



Company/Rig: NOBLE ENERGY/ CORETECH
WELL: WELLS RANCH AF 06-08
DECLINATION: 8.21 DEGREES
TD AS DRILLED: 6766 FEET
COUNTY/STATE: WELD/COLORADO
Latitude: 40.430, Longitude: -104.359
GRID North is 0.730 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=GLSURFACE ELEVATION=4678FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/14/2014 / 12:20

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: KEVIN MCDOWELL

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	0.145	97.336	100.000	-0.016	0.125	-0.016	0.126	97.336	0.145
200.000	0.396	83.753	199.999	0.005	0.594	0.005	0.594	89.491	0.257
300.000	0.142	123.449	299.998	-0.025	1.040	-0.025	1.041	91.392	0.301
400.000	0.344	22.290	399.997	0.184	1.257	0.184	1.270	81.671	0.396
500.000	0.511	66.476	499.994	0.639	1.779	0.639	1.891	70.236	0.357
600.000	0.341	74.586	599.992	0.896	2.475	0.896	2.632	70.091	0.180
700.000	0.362	60.672	699.990	1.130	3.036	1.130	3.240	69.589	0.088
800.000	0.562	38.649	799.987	1.668	3.618	1.668	3.984	65.252	0.264
900.000	0.636	42.081	899.981	2.463	4.297	2.463	4.953	60.175	0.082
1000.000	0.519	38.249	999.976	3.231	4.950	3.231	5.911	56.861	0.123
1100.000	0.610	65.265	1099.971	3.810	5.714	3.810	6.867	56.303	0.278
1200.000	0.514	45.228	1199.967	4.348	6.515	4.348	7.833	56.280	0.217
1300.000	0.621	36.547	1299.962	5.100	7.156	5.100	8.787	54.526	0.137
1400.000	0.552	43.117	1399.956	5.887	7.808	5.887	9.779	52.987	0.096
1500.000	0.573	57.527	1499.952	6.507	8.560	6.507	10.752	52.757	0.143
1600.000	0.936	81.896	1599.943	6.891	9.790	6.891	11.972	54.860	0.476
1700.000	1.574	94.413	1699.919	6.900	11.968	6.900	13.815	60.034	0.691
1800.000	1.657	95.015	1799.879	6.668	14.777	6.668	16.212	65.713	0.084
1900.000	1.915	120.474	1899.832	5.694	17.657	5.694	18.553	72.126	0.826

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
2000.000	1.736	147.715	1999.783	3.566	19.907	3.566	20.224	79.844	0.877
2100.000	2.111	150.658	2099.726	0.680	21.619	0.680	21.629	88.199	0.387
2200.000	2.201	152.154	2199.656	-2.623	23.418	-2.623	23.564	96.392	0.106
2300.000	2.508	148.064	2299.571	-6.178	25.472	-6.178	26.210	103.633	0.350
2400.000	2.065	157.058	2399.492	-9.693	27.331	-9.693	28.999	109.528	0.568
2500.000	2.160	149.090	2499.424	-12.969	29.002	-12.969	31.770	114.094	0.308
2600.000	1.903	167.593	2599.362	-16.208	30.326	-16.208	34.386	118.122	0.701
2700.000	1.575	151.009	2699.316	-19.032	31.349	-19.032	36.674	121.261	0.597
2800.000	1.195	138.766	2799.287	-21.018	32.703	-21.018	38.874	122.729	0.480
2900.000	0.833	143.046	2899.271	-22.383	33.827	-22.383	40.562	123.492	0.369
3000.000	0.713	156.329	2999.262	-23.534	34.514	-23.534	41.774	124.289	0.215
3100.000	0.894	171.620	3099.253	-24.876	34.877	-24.876	42.840	125.498	0.279
3200.000	1.363	218.122	3199.235	-26.584	34.257	-26.584	43.362	127.812	0.990
3300.000	1.624	254.002	3299.203	-27.910	32.161	-27.910	42.582	130.952	0.953
3400.000	1.718	259.701	3399.161	-28.568	29.324	-28.568	40.939	134.252	0.191
3500.000	1.390	268.567	3499.124	-28.867	26.636	-28.867	39.278	137.301	0.406
3600.000	1.344	254.975	3599.096	-29.201	24.291	-29.201	37.983	140.245	0.327
3700.000	1.486	243.420	3699.065	-30.085	21.998	-30.085	37.270	143.826	0.318
3800.000	1.352	253.569	3799.035	-30.999	19.707	-30.999	36.733	147.554	0.284
3900.000	1.167	256.912	3899.011	-31.563	17.585	-31.563	36.131	150.877	0.199
4000.000	0.661	223.418	3998.998	-32.213	16.197	-32.213	36.055	153.306	0.715
4100.000	0.595	167.134	4098.993	-33.138	15.916	-33.138	36.762	154.345	0.595
4200.000	0.710	153.908	4198.987	-34.200	16.304	-34.200	37.888	154.512	0.189
4300.000	0.926	182.693	4298.977	-35.564	16.539	-35.564	39.221	155.060	0.457
4400.000	0.675	161.425	4398.967	-36.929	16.688	-36.929	40.524	155.682	0.385
4500.000	0.581	142.271	4498.961	-37.888	17.186	-37.888	41.603	155.601	0.229
4600.000	0.794	157.131	4598.954	-38.927	17.765	-38.927	42.789	155.469	0.277
4700.000	0.812	162.455	4698.944	-40.242	18.248	-40.242	44.186	155.607	0.077
4800.000	0.917	118.995	4798.934	-41.305	19.162	-41.305	45.534	155.113	0.648
4900.000	1.343	92.966	4898.915	-41.754	21.032	-41.754	46.752	153.265	0.657
5000.000	1.797	85.677	4998.877	-41.697	23.766	-41.697	47.994	150.318	0.495
5100.000	1.989	83.169	5098.823	-41.372	27.053	-41.372	49.432	146.820	0.209
5200.000	2.103	85.327	5198.759	-41.016	30.604	-41.016	51.175	143.272	0.138
5300.000	2.480	90.733	5298.679	-40.894	34.596	-40.894	53.565	139.769	0.434
5400.000	2.437	82.542	5398.587	-40.646	38.868	-40.646	56.239	136.281	0.354
5500.000	2.506	80.036	5498.494	-39.992	43.130	-39.992	58.817	132.838	0.128
5600.000	2.441	85.598	5598.401	-39.450	47.406	-39.450	61.674	129.766	0.249
5700.000	2.867	90.928	5698.294	-39.327	52.030	-39.327	65.221	127.084	0.492
5800.000	2.646	79.039	5798.179	-38.929	56.798	-38.929	68.858	124.426	0.612
5900.000	2.589	72.153	5898.075	-37.797	61.214	-37.797	71.943	121.694	0.320

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6000.000	2.747	77.884	5997.966	-36.602	65.706	-36.602	75.213	119.120	0.310
6100.000	2.638	71.146	6097.856	-35.356	70.227	-35.356	78.625	116.723	0.335
6200.000	3.064	73.778	6197.732	-33.865	74.971	-33.865	82.265	114.309	0.446
6300.000	3.579	64.816	6297.564	-31.790	80.363	-31.790	86.422	111.583	0.730
6400.000	3.092	57.381	6397.395	-29.008	85.460	-29.008	90.248	108.749	0.650
6500.000	2.618	49.555	6497.271	-26.072	89.469	-26.072	93.191	106.247	0.613