

## Waters 34-12-32 #1H GYRO 0' to 3410' Survey Geodetic Report

(Def Survey)

**Report Date:** October 17, 2013 - 11:38 AM  
**Client:** SWIFT Energy Company  
**Field:** Co Laplata County NAD 83 Zone 12 2013  
**Structure / Slot:** Swift Energy Mancos Water 34-12-32 #1H / Waters 34-12-32 #1H  
**Well:** Waters 34-12-32 #1H  
**Borehole:** Original Hole  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** Waters 34-12-32 #1H GYRO 0' to 3410'  
**Survey Date:** October 10, 2013  
**Tort / AHD / DDI / ERD Ratio:** 9.753 ° / 48.688 ft / 2.677 / 0.014  
**Coordinate Reference System:** NAD83 Universal Transverse Mercator, Zone 12 North, US Feet  
**Location Lat / Long:** N 37° 9' 4.57200", W 108° 10' 54.29999"  
**Location Grid N/E Y/X:** N 13501851.687 ftUS, E 2461565.718 ftUS  
**CRS Grid Convergence Angle:** 1.7029 °  
**Grid Scale Factor:** 1.00037175

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 0.000 ° (True North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** KB  
**TVD Reference Elevation:** 6933.000 ft above MSL  
**Seabed / Ground Elevation:** 6919.000 ft above MSL  
**Magnetic Declination:** 9.881 °  
**Total Gravity Field Strength:** 998.5741mgn (9.80665 Based)  
**Total Magnetic Field Strength:** 50616.673 nT  
**Magnetic Dip Angle:** 63.694 °  
**Declination Date:** October 10, 2013  
**Magnetic Declination Model:** BGGM 2013  
**North Reference:** True North  
**Grid Convergence Used:** 0.0000 °  
**Total Corr Mag North->True North:** 9.8808 °  
**Local Coord Referenced To:** Well Head

