

# Devon

Crocket County, TX (NAD83)  
Sec 23, BLK 52, Universtiy Lands  
University 52-23 7H  
API# 105-41757 / JOB# 900286823 / C138  
Wellbore #1

Survey: Sperry MWD Surveys

## Sperry Drilling Services Combo Report

03 June, 2013

Surface UWI : API# 105-41757 / JOB# 900286823 / C138

Well Coordinates: 10,336,957.30 N, 2,091,506.79 E (31° 01' 28.34" N, 100° 59' 17.09" W)  
Ground Level: 2,574.00 ft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well University 52-23 7H  
WELL @ 2599.00ft (Original Well Elev+25'KB)  
N  
Grid  
API US Survey Feet

Version: 2003.21 Build: 43

**HALLIBURTON**

## Survey Report for University 52-23 7H - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)			
0.00	0.00	0.00	-2,599.00	0.00	0.00 N	0.00 E	10,336,957.30	2,091,506.79	0.00	0.00	
51.00	0.44	80.01	-2,548.00	51.00	0.03 N	0.19 E	10,336,957.33	2,091,506.98	0.86	-0.03	First Sperry MWD Survey
84.00	1.12	79.17	-2,515.00	84.00	0.12 N	0.63 E	10,336,957.42	2,091,507.42	2.06	-0.12	
114.00	1.96	89.62	-2,485.01	113.99	0.18 N	1.44 E	10,336,957.48	2,091,508.23	2.94	-0.18	
145.00	2.15	100.43	-2,454.03	144.97	0.07 N	2.54 E	10,336,957.37	2,091,509.33	1.39	-0.08	
175.00	2.42	99.96	-2,424.06	174.94	0.14 S	3.71 E	10,336,957.16	2,091,510.50	0.90	0.13	
234.00	2.81	97.09	-2,365.12	233.88	0.53 S	6.38 E	10,336,956.77	2,091,513.17	0.70	0.51	
298.00	1.85	93.50	-2,301.17	297.83	0.79 S	8.96 E	10,336,956.51	2,091,515.75	1.52	0.76	
330.00	2.33	94.06	-2,269.20	329.80	0.87 S	10.13 E	10,336,956.43	2,091,516.92	1.50	0.84	
361.00	3.50	79.80	-2,238.24	360.76	0.74 S	11.69 E	10,336,956.56	2,091,518.48	4.41	0.71	
393.00	3.59	94.19	-2,206.30	392.70	0.64 S	13.65 E	10,336,956.66	2,091,520.44	2.79	0.61	
424.00	3.70	97.09	-2,175.36	423.64	0.84 S	15.61 E	10,336,956.46	2,091,522.40	0.69	0.79	
455.00	4.12	97.56	-2,144.43	454.57	1.11 S	17.71 E	10,336,956.19	2,091,524.50	1.36	1.06	
487.00	4.01	92.17	-2,112.51	486.49	1.30 S	19.96 E	10,336,956.00	2,091,526.75	1.24	1.25	
518.00	3.50	90.33	-2,081.58	517.42	1.35 S	21.99 E	10,336,955.95	2,091,528.78	1.69	1.29	
550.00	3.60	85.50	-2,049.64	549.36	1.27 S	23.97 E	10,336,956.03	2,091,530.76	0.99	1.21	
