

Job# 900493698  
HP 267 25'KB

# Devon

Reagan County, TX (NAD-83) Section 36 BLK 10  
API# 383-38405

University 10-360 6HR (600' FNL 440' FEL)

Wellbore #1

Survey: Sperry MWD Surveys

## Sperry Drilling Services Combo Report

14 October, 2013

Well Coordinates: 31° 13' 39.64" N  
101° 33' 15.15" W

North American Datum 1983  
Texas Central Zone  
10,412,330.90 N  
1,915,003.82 E

Ground Level: 2,751.00 ft

Local Coordinate Origin:  
Viewing Datum:  
TVDs to System:

Centered on Well University 10-360 6HR  
WELL @ 2776.00ft (HP 267 25'KB)  
N

**North Reference:**

**Grid**

Unit System:

API US Survey Feet

Version: 5000.1 Build: 65

Report Version: Midcon Combo v1.30

**HALLIBURTON**

## Survey Report for University 10-360 6HR - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (ft)	Comments
					Northing (ft)	Easting (ft)	Northing (usft)	Easting (usft)			
0.00	0.00	0.00	-2,776.00	0.00	0.00 N	0.00 E	10,412,330.90	1,915,003.82	0.00	0.00	
47.00	0.29	203.51	-2,729.00	47.00	0.11 S	0.05 W	10,412,330.79	1,915,003.77	0.62	-0.11	First Sperry MWD Survey
80.00	0.32	200.13	-2,696.00	80.00	0.27 S	0.11 W	10,412,330.63	1,915,003.71	0.11	-0.28	
111.00	0.08	216.85	-2,665.00	111.00	0.37 S	0.16 W	10,412,330.53	1,915,003.66	0.79	-0.38	
140.00	0.40	219.15	-2,636.00	140.00	0.47 S	0.23 W	10,412,330.43	1,915,003.59	1.10	-0.48	
169.00	0.51	233.81	-2,607.00	169.00	0.62 S	0.40 W	10,412,330.28	1,915,003.42	0.55	-0.64	
199.00	0.37	235.48	-2,577.00	199.00	0.75 S	0.59 W	10,412,330.15	1,915,003.23	0.47	-0.79	
228.00	0.32	211.26	-2,548.00	228.00	0.88 S	0.71 W	10,412,330.02	1,915,003.11	0.53	-0.92	
260.00	0.53	235.01	-2,516.00	260.00	1.04 S	0.87 W	10,412,329.86	1,915,002.95	0.84	-1.09	
291.00	0.74	221.15	-2,485.01	290.99	1.27 S	1.12 W	10,412,329.63	1,915,002.70	0.83	-1.34	
322.00	0.19	147.98	-2,454.01	321.99	1.46 S	1.23 W	10,412,329.44	1,915,002.59	2.29	-1.54	
354.00	0.71	212.40	-2,422.01	353.99	1.68 S	1.31 W	10,412,329.22	1,915,002.51	2.03	-1.76	
385.00	0.75	202.28	-2,391.01	384.99	2.03 S	1.49 W	10,412,328.87	1,915,002.33	0.43	-2.12	
416.00	0.95	230.48	-2,360.01	415.99	2.38 S	1.76 W	10,412,328.52	1,915,002.06	1.48	-2.49	
448.00	1.03	210.42	-2,328.02	447.98	2.80 S	2.11 W	10,412,328.10	1,915,001.71	1.11	-2.93	
480.00	0.99	208.26	-2,296.02	479.98	3.29 S	2.39 W	10,412,327.61	1,915,001.43	0.17	-3.44	