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	13501851.69	2461565.72	N 37 9 4.57	W 108 10 54.30
Marker MudLine	14.00	0.07	66.74	14.00	0.00	0.00	0.01	0.48	13501851.69	2461565.73	N 37 9 4.57	W 108 10 54.30
	50.00	0.24	66.74	50.00	0.04	0.04	0.10	0.48	13501851.73	2461565.81	N 37 9 4.57	W 108 10 54.30
	100.00	0.22	74.78	100.00	0.11	0.11	0.29	0.08	13501851.80	2461566.00	N 37 9 4.57	W 108 10 54.30
	150.00	0.16	21.34	150.00	0.20	0.20	0.40	0.36	13501851.90	2461566.12	N 37 9 4.57	W 108 10 54.30
	200.00	0.14	353.59	200.00	0.32	0.32	0.42	0.15	13501852.02	2461566.13	N 37 9 4.58	W 108 10 54.29
	250.00	0.28	323.26	250.00	0.48	0.48	0.34	0.35	13501852.18	2461566.05	N 37 9 4.58	W 108 10 54.30
	300.00	0.23	352.54	300.00	0.68	0.68	0.26	0.28	13501852.37	2461565.95	N 37 9 4.58	W 108 10 54.30
	350.00	0.15	318.28	350.00	0.83	0.83	0.20	0.27	13501852.52	2461565.89	N 37 9 4.58	W 108 10 54.30
	400.00	0.21	344.14	400.00	0.97	0.97	0.13	0.20	13501852.66	2461565.82	N 37 9 4.58	W 108 10 54.30
	450.00	0.29	338.81	450.00	1.17	1.17	0.06	0.17	13501852.86	2461565.74	N 37 9 4.58	W 108 10 54.30
	500.00	0.21	317.65	500.00	1.36	1.36	-0.05	0.24	13501853.04	2461565.63	N 37 9 4.59	W 108 10 54.30
	550.00	0.36	338.42	550.00	1.57	1.57	-0.17	0.36	13501853.25	2461565.50	N 37 9 4.59	W 108 10 54.30
	600.00	0.51	343.56	599.99	1.93	1.93	-0.29	0.31	13501853.61	2461565.37	N 37 9 4.59	W 108 10 54.30
	650.00	0.58	5.19	649.99	2.40	2.40	-0.33	0.43	13501854.07	2461565.32	N 37 9 4.60	W 108 10 54.30
	700.00	0.97	13.63	699.99	3.06	3.06	-0.21	0.81	13501854.74	2461565.42	N 37 9 4.60	W 108 10 54.30
	750.00	1.02	17.21	749.98	3.90	3.90	0.03	0.16	13501855.58	2461565.63	N 37 9 4.61	W 108 10 54.30
	800.00	1.08	12.92	799.97	4.78	4.78	0.26	0.20	13501856.47	2461565.84	N 37 9 4.62	W 108 10 54.30
	850.00	1.15	11.75	849.96	5.73	5.73	0.47	0.15	13501857.43	2461566.02	N 37 9 4.63	W 108 10 54.29
	900.00	1.08	358.18	899.95	6.69	6.69	0.56	0.54	13501858.40	2461566.08	N 37 9 4.64	W 108 10 54.29
	950.00	1.20	356.94	949.94	7.69	7.69	0.51	0.25	13501859.39	2461566.00	N 37 9 4.65	W 108 10 54.29
	1000.00	1.10	5.62	999.93	8.69	8.69	0.53	0.40	13501860.39	2461565.99	N 37 9 4.66	W 108 10 54.29
	1050.00	1.12	11.05	1049.92	9.64	9.64	0.67	0.21	13501861.35	2461566.11	N 37 9 4.67	W 108 10 54.29
	1100.00	1.11	11.80	1099.91	10.60	10.60	0.87	0.04	13501862.31	2461566.27	N 37 9 4.68	W 108 10 54.29
	1150.00	1.02	15.98	1149.91	11.50	11.50	1.09	0.24	13501863.22	2461566.46	N 37 9 4.69	W 108 10 54.29
	1200.00	0.97	15.91	1199.90	12.33	12.33	1.33	0.10	13501864.06	2461566.68	N 37 9 4.69	W 108 10 54.28
	1250.00	0.87	10.85	1249.89	13.11	13.11	1.51	0.26	13501864.85	2461566.84	N 37 9 4.70	W 108 10 54.28
	1300.00	0.96	10.50	1299.89	13.90	13.90	1.66	0.18	13501865.63	2461566.97	N 37 9 4.71	W 108 10 54.28
	1326.00	0.97	14.78	1325.88	14.33	14.33	1.76	0.28	13501866.06	2461567.05	N 37 9 4.71	W 108 10 54.28
	1477.00	0.80	14.41	1476.86	16.58	16.58	2.35	0.11	13501868.34	2461567.57	N 37 9 4.74	W 108 10 54.27
	1539.00	0.84	8.53	1538.86	17.45	17.45	2.52	0.15	13501869.21	2461567.72	N 37 9 4.74	W 108 10 54.27
	1600.00	0.85	7.93	1599.85	18.34	18.34	2.65	0.02	13501870.11	2461567.82	N 37 9 4.75	W 108 10 54.27
	1660.00	0.95	13.85	1659.84	19.27	19.27	2.83	0.23	13501871.04	2461567.98	N 37 9 4.76	W 108 10 54.27