581.00	3.55	91.76	-2,018.70	580.30	1.23 S	25.90 E	10,336,956.07	2,091,532.69	1.27	1.16	
613.00	3.71	92.66	-1,986.76	612.24	1.31 S	27.93 E	10,336,955.99	2,091,534.72	0.53	1.23	
644.00	3.57	90.93	-1,955.83	643.17	1.37 S	29.89 E	10,336,955.93	2,091,536.68	0.57	1.29	
676.00	2.87	91.33	-1,923.88	675.12	1.40 S	31.69 E	10,336,955.90	2,091,538.48	2.19	1.31	
708.00	2.88	85.83	-1,891.92	707.08	1.36 S	33.29 E	10,336,955.94	2,091,540.08	0.86	1.27	
833.00	2.44	87.89	-1,767.05	831.95	1.04 S	39.08 E	10,336,956.26	2,091,545.87	0.36	0.93	
894.00	2.20	91.21	-1,706.10	892.90	1.01 S	41.55 E	10,336,956.29	2,091,548.34	0.45	0.90	
987.00	0.73	68.52	-1,613.13	985.87	0.83 S	43.89 E	10,336,956.47	2,091,550.68	1.67	0.71	
1,079.00	1.51	286.93	-1,521.14	1,077.86	0.27 S	43.27 E	10,336,957.03	2,091,550.06	2.32	0.15	
1,172.00	1.44	288.08	-1,428.17	1,170.83	0.45 N	40.99 E	10,336,957.75	2,091,547.78	0.08	-0.57	
1,265.00	1.29	287.10	-1,335.20	1,263.80	1.12 N	38.88 E	10,336,958.42	2,091,545.67	0.16	-1.23	
1,358.00	2.16	255.96	-1,242.24	1,356.76	1.01 N	36.18 E	10,336,958.31	2,091,542.97	1.34	-1.11	
1,451.00	2.09	255.92	-1,149.31	1,449.69	0.17 N	32.83 E	10,336,957.47	2,091,539.62	0.08	-0.26	
1,544.00	1.72	252.74	-1,056.36	1,542.64	0.66 S	29.86 E	10,336,956.64	2,091,536.65	0.41	0.58	
1,675.00	1.58	257.48	-925.41	1,673.59	1.63 S	26.21 E	10,336,955.67	2,091,533.00	0.15	1.56	
1,770.00	0.81	120.60	-830.42	1,768.58	2.26 S	25.51 E	10,336,955.04	2,091,532.30	2.36	2.19	
1,865.00	1.14	117.02	-735.44	1,863.56	3.03 S	26.93 E	10,336,954.27	2,091,533.72	0.35	2.96	
1,960.00	1.23	111.81	-640.46	1,958.54	3.84 S	28.72 E	10,336,953.46	2,091,535.51	0.15	3.76	
2,054.00	0.97	117.00	-546.47	2,052.53	4.58 S	30.37 E	10,336,952.72	2,091,537.16	0.30	4.49	
2,149.00	2.02	79.90	-451.51	2,147.49	4.65 S	32.73 E	10,336,952.65	2,091,539.52	1.45	4.56	
2,243.00	1.77	85.41	-357.56	2,241.44	4.24 S	35.81 E	10,336,953.06	2,091,542.60	0.33	4.14	
2,337.00	1.46	80.99	-263.59	2,335.41	3.94 S	38.44 E	10,336,953.36	2,091,545.23	0.36	3.83	
2,432.00	1.18	83.02	-168.62	2,430.38	3.63 S	40.61 E	10,336,953.67	2,091,547.40	0.30	3.51	

