



Company: Extraction Oil and Gas
Well/API: Graeber 31-33D/05-123-23664
Tool Type: North Seeking Rate Gyro
Rig Name: Production/Coretech
County/State: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.00888, Longitude: -105.00162
All Azimuths referenced to True North
No Grid Correction Applied



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB= GL Elevation= 5234'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 7/18/2016 / 14:57

Lat/Long & Elevation Obtained by Handheld GPS at Wellhead

Handheld GPS Reference: NAD83/ Device Error: +- 9 Feet

VES Survey International- Henderson Co

Jason Kinchelow

303-853-4976

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
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	****
100.000	0.368	221.236	99.999	-0.241	-0.212	-0.241	0.321	221.236	0.368
200.000	0.797	301.645	199.995	-0.118	-1.015	-0.118	1.022	263.366	0.820
300.000	2.385	325.793	299.954	1.967	-2.777	1.967	3.403	305.321	1.690
400.000	4.291	327.132	399.780	6.831	-5.977	6.831	9.077	318.815	1.908
500.000	6.473	327.681	499.333	14.738	-11.022	14.738	18.403	323.210	2.182
600.000	8.217	323.740	598.509	25.265	-18.263	25.265	31.174	324.139	1.815
700.000	10.508	320.439	697.171	38.059	-28.298	38.059	47.426	323.368	2.352
800.000	12.437	320.275	795.169	53.372	-40.989	53.372	67.295	322.476	1.930
900.000	14.481	316.325	892.419	70.699	-56.507	70.699	90.507	321.366	2.240
1000.000	16.108	316.542	988.874	89.813	-74.684	89.813	116.808	320.255	1.629
1100.000	17.972	317.372	1084.481	111.236	-94.676	111.236	146.072	319.598	1.879
1200.000	18.524	317.263	1179.451	134.255	-115.904	134.255	177.364	319.195	0.554
1300.000	18.413	320.350	1274.303	158.082	-136.762	158.082	209.031	319.136	0.984
1400.000	18.546	322.108	1369.148	182.793	-156.607	182.793	240.706	319.412	0.573
1500.000	18.804	321.699	1463.883	207.992	-176.364	207.992	272.699	319.704	0.289
1600.000	19.670	322.636	1558.298	234.017	-196.567	234.017	305.618	319.971	0.919
1700.000	20.245	323.376	1652.293	261.279	-217.103	261.279	339.706	320.276	0.628
1800.000	19.524	322.642	1746.330	288.448	-237.564	288.448	373.683	320.525	0.762
1900.000	19.029	320.879	1840.724	314.378	-257.990	314.378	406.685	320.626	0.765
2000.000	18.945	318.913	1935.285	339.260	-278.945	339.260	439.213	320.572	0.645
2100.000	18.197	315.286	2030.080	362.592	-300.600	362.592	470.992	320.340	1.376
2200.000	18.464	315.836	2125.006	385.048	-322.619	385.048	502.340	320.041	0.318
2300.000	18.717	318.942	2219.790	408.507	-344.191	408.507	534.177	319.884	1.022
2400.000	18.385	318.845	2314.594	432.479	-365.107	432.479	565.987	319.828	0.333
2500.000	18.212	317.308	2409.538	455.839	-386.081	455.839	597.367	319.736	0.513
2600.000	18.106	318.881	2504.558	479.031	-406.896	479.031	628.518	319.655	0.502
2700.000	18.486	318.818	2599.503	502.669	-427.554	502.669	659.908	319.617	0.380
2800.000	17.736	318.138	2694.548	525.944	-448.157	525.944	690.987	319.566	0.779
2900.000	17.184	320.343	2789.941	548.661	-467.750	548.661	720.985	319.551	0.861
3000.000	16.996	320.446	2885.525	571.303	-486.485	571.303	750.369	319.584	0.191
3100.000	17.273	319.562	2981.087	593.872	-505.421	593.872	779.830	319.600	0.380
3200.000	17.943	318.483	3076.402	616.705	-525.261	616.705	810.077	319.578	0.745
3300.000	18.466	318.071	3171.396	640.021	-546.054	640.021	841.309	319.530	0.539
3400.000	18.334	319.046	3266.284	663.681	-566.945	663.681	872.869	319.495	0.335