	1723.00	1.06	8.71	1722.83	20.35	20.35	3.04	0.23	13501872.13	2461568.16	N 37 9 4.77	W 108 10 54.26
	1785.00	0.92	5.13	1784.82	21.41	21.41	3.18	0.25	13501873.19	2461568.26	N 37 9 4.78	W 108 10 54.26
	1848.00	0.94	2.21	1847.82	22.43	22.43	3.24	0.08	13501874.21	2461568.29	N 37 9 4.79	W 108 10 54.26
	1910.00	0.93	357.13	1909.81	23.44	23.44	3.24	0.13	13501875.22	2461568.26	N 37 9 4.80	W 108 10 54.26
	1973.00	0.95	352.64	1972.80	24.47	24.47	3.14	0.12	13501876.25	2461568.13	N 37 9 4.81	W 108 10 54.26
	2035.00	0.87	359.28	2034.79	25.45	25.45	3.07	0.21	13501877.23	2461568.03	N 37 9 4.82	W 108 10 54.26
	2097.00	0.90	355.86	2096.78	26.41	26.41	3.03	0.10	13501878.18	2461567.96	N 37 9 4.83	W 108 10 54.26
	2160.00	0.88	352.84	2159.78	27.38	27.38	2.93	0.08	13501879.15	2461567.84	N 37 9 4.84	W 108 10 54.26
	2223.00	0.91	354.86	2222.77	28.36	28.36	2.83	0.07	13501880.13	2461567.70	N 37 9 4.85	W 108 10 54.27
	2285.00	0.94	352.30	2284.76	29.35	29.35	2.72	0.08	13501881.12	2461567.56	N 37 9 4.86	W 108 10 54.27
	2410.00	0.90	346.11	2409.74	31.32	31.32	2.34	0.09	13501883.08	2461567.13	N 37 9 4.88	W 108 10 54.27
	2473.00	0.96	340.82	2472.74	32.30	32.30	2.05	0.17	13501884.05	2461566.81	N 37 9 4.89	W 108 10 54.27
	2535.00	0.93	339.99	2534.73	33.26	33.26	1.71	0.05	13501885.00	2461566.44	N 37 9 4.90	W 108 10 54.28
	2597.00	0.93	339.37	2596.72	34.21	34.21	1.36	0.02	13501885.93	2461566.06	N 37 9 4.91	W 108 10 54.28
	2661.00	1.07	329.54	2660.71	35.21	35.21	0.87	0.35	13501886.92	2461565.54	N 37 9 4.92	W 108 10 54.29
	2723.00	1.10	328.11	2722.70	36.21	36.21	0.27	0.07	13501887.91	2461564.91	N 37 9 4.93	W 108 10 54.30
	2785.00	0.92	331.28	2784.69	37.16	37.16	-0.29	0.30	13501888.83	2461564.33	N 37 9 4.94	W 108 10 54.30
	2848.00	0.88	333.85	2847.68	38.03	38.03	-0.74	0.09	13501889.70	2461563.84	N 37 9 4.95	W 108 10 54.31
	2910.00	0.86	346.73	2909.67	38.91	38.91	-1.06	0.32	13501890.57	2461563.50	N 37 9 4.96	W 108 10 54.31
	2973.00	0.86	346.40	2972.67	39.83	39.83	-1.28	0.01	13501891.48	2461563.25	N 37 9 4.97	W 108 10 54.32
	3035.00	0.93	337.54	3034.66	40.75	40.75	-1.58	0.25	13501892.39	2461562.92	N 37 9 4.97	W 108 10 54.32
	3098.00	1.01	344.62	3097.65	41.76	41.76	-1.93	0.23	13501893.39	2461562.55	N 37 9 4.98	W 108 10 54.32
	3161.00	0.97	343.50	3160.64	42.81	42.81	-2.22	0.07	13501894.42	2461562.22	N 37 9 5.00	W 108 10 54.33
	3223.00	1.11	344.90	3222.63	43.89	43.89	-2.53	0.23	13501895.50	2461561.88	N 37 9 5.01	W 108 10 54.33
	3286.00	1.04	247.48	3285.62	44.26	44.26	-3.22	2.57	13501895.85	2461561.19	N 37 9 5.01	W 108 10 54.34
	3348.00	1.00	351.11	3347.62	44.58	44.58	-3.82	2.59	13501896.15	2461560.57	N 37 9 5.01	W 108 10 54.35
	3410.00	1.15	353.51	3409.61	45.73	45.73	-3.97	0.25	13501897.30	2461560.39	N 37 9 5.02	W 108 10 54.35

**Survey Type:** Def Survey

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Survey Error Model: Survey Program:	ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma											
Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey					
	0.000	14.000		Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Hole / Waters 34-12-32 #1H GYRO 0' to 3410'				
	14.000	3410.000		Act Stns	30.000	30.000	SLB_NSG+MSHOT	Original Hole / Waters 34-12-32 #1H GYRO 0' to 3410'				