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					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)			
2,527.00	1.23	78.67	-73.64	2,525.36	3.31 S	42.58 E	10,336,953.99	2,091,549.37	0.11	3.19	
2,622.00	1.14	83.93	21.34	2,620.34	3.01 S	44.52 E	10,336,954.29	2,091,551.31	0.15	2.88	
2,717.00	0.87	93.40	116.32	2,715.32	2.95 S	46.18 E	10,336,954.35	2,091,552.97	0.33	2.82	
2,812.00	0.91	98.78	211.31	2,810.31	3.11 S	47.64 E	10,336,954.19	2,091,554.43	0.10	2.98	
2,908.00	0.89	103.12	307.30	2,906.30	3.39 S	49.12 E	10,336,953.91	2,091,555.91	0.07	3.26	
3,003.00	2.60	45.66	402.26	3,001.26	2.06 S	51.38 E	10,336,955.24	2,091,558.17	2.37	1.91	
3,098.00	2.51	45.73	497.16	3,096.16	0.90 N	54.41 E	10,336,958.20	2,091,561.20	0.09	-1.05	
3,193.00	2.32	49.67	592.08	3,191.08	3.60 N	57.37 E	10,336,960.90	2,091,564.16	0.27	-3.76	
3,289.00	2.09	53.08	688.01	3,287.01	5.91 N	60.25 E	10,336,963.21	2,091,567.04	0.28	-6.08	
3,383.00	1.88	61.68	781.95	3,380.95	7.67 N	62.98 E	10,336,964.97	2,091,569.77	0.39	-7.84	
3,478.00	1.79	67.04	876.90	3,475.90	8.99 N	65.71 E	10,336,966.29	2,091,572.50	0.20	-9.17	
3,573.00	1.88	77.49	971.86	3,570.86	9.90 N	68.60 E	10,336,967.20	2,091,575.39	0.36	-10.09	
3,668.00	1.28	63.29	1,066.82	3,665.82	10.72 N	71.07 E	10,336,968.02	2,091,577.86	0.75	-10.92	
3,764.00	0.74	144.06	1,162.81	3,761.81	10.70 N	72.39 E	10,336,968.00	2,091,579.18	1.43	-10.90	
3,859.00	0.69	128.84	1,257.80	3,856.80	9.84 N	73.20 E	10,336,967.14	2,091,579.99	0.21	-10.05	
3,955.00	0.59	110.11	1,353.79	3,952.79	9.31 N	74.11 E	10,336,966.61	2,091,580.90	0.24	-9.52	
4,050.00	0.74	102.26	1,448.79	4,047.79	9.01 N	75.17 E	10,336,966.31	2,091,581.96	0.18	-9.22	
4,144.00	0.12	71.49	1,542.79	4,141.79	8.91 N	75.86 E	10,336,966.21	2,091,582.65	0.68	-9.13	
4,239.00	0.35	277.05	1,637.78	4,236.78	8.98 N	75.66 E	10,336,966.28	2,091,582.45	0.49	-9.19	
4,334.00	0.24	152.26	1,732.78	4,331.78	8.84 N	75.47 E	10,336,966.14	2,091,582.26	0.55	-9.05	
4,429.00	0.32	188.15	1,827.78	4,426.78	8.40 N	75.52 E	10,336,965.70	2,091,582.31	0.20	-8.61	
4,525.00	0.38	221.31	1,923.78	4,522.78	7.90 N	75.28 E	10,336,965.20	2,091,582.07	0.22	-8.11	
4,620.00	0.84	97.18	2,018.78	4,617.78	7.57 N	75.76 E	10,336,964.87	2,091,582.55	1.16	-7.78	
4,713.00	0.83	99.17	2,111.77	4,710.77	7.38 N	77.10 E	10,336,964.68	2,091,583.89	0.03	-7.60	
4,809.00	0.87	105.51	2,207.76	4,806.76	7.08 N	78.49 E	10,336,964.38	2,091,585.28	0.11	-7.29	
4,905.00	0.70	117.07	2,303.75	4,902.75	6.61 N	79.71 E	10,336,963.91	2,091,586.50	0.24	-6.84	
5,000.00	0.70	118.94	2,398.74	4,997.74	6.07 N	80.74 E	10,336,963.37	2,091,587.53	0.02	-6.29	
5,095.00	0.68	127.11	2,493.73	5,092.73	5.45 N	81.70 E	10,336,962.75	2,091,588.49	0.11	-5.68	
5,190.00	1.09	94.11	2,588.72	5,187.72	5.04 N	83.05 E	10,336,962.34	2,091,589.84	0.67	-5.27	
5,284.00	0.95	108.51	2,682.71	5,281.71	4.73 N	84.68 E	10,336,962.03	2,091,591.47	0.31	-4.97	
5,379.00	0.70	116.68	2,777.70	5,376.70	4.22 N	85.94 E	10,336,961.52	2,091,592.73	0.29	-4.46	
5,465.00	0.63	122.28	2,863.69	5,462.69	3.73 N	86.81 E	10,336,961.03	2,091,593.60	0.11	-3.97	
5,497.00	1.87	158.68	2,895.69	5,494.69	3.15 N	87.15 E	10,336,960.45	2,091,593.94	4.42	-3.40	
5,529.00	5.35	160.14	2,927.62	5,526.62	1.26 N	87.85 E	10,336,958.56	2,091,594.64	10.88	-1.51	
5,561.00	7.45	166.08	2,959.42	5,558.42	2.16 S	88.85 E	10,336,955.14	2,091,595.64	6.87	1.91	
5,593.00	9.52	168.90	2,991.06	5,590.06	6.77 S	89.86 E	10,336,950.53	2,091,596.65	6.60	6.52	
5,624.00	12.00	171.43	3,021.52	5,620.52	12.47 S	90.84 E	10,336,944.83	2,091,597.63	8.14	12.22	
5,656.00	14.22	172.59	3,052.68	5,651.68	19.66 S	91.84 E	10,336,937.64	2,091,598.63	6.99	19.40	
5,688.00	16.22	172.98	3,083.56	5,682.56	27.99 S	92.89 E	10,336,929.31	2,091,599.68	6.26	27.73	