511.00	0.83	207.93	-2,265.03	510.97	3.72 S	2.62 W	10,412,327.18	1,915,001.20	0.52	-3.88	
542.00	1.22	214.67	-2,234.03	541.97	4.19 S	2.91 W	10,412,326.71	1,915,000.91	1.31	-4.37	
573.00	1.15	216.34	-2,203.04	572.96	4.71 S	3.28 W	10,412,326.19	1,915,000.54	0.25	-4.92	
605.00	0.88	211.40	-2,171.04	604.96	5.18 S	3.60 W	10,412,325.72	1,915,000.22	0.89	-5.40	
637.00	0.42	221.21	-2,139.05	636.95	5.48 S	3.81 W	10,412,325.42	1,915,000.01	1.47	-5.72	
668.00	0.53	121.96	-2,108.05	667.95	5.64 S	3.76 W	10,412,325.26	1,915,000.06	2.35	-5.87	
708.00	0.47	150.86	-2,068.05	707.95	5.88 S	3.52 W	10,412,325.02	1,915,000.30	0.64	-6.10	
740.00	0.64	119.03	-2,036.05	739.95	6.08 S	3.30 W	10,412,324.82	1,915,000.52	1.08	-6.29	
772.00	0.51	127.77	-2,004.05	771.95	6.26 S	3.04 W	10,412,324.64	1,915,000.78	0.49	-6.44	
803.00	0.58	101.55	-1,973.05	802.95	6.37 S	2.77 W	10,412,324.53	1,915,001.05	0.83	-6.54	
876.00	0.58	101.55	-1,900.06	875.94	6.52 S	2.05 W	10,412,324.38	1,915,001.77	0.00	-6.64	
984.00	1.01	119.55	-1,792.07	983.93	7.10 S	0.68 W	10,412,323.80	1,915,003.14	0.46	-7.13	
1,076.00	2.07	87.42	-1,700.10	1,075.90	7.42 S	1.68 E	10,412,323.48	1,915,005.50	1.44	-7.30	
1,168.00	3.64	85.15	-1,608.22	1,167.78	7.10 S	6.25 E	10,412,323.80	1,915,010.07	1.71	-6.68	
1,260.00	5.16	83.53	-1,516.49	1,259.51	6.39 S	13.27 E	10,412,324.51	1,915,017.09	1.66	-5.51	
1,352.00	5.83	81.89	-1,424.91	1,351.09	5.26 S	22.01 E	10,412,325.64	1,915,025.83	0.75	-3.82	
1,445.00	5.29	80.75	-1,332.35	1,443.65	3.91 S	30.92 E	10,412,326.99	1,915,034.74	0.59	-1.89	
1,535.00	5.70	83.34	-1,242.77	1,533.23	2.72 S	39.45 E	10,412,328.18	1,915,043.27	0.53	-0.15	
1,630.00	6.24	84.49	-1,148.28	1,627.72	1.68 S	49.28 E	10,412,329.22	1,915,053.10	0.58	1.53	
1,724.00	6.27	84.03	-1,054.84	1,721.16	0.66 S	59.47 E	10,412,330.24	1,915,063.29	0.06	3.21	
1,818.00	5.90	83.85	-961.37	1,814.63	0.39 N	69.37 E	10,412,331.29	1,915,073.19	0.39	4.91	
1,913.00	5.60	85.38	-866.85	1,909.15	1.29 N	78.85 E	10,412,332.19	1,915,082.67	0.35	6.42	
2,008.00	5.18	84.86	-772.27	2,003.73	2.05 N	87.74 E	10,412,332.95	1,915,091.56	0.45	7.75	
2,100.00	5.75	88.19	-680.69	2,095.31	2.57 N	96.48 E	10,412,333.47	1,915,100.30	0.71	8.84	
2,195.00	5.93	88.25	-586.18	2,189.82	2.87 N	106.14 E	10,412,333.77	1,915,109.96	0.19	9.77	

