	6.90	-22.65	23.68	163.06	2.03
800.00	11.78	157.95	796.04	-53.33	20.17	-53.33	57.02	159.28	2.17
1000.00	13.97	149.78	991.02	-93.12	39.99	-93.12	101.34	156.76	1.42
1200.00	13.54	145.84	1185.29	-133.35	65.28	-133.35	148.47	153.92	0.52
1400.00	13.34	147.37	1379.81	-172.16	90.87	-172.16	194.67	152.17	0.20
1600.00	13.34	147.98	1574.41	-211.15	115.55	-211.15	240.69	151.31	0.07
1800.00	12.82	146.55	1768.23	-249.21	140.01	-249.21	285.85	150.67	0.31
2000.00	10.69	139.41	1965.03	-281.82	164.31	-281.82	326.22	149.76	1.29
2200.00	7.12	132.96	2162.59	-304.37	185.47	-304.37	356.42	148.64	1.85
2400.00	4.12	135.38	2361.61	-317.93	199.59	-317.93	375.39	147.88	1.51
2600.00	2.11	148.71	2561.30	-326.19	206.55	-326.19	386.08	147.66	1.06
2800.00	1.33	139.04	2761.21	-331.08	209.98	-331.08	392.05	147.62	0.41
3000.00	1.08	123.99	2961.17	-333.89	213.06	-333.89	396.08	147.46	0.20
3200.00	0.50	22.61	3161.16	-334.13	214.97	-334.13	397.31	147.24	0.64
3400.00	0.44	47.96	3361.15	-332.81	215.87	-332.81	396.69	147.03	0.11
3600.00	0.24	28.71	3561.15	-331.93	216.64	-331.93	396.37	146.87	0.11

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
3800.00	0.06	12.71	3761.14	-331.46	216.87	-331.46	396.10	146.80	0.09
4000.00	0.02	34.51	3961.14	-331.32	216.91	-331.32	396.01	146.79	0.02
4200.00	0.03	41.35	4161.14	-331.26	216.96	-331.26	395.98	146.78	0.00
4400.00	0.17	359.57	4361.14	-330.93	216.99	-330.93	395.73	146.75	0.07
4600.00	0.45	134.53	4561.14	-331.20	217.55	-331.20	396.26	146.70	0.29
4800.00	0.66	133.91	4761.13	-332.55	218.94	-332.55	398.15	146.64	0.10
5000.00	1.32	165.63	4961.10	-335.59	220.35	-335.59	401.46	146.71	0.42
5200.00	1.21	123.65	5161.06	-338.99	222.68	-338.99	405.59	146.70	0.46
5400.00	1.17	126.35	5361.02	-341.37	226.08	-341.37	409.45	146.48	0.03
5600.00	1.52	115.53	5560.96	-343.72	230.12	-343.72	413.64	146.20	0.22
5800.00	1.64	122.89	5760.88	-346.42	234.91	-346.42	418.55	145.86	0.12
6000.00	1.71	134.66	5960.80	-350.06	239.42	-350.06	424.10	145.63	0.17
6200.00	1.78	160.90	6160.71	-355.09	242.56	-355.09	430.03	145.66	0.40
6400.00	2.07	193.04	6360.60	-361.55	242.76	-361.55	435.49	146.12	0.55
6600.00	1.84	184.73	6560.49	-368.28	241.68	-368.28	440.50	146.73	0.18
6800.00	1.72	181.92	6760.39	-374.48	241.31	-374.48	445.50	147.20	0.07
7000.00	2.14	148.13	6960.28	-380.64	243.18	-380.64	451.69	147.43	0.59
7200.00	2.10	147.04	7160.15	-386.88	247.14	-386.88	459.08	147.43	0.03
7400.00	1.95	150.55	7360.02	-392.92	250.81	-392.92	466.14	147.45	0.09
7600.00	1.90	162.39	7559.91	-399.05	253.49	-399.05	472.76	147.58	0.20
7800.00	1.96	164.44	7759.80	-405.51	255.41	-405.51	479.24	147.80	0.05
8000.00	1.97	152.38	7959.68	-411.86	257.92	-411.86	485.95	147.94	0.21
8200.00	1.91	147.04	8159.56	-417.71	261.34	-417.71	492.72	147.97	0.10
8400.00	2.38	147.34	8359.42	-424.01	265.40	-424.01	500.22	147.96	0.24
8600.00	2.17	144.64	8559.26	-430.60	269.83	-430.60	508.16	147.93	0.12
8800.00	2.07	145.81	8759.13	-436.67	274.05	-436.67	515.54	147.89	0.05
9000.00	1.74	150.22	8959.02	-442.30	277.59	-442.30	522.19	147.89	0.18
9200.00	1.37	150.86	9158.94	-447.03	280.27	-447.03	527.62	147.91	0.18
9400.00	1.66	165.18	9358.87	-451.92	282.17	-451.92	532.78	148.02	0.24
9600.00	1.76	165.28	9558.78	-457.68	283.69	-457.68	538.47	148.21	0.05
9800.00	1.88	161.80	9758.68	-463.75	285.49	-463.75	544.59	148.38	0.08
10000.00	1.77	169.55	9958.58	-469.91	287.08	-469.91	550.66	148.58	0.13
10200.00	1.45	192.75	10158.51	-475.41	287.08	-475.41	555.37	148.87	0.36
10400.00	1.90	204.20	10358.42	-480.90	285.17	-480.90	559.09	149.33	0.28
10600.00	1.79	212.65	10558.32	-486.54	282.13	-486.54	562.42	149.89	0.15
10800.00	1.51	217.15	10758.23	-491.27	278.85	-491.27	564.89	150.42	0.15
11000.00	1.35	203.54	10958.17	-495.53	276.32	-495.53	567.36	150.86	0.19
11200.00	1.30	200.74	11158.12	-499.82	274.57	-499.82	570.27	151.22	0.04
11400.00	0.95	193.47	11358.08	-503.55	273.38	-503.55	572.97	151.50	0.19

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
11600.00	0.99	168.89	11558.05	-506.85	273.33	-506.85	575.86	151.66	0.21
11800.00	1.01	167.28	11758.02	-510.28	274.05	-510.28	579.21	151.76	0.02
12000.00	0.88	154.21	11958.00	-513.38	275.11	-513.38	582.45	151.81	0.13
12196.00	1.03	152.27	12153.97	-516.29	276.58	-516.29	585.71	151.82	0.08



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