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)			
5,719.00	18.56	172.94	3,113.14	5,712.14	37.19 S	94.03 E	10,336,920.11	2,091,600.82	7.55	36.92	
5,751.00	21.61	173.01	3,143.19	5,742.19	48.09 S	95.37 E	10,336,909.21	2,091,602.16	9.53	47.82	
5,783.00	24.44	174.33	3,172.64	5,771.64	60.53 S	96.74 E	10,336,896.77	2,091,603.53	8.99	60.26	
5,814.00	26.92	177.29	3,200.57	5,799.57	73.92 S	97.71 E	10,336,883.38	2,091,604.50	9.00	73.65	
5,845.00	30.11	175.38	3,227.81	5,826.81	88.69 S	98.67 E	10,336,868.61	2,091,605.46	10.70	88.41	
5,877.00	32.58	175.66	3,255.14	5,854.14	105.28 S	99.96 E	10,336,852.02	2,091,606.75	7.73	105.00	
5,909.00	34.58	176.63	3,281.80	5,880.80	122.94 S	101.15 E	10,336,834.36	2,091,607.94	6.47	122.66	
5,941.00	37.65	175.90	3,307.64	5,906.64	141.76 S	102.38 E	10,336,815.54	2,091,609.17	9.69	141.47	
5,973.00	41.09	176.73	3,332.38	5,931.38	162.01 S	103.68 E	10,336,795.29	2,091,610.47	10.87	161.72	
6,005.00	44.79	176.35	3,355.80	5,954.80	183.77 S	105.00 E	10,336,773.53	2,091,611.79	11.59	183.47	
6,036.00	48.71	176.47	3,377.04	5,976.04	206.30 S	106.41 E	10,336,751.00	2,091,613.20	12.65	206.00	
6,068.00	51.97	177.15	3,397.46	5,996.46	230.89 S	107.78 E	10,336,726.41	2,091,614.57	10.32	230.59	
6,099.00	55.24	179.13	3,415.85	6,014.85	255.83 S	108.58 E	10,336,701.47	2,091,615.37	11.73	255.52	
6,131.00	58.46	179.92	3,433.35	6,032.35	282.61 S	108.80 E	10,336,674.69	2,091,615.59	10.27	282.31	
6,163.00	62.18	181.76	3,449.19	6,048.19	310.41 S	108.38 E	10,336,646.89	2,091,615.17	12.65	310.10	
6,195.00	66.81	182.42	3,462.97	6,061.97	339.26 S	107.33 E	10,336,618.04	2,091,614.12	14.59	338.96	
6,226.00	70.62	181.74	3,474.22	6,073.22	368.12 S	106.28 E	10,336,589.18	2,091,613.07	12.46	367.82	
6,258.00	72.58	181.92	3,484.32	6,083.32	398.47 S	105.31 E	10,336,558.83	2,091,612.10	6.15	398.17	
6,289.00	74.83	182.02	3,493.01	6,092.01	428.20 S	104.29 E	10,336,529.10	2,091,611.08	7.26	427.91	
6,321.00	76.57	181.17	3,500.92	6,099.92	459.20 S	103.43 E	10,336,498.10	2,091,610.22	6.02	458.91	
6,353.00	77.33	181.26	3,508.14	6,107.14	490.36 S	102.77 E	10,336,466.94	2,091,609.56	2.39	490.08	
6,384.00	78.91	181.11	3,514.53	6,113.53	520.69 S	102.14 E	10,336,436.61	2,091,608.93	5.12	520.41	
6,416.00	80.48	181.76	3,520.25	6,119.25	552.17 S	101.35 E	10,336,405.14	2,091,608.14	5.30	551.88	
6,448.00	82.32	182.28	3,525.03	6,124.03	583.79 S	100.23 E	10,336,373.52	2,091,607.02	5.97	583.50	
6,479.00	84.14	181.75	3,528.69	6,127.69	614.55 S	99.15 E	10,336,342.75	2,091,605.94	6.11	614.27	
6,495.00	85.53	180.99	3,530.13	6,129.13	630.48 S	98.77 E	10,336,326.82	2,091,605.56	9.89	630.20	
6,527.00	87.38	179.78	3,532.11	6,131.11	662.41 S	98.56 E	10,336,294.89	2,091,605.35	6.90	662.14	
6,622.00	90.65	179.39	3,533.74	6,132.74	757.38 S	99.25 E	10,336,199.92	2,091,606.03	3.47	757.10	
6,717.00	89.97	179.39	3,533.23	6,132.23	852.38 S	100.26 E	10,336,104.92	2,091,607.05	0.72	852.09	
6,812.00	90.37	180.94	3,532.94	6,131.94	947.37 S	99.98 E	10,336,009.93	2,091,606.77	1.69	947.09	
6,907.00	88.98	180.62	3,533.48	6,132.48	1,042.36 S	98.69 E	10,335,914.94	2,091,605.48	1.50	1,042.08	
7,002.00	91.39	182.17	3,533.18	6,132.18	1,137.32 S	96.38 E	10,335,819.98	2,091,603.17	3.02	1,137.05	
7,097.00	91.73	182.01	3,530.59	6,129.59	1,232.22 S	92.91 E	10,335,725.08	2,091,599.70	0.40	1,231.96	
7,192.00	90.59	180.60	3,528.67	6,127.67	1,327.18 S	90.75 E	10,335,630.13	2,091,597.54	1.91	1,326.92	
7,288.00	90.86	180.27	3,527.45	6,126.45	1,423.17 S	90.02 E	10,335,534.14	2,091,596.81	0.44	1,422.91	
7,383.00	90.62	178.62	3,526.23	6,125.23	1,518.15 S	90.94 E	10,335,439.15	2,091,597.73	1.75	1,517.89	
7,478.00	90.96	180.67	3,524.92	6,123.92	1,613.13 S	91.53 E	10,335,344.17	2,091,598.32	2.19	1,612.87	
7,572.00	91.08	181.85	3,523.24	6,122.24	1,707.09 S	89.46 E	10,335,250.21	2,091,596.25	1.26	1,706.84	
7,666.00	91.42	182.70	3,521.19	6,120.19	1,801.00 S	85.73 E	10,335,156.31	2,091,592.52	0.97	1,800.75	