## Survey Report for University 10-360 6HR - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (ft)	Comments
					Northing (ft)	Easting (ft)	Northing (usft)	Easting (usft)			
2,329.00	5.67	88.56	-452.87	2,323.13	3.24 N	119.68 E	10,412,334.14	1,915,123.50	0.20	11.02	
2,423.00	5.51	91.69	-359.31	2,416.69	3.23 N	128.83 E	10,412,334.13	1,915,132.65	0.37	11.60	
2,518.00	5.12	91.67	-264.72	2,511.28	2.97 N	137.63 E	10,412,333.87	1,915,141.45	0.41	11.92	
2,613.00	5.35	89.79	-170.12	2,605.88	2.86 N	146.30 E	10,412,333.76	1,915,150.12	0.30	12.37	
2,707.00	5.35	91.70	-76.53	2,699.47	2.75 N	155.06 E	10,412,333.65	1,915,158.88	0.19	12.83	
2,802.00	5.97	87.35	18.01	2,794.01	2.85 N	164.42 E	10,412,333.75	1,915,168.24	0.79	13.54	
2,897.00	5.59	87.16	112.53	2,888.53	3.30 N	173.98 E	10,412,334.20	1,915,177.80	0.40	14.61	
2,991.00	5.52	89.80	206.08	2,982.08	3.55 N	183.07 E	10,412,334.45	1,915,186.89	0.28	15.45	
3,086.00	5.38	90.57	300.66	3,076.66	3.52 N	192.09 E	10,412,334.42	1,915,195.91	0.17	16.01	
3,181.00	5.25	89.37	395.25	3,171.25	3.52 N	200.89 E	10,412,334.42	1,915,204.71	0.18	16.58	
3,275.00	5.05	90.56	488.87	3,264.87	3.53 N	209.33 E	10,412,334.43	1,915,213.15	0.24	17.14	
3,370.00	4.78	89.04	583.52	3,359.52	3.55 N	217.47 E	10,412,334.45	1,915,221.29	0.32	17.69	
3,465.00	4.51	85.66	678.21	3,454.21	3.90 N	225.15 E	10,412,334.80	1,915,228.97	0.40	18.54	
3,560.00	5.00	84.40	772.88	3,548.88	4.59 N	233.00 E	10,412,335.49	1,915,236.82	0.53	19.74	
3,654.00	4.85	81.93	866.53	3,642.53	5.55 N	241.01 E	10,412,336.45	1,915,244.83	0.28	21.21	
3,749.00	4.52	83.41	961.21	3,737.21	6.54 N	248.70 E	10,412,337.44	1,915,252.52	0.37	22.71	
3,844.00	4.36	79.92	1,055.93	3,831.93	7.60 N	255.98 E	10,412,338.50	1,915,259.80	0.33	24.24	
3,941.00	4.24	82.30	1,152.66	3,928.66	8.73 N	263.16 E	10,412,339.63	1,915,266.98	0.22	25.83	
4,036.00	4.00	87.83	1,247.41	4,023.41	9.32 N	269.95 E	10,412,340.22	1,915,273.77	0.49	26.87	
4,131.00	3.16	87.05	1,342.22	4,118.22	9.58 N	275.88 E	10,412,340.48	1,915,279.70	0.89	27.51	
4,225.00	3.31	88.06	1,436.08	4,212.08	9.81 N	281.18 E	10,412,340.71	1,915,285.00	0.17	28.08	
4,320.00	3.33	87.41	1,530.92	4,306.92	10.03 N	286.67 E	10,412,340.93	1,915,290.49	0.04	28.65	
4,414.00	3.01	86.14	1,624.77	4,400.77	10.32 N	291.86 E	10,412,341.22	1,915,295.68	0.35	29.28	
4,508.00	3.35	92.52	1,718.63	4,494.63	10.36 N	297.07 E	10,412,341.26	1,915,300.89	0.52	29.67	
4,603.00	3.51	93.20	1,813.46	4,589.46	10.08 N	302.75 E	10,412,340.98	1,915,306.57	0.17	29.75	
4,697.00	3.60	94.29	1,907.28	4,683.28	9.70 N	308.56 E	10,412,340.60	1,915,312.38	0.12	29.75	
4,791.00	3.73	99.94	2,001.08	4,777.08	8.95 N	314.52 E	10,412,339.85	1,915,318.34	0.41	29.39	
4,886.00	4.20	98.80	2,095.86	4,871.86	7.88 N	321.00 E	10,412,338.78	1,915,324.82	0.50	28.75	
4,980.00	3.83	101.99	2,189.63	4,965.63	6.70 N	327.47 E	10,412,337.60	1,915,331.29	0.46	27.99	
5,075.00	4.15	100.43	2,284.40	5,060.40	5.42 N	333.96 E	10,412,336.32	1,915,337.77	0.36	27.13	
5,169.00	3.64	106.08	2,378.18	5,154.18	3.98 N	340.17 E	10,412,334.88	1,915,343.99	0.68	26.10	
5,264.00	3.57	96.43	2,472.99	5,248.99	2.81 N	346.00 E	10,412,333.71	1,915,349.82	0.64	25.32	
5,358.00	3.40	98.72	2,566.82	5,342.82	2.06 N	351.67 E	10,412,332.96	1,915,355.49	0.23	24.94	
5,453.00	3.42	107.70	2,661.65	5,437.65	0.77 N	357.15 E	10,412,331.67	1,915,360.97	0.56	24.01	
5,547.00	3.54	107.60	2,755.48	5,531.48	0.96 S	362.59 E	10,412,329.94	1,915,366.41	0.13	22.63	
5,642.00	3.55	104.88	2,850.29	5,626.29	2.60 S	368.23 E	10,412,328.30	1,915,372.05	0.18	21.36	
5,737.00	3.71	95.01	2,945.11	5,721.11	3.62 S	374.13 E	10,412,327.28	1,915,377.95	0.68	20.72	
5,831.00	3.63	95.81	3,038.91	5,814.91	4.19 S	380.12 E	10,412,326.71	1,915,383.94	0.10	20.55	
5,926.00	3.65	88.32	3,133.72	5,909.72	4.40 S	386.14 E	10,412,326.50	1,915,389.96	0.50	20.72	
6,024.00	3.45	88.97	3,231.53	6,007.53	4.26 S	392.20 E	10,412,326.64	1,915,396.02	0.21	21.26	
6,119.00	3.74	92.45	3,326.35	6,102.35	4.34 S	398.16 E	10,412,326.56	1,915,401.97	0.38	21.57	

