



Company: Extraction Oil & Gas
Well/API: Thronson MC 2-4/05-013-06417
Tool Type: North Seeking Rate Gyro
Rig Name: Production/CoreTech
County/State: Boulder/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.08537, Longitude: -105.09142
All Azimuths referenced to True North
No Grid Correction Applied



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Elevation = 5078

DRILLOG MS GYRO SURVEY CALCULATIONS
Error Model: VESSI_GYROFLEX_SLICKLINE.IPM
Filename: msgyrosurvey.ut
Minimum Curvature Method
Report Date/Time: 9/19/2018 / 11:48

Lat/Long Obtained By Handheld GPS At Wellhead
Handheld GPS Reference: NAD83/Device Error: ±9 Feet
VES Survey International - Henderson CO
Justin Williams
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	0.290	138.433	100.000	-0.189	0.168	-0.189	0.253	138.433	0.290
200.000	0.376	235.476	199.998	-0.565	0.066	-0.565	0.569	173.348	0.502
300.000	0.331	212.388	299.997	-0.994	-0.359	-0.994	1.057	199.846	0.148
400.000	0.723	214.556	399.992	-1.758	-0.871	-1.758	1.962	206.370	0.393
500.000	0.694	231.393	499.985	-2.655	-1.702	-2.655	3.154	212.666	0.209
600.000	1.164	236.851	599.971	-3.588	-3.025	-3.588	4.693	220.138	0.478
700.000	1.586	232.669	699.942	-4.982	-4.975	-4.982	7.041	224.963	0.434
800.000	2.014	235.844	799.893	-6.808	-7.530	-6.808	10.151	227.884	0.440
900.000	2.032	234.246	899.830	-8.830	-10.423	-8.830	13.661	229.729	0.059
1000.000	1.970	238.523	999.770	-10.764	-13.327	-10.764	17.131	231.075	0.162
1100.000	2.002	237.691	1099.709	-12.595	-16.270	-12.595	20.575	232.256	0.044
1200.000	1.961	240.571	1199.650	-14.369	-19.237	-14.369	24.011	233.241	0.108
1300.000	1.806	244.099	1299.596	-15.899	-22.145	-15.899	27.261	234.324	0.193
1400.000	1.782	245.070	1399.547	-17.242	-24.972	-17.242	30.347	235.377	0.039
1500.000	1.653	251.410	1499.502	-18.358	-27.750	-18.358	33.272	236.514	0.229
1600.000	1.215	271.394	1599.471	-18.792	-30.177	-18.792	35.549	238.089	0.659
1700.000	1.154	284.393	1699.450	-18.516	-32.212	-18.516	37.154	240.110	0.275
1800.000	1.318	298.330	1799.427	-17.720	-34.199	-17.720	38.517	242.610	0.341
1900.000	1.440	309.404	1899.398	-16.377	-36.182	-16.377	39.716	245.648	0.292
2000.000	1.495	311.587	1999.365	-14.714	-38.128	-14.714	40.869	248.899	0.078
2100.000	1.586	338.816	2099.330	-12.558	-39.604	-12.558	41.547	252.407	0.730
2200.000	1.715	343.956	2199.289	-9.829	-40.517	-9.829	41.693	256.364	0.196
2300.000	1.606	335.115	2299.247	-7.120	-41.521	-7.120	42.127	260.270	0.278
2400.000	1.425	341.013	2399.212	-4.673	-42.515	-4.673	42.771	263.727	0.239
2500.000	1.512	341.204	2499.179	-2.248	-43.344	-2.248	43.403	267.031	0.088
2600.000	1.593	339.485	2599.142	0.303	-44.257	0.303	44.258	270.393	0.093
2700.000	1.788	339.489	2699.099	3.066	-45.291	3.066	45.394	273.873	0.195
2800.000	1.723	344.974	2799.052	5.979	-46.227	5.979	46.612	277.370	0.180
2900.000	1.681	333.044	2899.008	8.739	-47.281	8.739	48.082	280.471	0.356
3000.000	1.607	340.907	2998.967	11.371	-48.405	11.371	49.723	283.220	0.237
3100.000	1.112	328.605	3098.939	13.525	-49.369	13.525	51.188	285.320	0.572