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					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)			
7,762.00	90.74	182.24	3,519.38	6,118.38	1,896.89 S	81.60 E	10,335,060.41	2,091,588.39	0.86	1,896.65	
7,857.00	89.63	181.35	3,519.08	6,118.08	1,991.84 S	78.62 E	10,334,965.46	2,091,585.41	1.50	1,991.61	
7,951.00	89.51	181.97	3,519.78	6,118.78	2,085.80 S	75.90 E	10,334,871.51	2,091,582.69	0.67	2,085.58	
8,046.00	89.54	182.79	3,520.57	6,119.57	2,180.71 S	71.95 E	10,334,776.59	2,091,578.74	0.86	2,180.50	
8,137.00	89.32	183.04	3,521.47	6,120.47	2,271.59 S	67.33 E	10,334,685.72	2,091,574.12	0.37	2,271.39	
8,233.00	89.63	182.80	3,522.35	6,121.35	2,367.46 S	62.44 E	10,334,589.84	2,091,569.23	0.41	2,367.28	
8,328.00	89.88	181.36	3,522.76	6,121.76	2,462.39 S	58.99 E	10,334,494.91	2,091,565.78	1.54	2,462.22	
8,423.00	92.84	181.45	3,520.51	6,119.51	2,557.33 S	56.66 E	10,334,399.98	2,091,563.45	3.12	2,557.16	
8,517.00	91.60	179.72	3,516.86	6,115.86	2,651.25 S	55.70 E	10,334,306.06	2,091,562.49	2.26	2,651.08	
8,608.00	91.08	179.40	3,514.74	6,113.74	2,742.22 S	56.40 E	10,334,215.09	2,091,563.19	0.67	2,742.05	
8,701.00	89.63	176.27	3,514.16	6,113.16	2,835.14 S	59.91 E	10,334,122.17	2,091,566.70	3.71	2,834.96	
8,794.00	89.85	178.12	3,514.58	6,113.58	2,928.02 S	64.46 E	10,334,029.29	2,091,571.25	2.00	2,927.83	
8,887.00	90.37	179.09	3,514.40	6,113.40	3,020.99 S	66.73 E	10,333,936.31	2,091,573.52	1.18	3,020.79	
8,980.00	91.63	176.53	3,512.78	6,111.78	3,113.90 S	70.28 E	10,333,843.41	2,091,577.07	3.07	3,113.69	
9,073.00	91.45	176.61	3,510.28	6,109.28	3,206.70 S	75.84 E	10,333,750.61	2,091,582.63	0.21	3,206.48	
9,165.00	89.97	179.35	3,509.14	6,108.14	3,298.62 S	79.08 E	10,333,658.68	2,091,585.87	3.38	3,298.39	
9,258.00	90.62	183.05	3,508.66	6,107.66	3,391.59 S	77.14 E	10,333,565.72	2,091,583.93	4.04	3,391.36	
9,350.00	89.94	183.40	3,508.21	6,107.21	3,483.44 S	71.96 E	10,333,473.87	2,091,578.75	0.83	3,483.22	
9,443.00	91.94	186.39	3,506.69	6,105.69	3,576.07 S	64.03 E	10,333,381.24	2,091,570.82	3.87	3,575.88	