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					Northing (ft)	Easting (ft)	Northing (usft)	Easting (usft)			
6,213.00	3.77	86.16	3,420.14	6,196.14	4.27 S	404.30 E	10,412,326.63	1,915,408.12	0.44	22.05	
6,308.00	3.76	85.11	3,514.94	6,290.94	3.79 S	410.52 E	10,412,327.11	1,915,414.34	0.07	22.92	
6,402.00	3.30	83.14	3,608.76	6,384.76	3.21 S	416.28 E	10,412,327.69	1,915,420.10	0.51	23.88	
6,497.00	3.00	83.13	3,703.62	6,479.62	2.58 S	421.46 E	10,412,328.32	1,915,425.28	0.32	24.84	
6,592.00	2.57	83.33	3,798.51	6,574.51	2.04 S	426.05 E	10,412,328.86	1,915,429.86	0.45	25.68	
6,686.00	2.52	78.57	3,892.41	6,668.41	1.38 S	430.16 E	10,412,329.52	1,915,433.98	0.23	26.61	
6,781.00	2.21	78.65	3,987.33	6,763.33	0.61 S	434.01 E	10,412,330.29	1,915,437.83	0.33	27.63	
6,876.00	2.28	81.83	4,082.26	6,858.26	0.02 N	437.67 E	10,412,330.92	1,915,441.49	0.15	28.49	
6,970.00	1.97	81.21	4,176.19	6,952.19	0.53 N	441.12 E	10,412,331.43	1,915,444.94	0.33	29.23	
7,064.00	1.97	81.46	4,270.14	7,046.14	1.02 N	444.32 E	10,412,331.92	1,915,448.13	0.01	29.92	
7,158.00	1.73	95.40	4,364.09	7,140.09	1.13 N	447.33 E	10,412,332.03	1,915,451.15	0.54	30.23	
7,253.00	1.48	78.03	4,459.05	7,235.05	1.25 N	449.95 E	10,412,332.15	1,915,453.77	0.57	30.52	
7,337.00	0.99	64.59	4,543.03	7,319.03	1.78 N	451.67 E	10,412,332.68	1,915,455.49	0.67	31.16	
7,453.00	1.64	76.71	4,659.00	7,435.00	2.59 N	454.19 E	10,412,333.49	1,915,458.01	0.61	32.14	
7,499.00	1.54	70.96	4,704.98	7,480.98	2.95 N	455.42 E	10,412,333.85	1,915,459.24	0.41	32.57	
7,530.00	3.43	29.27	4,735.96	7,511.96	3.89 N	456.26 E	10,412,334.79	1,915,460.08	8.06	33.57	
7,562.00	5.78	16.85	4,767.85	7,543.85	6.27 N	457.20 E	10,412,337.17	1,915,461.02	7.94	36.00	
7,593.00	8.34	8.20	4,798.61	7,574.61	9.99 N	457.97 E	10,412,340.89	1,915,461.79	8.92	39.76	
7,625.00	11.25	7.14	4,830.14	7,606.14	15.39 N	458.69 E	10,412,346.29	1,915,462.51	9.11	45.19	
7,656.00	13.72	7.40	4,860.41	7,636.41	22.03 N	459.54 E	10,412,352.93	1,915,463.36	7.97	51.88	
7,688.00	15.67	10.17	4,891.36	7,667.36	30.05 N	460.79 E	10,412,360.95	1,915,464.61	6.48	59.96	
7,719.00	18.07	12.04	4,921.03	7,697.03	38.87 N	462.53 E	10,412,369.77	1,915,466.35	7.94	68.88	
7,750.00	20.67	12.34	4,950.27	7,726.27	48.92 N	464.71 E	10,412,379.82	1,915,468.53	8.39	79.05	