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
3200.000	0.767	325.938	3198.925	14.908	-50.250	14.908	52.415	286.524	0.348
3300.000	0.485	311.935	3298.919	15.745	-50.940	15.745	53.318	287.176	0.319
3400.000	0.703	295.480	3398.914	16.292	-51.809	16.292	54.310	287.457	0.275
3500.000	0.806	270.728	3498.905	16.565	-53.066	16.565	55.592	287.336	0.339
3600.000	0.823	287.150	3598.895	16.786	-54.456	16.786	56.984	287.132	0.233
3700.000	0.670	275.775	3698.887	17.056	-55.723	17.056	58.275	287.019	0.212
3800.000	0.669	304.327	3798.880	17.444	-56.787	17.444	59.406	287.077	0.330
3900.000	0.816	315.863	3898.872	18.285	-57.765	18.285	60.590	287.565	0.209
4000.000	0.696	298.001	3998.863	19.081	-58.797	19.081	61.816	287.980	0.263
4100.000	0.775	304.369	4098.855	19.748	-59.892	19.748	63.064	288.249	0.113
4200.000	1.083	314.824	4198.842	20.796	-61.120	20.796	64.561	288.791	0.351
4300.000	1.314	322.163	4298.820	22.368	-62.494	22.368	66.376	289.693	0.276
4400.000	1.194	312.078	4398.796	23.971	-63.970	23.971	68.314	290.542	0.251
4500.000	1.276	315.316	4498.773	25.461	-65.526	25.461	70.299	291.234	0.108
4600.000	1.404	298.666	4598.746	26.840	-67.384	26.840	72.533	291.718	0.408
4700.000	1.514	280.318	4698.714	27.665	-69.759	27.665	75.044	291.632	0.478
4800.000	1.597	281.183	4798.677	28.171	-72.426	28.171	77.712	291.254	0.086
4900.000	1.353	291.533	4898.644	28.875	-74.891	28.875	80.265	291.085	0.360
5000.000	0.961	312.813	4998.624	29.878	-76.604	29.878	82.225	291.307	0.575
5100.000	0.951	326.553	5098.610	31.141	-77.677	31.141	83.686	291.846	0.229
5200.000	0.877	328.899	5198.598	32.489	-78.530	32.489	84.985	292.475	0.083
5300.000	0.846	336.347	5298.586	33.820	-79.221	33.820	86.138	293.118	0.116
5400.000	0.816	341.478	5398.576	35.170	-79.743	35.170	87.154	293.800	0.080
5500.000	0.737	340.086	5498.567	36.450	-80.188	36.450	88.084	294.444	0.081
5600.000	0.686	318.083	5598.559	37.500	-80.807	37.500	89.084	294.894	0.276
5700.000	0.676	315.722	5698.552	38.368	-81.619	38.368	90.187	295.177	0.030
5800.000	0.912	335.733	5798.543	39.516	-82.358	39.516	91.347	295.632	0.361
5900.000	1.355	338.090	5898.523	41.339	-83.126	41.339	92.838	296.441	0.445
6000.000	1.130	335.208	5998.499	43.331	-83.981	43.331	94.501	297.292	0.233
6100.000	1.278	334.495	6098.477	45.233	-84.875	45.233	96.176	298.055	0.148
6200.000	1.699	326.799	6198.443	47.480	-86.167	47.480	98.382	298.856	0.466
6300.000	1.506	307.933	6298.405	49.528	-88.015	49.528	100.994	299.367	0.559
6400.000	1.558	339.558	6398.371	51.610	-89.527	51.610	103.337	299.962	0.836
6500.000	2.156	346.134	6498.318	54.710	-90.452	54.710	105.711	301.168	0.634
6600.000	2.017	343.309	6598.252	58.222	-91.408	58.222	108.376	302.495	0.173
6700.000	2.496	354.468	6698.174	62.075	-92.124	62.075	111.086	303.973	0.648
6800.000	2.434	353.907	6798.082	66.354	-92.559	66.354	113.886	305.636	0.067
6900.000	2.838	5.335	6897.976	70.930	-92.554	70.930	116.608	307.465	0.661
7000.000	2.906	16.203	6997.852	75.830	-91.617	75.830	118.928	309.614	0.548
7100.000	2.900	21.375	7097.723	80.619	-89.988	80.619	120.819	311.857	0.262
7200.000	2.795	17.055	7197.600	85.306	-88.350	85.306	122.813	313.996	0.239
7300.000	2.401	25.405	7297.497	89.529	-86.737	89.529	124.654	315.908	0.546
7400.000	2.305	13.977	7397.414	93.372	-85.353	93.372	126.504	317.569	0.478

<div> HORIZONTAL DISPLACEMENT IS 126.504 FEET AT 317.569 DEGREES </div>