9,536.00	90.65	184.64	3,504.58	6,103.58	3,668.61 S	55.09 E	10,333,288.70	2,091,561.88	2.34	3,668.44	
9,628.00	90.55	184.72	3,503.62	6,102.62	3,760.30 S	47.59 E	10,333,197.01	2,091,554.38	0.14	3,760.15	
9,722.00	89.57	182.75	3,503.52	6,102.52	3,854.09 S	41.47 E	10,333,103.21	2,091,548.26	2.34	3,853.96	
9,815.00	88.83	180.67	3,504.82	6,103.82	3,947.04 S	38.69 E	10,333,010.27	2,091,545.48	2.37	3,946.91	
9,910.00	90.28	182.42	3,505.56	6,104.56	4,041.99 S	36.13 E	10,332,915.31	2,091,542.92	2.39	4,041.88	
10,005.00	89.94	180.53	3,505.38	6,104.38	4,136.96 S	33.68 E	10,332,820.35	2,091,540.47	2.02	4,136.85	
10,100.00	91.54	181.15	3,504.15	6,103.15	4,231.94 S	32.29 E	10,332,725.37	2,091,539.08	1.81	4,231.83	
10,196.00	90.34	178.89	3,502.57	6,101.57	4,327.92 S	32.26 E	10,332,629.39	2,091,539.05	2.67	4,327.81	
10,291.00	89.78	177.70	3,502.47	6,101.47	4,422.87 S	35.09 E	10,332,534.44	2,091,541.88	1.38	4,422.76	
10,387.00	89.72	177.65	3,502.89	6,101.89	4,518.79 S	38.98 E	10,332,438.52	2,091,545.77	0.08	4,518.67	
10,482.00	89.11	178.02	3,503.86	6,102.86	4,613.72 S	42.57 E	10,332,343.59	2,091,549.36	0.75	4,613.58	
10,578.00	88.98	178.87	3,505.46	6,104.46	4,709.67 S	45.17 E	10,332,247.64	2,091,551.96	0.90	4,709.52	
10,672.00	90.92	184.70	3,505.55	6,104.55	4,803.58 S	42.25 E	10,332,153.73	2,091,549.04	6.54	4,803.44	
10,768.00	88.70	183.72	3,505.86	6,104.86	4,899.31 S	35.20 E	10,332,058.00	2,091,541.99	2.53	4,899.19	
10,863.00	88.30	182.84	3,508.35	6,107.35	4,994.12 S	29.77 E	10,331,963.19	2,091,536.56	1.02	4,994.02	
10,957.00	88.30	180.83	3,511.14	6,110.14	5,088.03 S	26.76 E	10,331,869.28	2,091,533.55	2.14	5,087.93	
11,052.00	88.95	180.11	3,513.42	6,112.42	5,183.00 S	25.98 E	10,331,774.31	2,091,532.77	1.02	5,182.90	
11,148.00	89.66	179.64	3,514.58	6,113.58	5,278.99 S	26.19 E	10,331,678.32	2,091,532.98	0.89	5,278.89	
11,243.00	89.81	180.49	3,515.02	6,114.02	5,373.99 S	26.08 E	10,331,583.32	2,091,532.87	0.91	5,373.89	
11,338.00	89.51	180.59	3,515.59	6,114.59	5,468.98 S	25.18 E	10,331,488.33	2,091,531.97	0.33	5,468.89	