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
3500.000	18.222	318.273	3361.239	687.228	-587.660	687.228	904.227	319.466	0.267
3600.000	18.529	319.675	3456.140	711.010	-608.349	711.010	935.748	319.449	0.538
3700.000	18.713	319.312	3550.905	735.288	-629.090	735.288	967.679	319.451	0.217
3800.000	18.696	318.378	3645.624	759.433	-650.193	759.433	999.745	319.431	0.300
3900.000	17.792	318.029	3740.596	782.774	-671.057	782.774	1031.044	319.394	0.910
4000.000	18.078	316.655	3835.737	805.417	-691.924	805.417	1061.817	319.335	0.511
4100.000	17.910	317.131	3930.846	827.970	-713.035	827.970	1092.682	319.265	0.223
4200.000	18.229	317.776	4025.914	850.822	-734.007	850.822	1123.684	319.216	0.376
4300.000	17.331	318.434	4121.137	873.549	-754.401	873.549	1154.214	319.186	0.920
4400.000	17.132	317.286	4216.648	895.515	-774.275	895.515	1183.828	319.153	0.394
4500.000	17.614	319.043	4312.087	917.764	-794.184	917.764	1213.680	319.129	0.712
4600.000	18.192	317.906	4407.244	940.774	-814.566	940.774	1244.417	319.112	0.676
4700.000	18.083	316.974	4502.276	963.703	-835.620	963.703	1275.533	319.072	0.310
4800.000	19.310	319.099	4596.998	987.547	-857.036	987.547	1307.578	319.047	1.403
4900.000	18.611	320.104	4691.572	1012.287	-878.097	1012.287	1340.067	319.060	0.771
5000.000	18.182	318.560	4786.462	1036.226	-898.658	1036.226	1371.624	319.067	0.649
5100.000	19.262	321.393	4881.171	1060.813	-919.277	1060.813	1403.708	319.089	1.411
5200.000	19.864	321.985	4975.398	1087.088	-940.032	1087.088	1437.157	319.149	0.633
5300.000	19.947	319.566	5069.425	1113.456	-961.559	1113.456	1471.183	319.187	0.828
5400.000	19.229	319.866	5163.638	1139.030	-983.236	1139.030	1504.707	319.198	0.725
5500.000	18.965	319.262	5258.134	1163.932	-1004.46	1163.932	1537.423	319.206	0.329
5600.000	18.997	320.526	5352.697	1188.808	-1025.41	1188.808	1569.944	319.221	0.412
5700.000	18.732	319.345	5447.327	1213.552	-1046.21	1213.552	1602.272	319.235	0.465
5800.000	19.296	319.886	5541.870	1238.370	-1067.32	1238.370	1634.850	319.243	0.591
5900.000	19.293	320.122	5636.253	1263.683	-1088.56	1263.683	1667.890	319.258	0.078
6000.000	18.185	319.163	5730.951	1288.167	-1109.36	1288.167	1700.013	319.265	1.150
6100.000	16.789	317.408	5826.328	1310.607	-1129.34	1310.607	1730.055	319.249	1.492
6200.000	16.382	316.064	5922.167	1331.395	-1148.89	1331.395	1758.571	319.208	0.559
6300.000	15.207	318.091	6018.391	1351.312	-1167.44	1351.312	1785.767	319.175	1.299
6400.000	14.214	323.247	6115.116	1370.910	-1183.55	1370.910	1811.127	319.195	1.642
6500.000	13.645	321.148	6212.176	1389.933	-1198.29	1389.933	1835.163	319.235	0.761
6600.000	12.304	315.906	6309.624	1406.772	-1213.11	1406.772	1857.590	319.228	1.783
6700.000	10.818	318.356	6407.593	1421.438	-1226.76	1421.438	1877.612	319.204	1.565
6800.000	10.070	317.653	6505.935	1434.913	-1238.89	1434.913	1895.735	319.193	0.759
6900.000	8.994	320.915	6604.554	1447.442	-1249.70	1447.442	1912.288	319.193	1.204
7000.000	8.554	320.245	6703.384	1459.227	-1259.39	1459.227	1927.536	319.204	0.451
7100.000	7.592	317.455	6802.392	1469.812	-1268.61	1469.812	1941.576	319.202	1.038
7200.000	5.888	308.868	6901.700	1477.898	-1277.07	1477.898	1953.226	319.169	1.976
7300.000	4.045	302.979	7001.321	1483.037	-1284.02	1483.037	1961.662	319.114	1.909
7400.000	3.351	286.756	7101.114	1485.800	-1289.78	1485.800	1967.521	319.040	1.249
7500.000	2.718	269.389	7200.976	1486.617	-1294.95	1486.617	1971.530	318.942	1.109
7600.000	1.196	295.778	7300.916	1487.046	-1298.26	1487.046	1974.029	318.877	1.730
7700.000	0.661	319.439	7400.903	1487.938	-1299.58	1487.938	1975.566	318.866	0.648
7800.000	0.176	290.054	7500.900	1488.429	-1300.10	1488.429	1976.277	318.864	0.515
7900.000	0.316	248.647	7600.899	1488.381	-1300.50	1488.381	1976.505	318.854	0.218
8000.000	0.134	174.612	7700.899	1488.164	-1300.74	1488.164	1976.504	318.845	0.307
8100.000	0.431	120.904	7800.897	1487.855	-1300.41	1487.855	1976.052	318.846	0.368
8200.000	0.376	119.950	7900.895	1487.498	-1299.80	1487.498	1975.383	318.852	0.055
8300.000	0.655	131.900	8000.891	1486.952	-1299.09	1486.952	1974.505	318.858	0.297
HORIZONTAL DISPLACEMENT IS 1974.505 FEET AT 318.858 DEGREES									