## Survey Report for University 52-23 7H - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates Northing (ft)	Local Coordinates Easting (ft)	Map Coordinates Northing (ft)	Map Coordinates Easting (ft)	Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
11,433.00	90.25	180.47	3,515.79	6,114.79	5,563.98 S	24.31 E	10,331,393.34	2,091,531.10	0.79	5,563.89	
11,529.00	89.38	179.69	3,516.10	6,115.10	5,659.97 S	24.17 E	10,331,297.34	2,091,530.96	1.22	5,659.88	
11,623.00	89.72	179.80	3,516.83	6,115.83	5,753.97 S	24.59 E	10,331,203.34	2,091,531.38	0.38	5,753.88	
11,719.00	92.25	180.60	3,515.18	6,114.18	5,849.95 S	24.26 E	10,331,107.37	2,091,531.05	2.76	5,849.86	
11,814.00	92.47	180.88	3,511.27	6,110.27	5,944.86 S	23.03 E	10,331,012.45	2,091,529.82	0.37	5,944.77	
11,910.00	92.22	180.77	3,507.34	6,106.34	6,040.77 S	21.65 E	10,330,916.55	2,091,528.44	0.28	6,040.68	
12,005.00	92.07	180.58	3,503.79	6,102.79	6,135.69 S	20.53 E	10,330,821.62	2,091,527.32	0.25	6,135.61	
12,100.00	92.16	180.90	3,500.28	6,099.28	6,230.62 S	19.30 E	10,330,726.69	2,091,526.09	0.35	6,230.54	
12,194.00	90.49	179.66	3,498.11	6,097.11	6,324.59 S	18.85 E	10,330,632.72	2,091,525.64	2.21	6,324.51	
12,289.00	87.90	177.31	3,499.44	6,098.44	6,419.53 S	21.36 E	10,330,537.78	2,091,528.15	3.68	6,419.45	
12,385.00	89.32	179.00	3,501.77	6,100.77	6,515.45 S	24.44 E	10,330,441.87	2,091,531.23	2.30	6,515.35	
12,479.00	90.49	178.91	3,501.93	6,100.93	6,609.43 S	26.16 E	10,330,347.88	2,091,532.95	1.25	6,609.33	
12,574.00	89.97	180.25	3,501.55	6,100.55	6,704.42 S	26.86 E	10,330,252.89	2,091,533.65	1.51	6,704.32	
12,669.00	90.37	180.97	3,501.26	6,100.26	6,799.42 S	25.84 E	10,330,157.90	2,091,532.63	0.87	6,799.32	
12,763.00	90.28	181.62	3,500.73	6,099.73	6,893.39 S	23.72 E	10,330,063.92	2,091,530.51	0.70	6,893.30	
12,858.00	90.15	182.69	3,500.37	6,099.37	6,988.32 S	20.15 E	10,329,968.99	2,091,526.94	1.13	6,988.24	
12,954.00	90.09	184.76	3,500.17	6,099.17	7,084.11 S	13.91 E	10,329,873.20	2,091,520.70	2.16	7,084.05	
13,049.00	90.77	181.22	3,499.46	6,098.46	7,178.97 S	8.96 E	10,329,778.35	2,091,515.75	3.79	7,178.91	
13,143.00	89.78	181.71	3,499.01	6,098.01	7,272.93 S	6.55 E	10,329,684.38	2,091,513.34	1.18	7,272.89	
13,239.00	89.35	182.95	3,499.74	6,098.74	7,368.85 S	2.65 E	10,329,588.47	2,091,509.44	1.37	7,368.81	
13,334.00	91.23	184.96	3,499.26	6,098.26	7,463.61 S	3.90 W	10,329,493.70	2,091,502.89	2.90	7,463.59	
13,429.00	90.49	183.84	3,497.83	6,096.83	7,558.32 S	11.19 W	10,329,399.00	2,091,495.60	1.41	7,558.32	
13,524.00	91.64	184.27	3,496.07	6,095.07	7,653.06 S	17.90 W	10,329,304.25	2,091,488.89	1.29	7,653.08	
13,620.00	92.93	179.78	3,492.24	6,091.24	7,748.90 S	21.30 W	10,329,208.41	2,091,485.49	4.86	7,748.93	
13,715.00	93.12	178.51	3,487.22	6,086.22	7,843.76 S	19.88 W	10,329,113.56	2,091,486.91	1.35	7,843.78	
13,810.00	93.30	178.56	3,481.90	6,080.90	7,938.58 S	17.45 W	10,329,018.74	2,091,489.34	0.20	7,938.59	
13,904.00	92.10	179.35	3,477.48	6,076.48	8,032.45 S	15.74 W	10,328,924.86	2,091,491.05	1.53	8,032.47	
13,999.00	91.45	179.26	3,474.53	6,073.53	8,127.40 S	14.59 W	10,328,829.92	2,091,492.20	0.69	8,127.41	
14,095.00	89.69	179.08	3,473.58	6,072.58	8,223.38 S	13.20 W	10,328,733.93	2,091,493.59	1.84	8,223.39	
14,190.00	88.30	178.74	3,475.24	6,074.24	8,318.35 S	11.39 W	10,328,638.97	2,091,495.40	1.51	8,318.35	
14,285.00	87.38	178.58	3,478.82	6,077.82	8,413.25 S	9.17 W	10,328,544.06	2,091,497.62	0.98	8,413.25	
14,380.00	86.51	177.62	3,483.89	6,082.89	8,508.06 S	6.03 W	10,328,449.25	2,091,500.76	1.36	8,508.05	
14,415.00	86.14	177.48	3,486.13	6,085.13	8,542.96 S	4.54 W	10,328,414.36	2,091,502.25	1.13	8,542.94	Final Sperry MWD Survey Projection to TD
14,490.00	86.14	177.48	3,491.18	6,090.18	8,617.72 S	1.25 W	10,328,339.60	2,091,505.54	0.00	8,617.69	

## Survey Report for University 52-23 7H - Sperry MWD Surveys

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
51.00	51.00	0.03	0.19	First Sperry MWD Survey
14,415.00	6,085.13	-8,542.96	-4.54	Final Sperry MWD Survey
14,490.00	6,090.18	-8,617.72	-1.25	Projection to TD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
User	No Target (Freehand)	180.16	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
51.00	14,490.00	Sperry MWD Surveys	MWD

Design Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	( )	( )	( )	( )	( )	( )	( )		
- Shape									

Directional Difficulty Index

Average Dogleg over Survey:	1.75 °/100ft	Maximum Dogleg over Survey:	14.59 °/100ft at 6,195.00 ft
Net Tortousity applicable to Plans:	1.12 °/100ft	Directional Difficulty Index:	6.721

Audit Info

## North Reference Sheet for Sec 23, BLK 52, Universtiy Lands - University 52-23 7H - Wellbore #1

All data is in Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to WELL @ 2599.00ft (Original Well Elev+25'KB). Northing and Easting are relative to University 52-23 7H

Coordinate System is US State Plane 1983, Texas Central Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 100° 20' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:31° 53' 0.000 N°

False Easting: 2,296,583.33ft, False Northing: 9,842,500.00ft, Scale Reduction: 0.99988182

Grid Coordinates of Well: 10,336,957.30 ft N, 2,091,506.79 ft E

Geographical Coordinates of Well: 31° 01' 28.34" N, 100° 59' 17.09" W

Grid Convergence at Surface is: -0.34°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,490.00ft the Bottom Hole Displacement is 8,617.72ft in the Direction of 180.01° (Grid).

Magnetic Convergence at surface is: -6.43° (30 April 2013, , BGGM2012)