7,782.00	22.99	10.21	4,979.97	7,755.97	60.59 N	467.02 E	10,412,391.49	1,915,470.84	7.66	90.85	
7,813.00	24.91	6.72	5,008.30	7,784.30	73.04 N	468.86 E	10,412,403.94	1,915,472.68	7.69	103.38	
7,845.00	27.37	4.65	5,037.03	7,813.03	87.06 N	470.24 E	10,412,417.96	1,915,474.06	8.20	117.47	
7,876.00	29.77	5.25	5,064.25	7,840.25	101.83 N	471.53 E	10,412,432.73	1,915,475.35	7.80	132.29	
7,908.00	32.29	6.14	5,091.67	7,867.67	118.24 N	473.17 E	10,412,449.14	1,915,476.99	8.00	148.77	
7,940.00	34.68	6.97	5,118.36	7,894.36	135.78 N	475.19 E	10,412,466.68	1,915,479.01	7.60	166.41	
7,971.00	37.44	6.87	5,143.42	7,919.42	153.89 N	477.39 E	10,412,484.79	1,915,481.20	8.91	184.62	
8,002.00	40.66	6.78	5,167.49	7,943.49	173.28 N	479.71 E	10,412,504.18	1,915,483.52	10.39	204.12	
8,034.00	43.62	6.15	5,191.21	7,967.21	194.61 N	482.12 E	10,412,525.51	1,915,485.94	9.34	225.57	
8,065.00	45.80	6.87	5,213.24	7,989.24	216.28 N	484.59 E	10,412,547.18	1,915,488.41	7.22	247.35	
8,097.00	48.18	7.73	5,235.07	8,011.07	239.49 N	487.57 E	10,412,570.39	1,915,491.39	7.69	270.70	
8,129.00	48.98	8.85	5,256.24	8,032.24	263.23 N	491.03 E	10,412,594.13	1,915,494.85	3.62	294.62	
8,161.00	51.66	8.40	5,276.67	8,052.67	287.58 N	494.72 E	10,412,618.48	1,915,498.54	8.44	319.15	
8,192.00	56.95	6.86	5,294.75	8,070.75	312.52 N	498.05 E	10,412,643.42	1,915,501.87	17.53	344.26	
8,224.00	63.78	6.76	5,310.57	8,086.57	340.13 N	501.35 E	10,412,671.03	1,915,505.17	21.35	372.02	
8,255.00	70.28	7.16	5,322.66	8,098.66	368.44 N	504.81 E	10,412,699.34	1,915,508.63	21.00	400.50	
8,287.00	72.29	7.75	5,332.92	8,108.92	398.49 N	508.74 E	10,412,729.39	1,915,512.56	6.52	430.74	
8,318.00	74.27	7.85	5,341.84	8,117.84	427.91 N	512.77 E	10,412,758.80	1,915,516.59	6.39	460.36	

## Survey Report for University 10-360 6HR - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (ft)	Comments
					Northing (ft)	Easting (ft)	Northing (usft)	Easting (usft)			
8,350.00	78.18	8.32	5,349.46	8,125.46	458.67 N	517.14 E	10,412,789.57	1,915,520.96	12.30	491.34	
8,381.00	83.19	8.43	5,354.48	8,130.48	488.92 N	521.60 E	10,412,819.82	1,915,525.41	16.17	521.82	
8,486.00	91.17	9.63	5,359.64	8,135.64	592.41 N	538.05 E	10,412,923.31	1,915,541.86	7.69	626.16	
8,580.00	91.75	7.64	5,357.24	8,133.24	685.31 N	552.15 E	10,413,016.21	1,915,555.97	2.20	719.78	
8,671.00	93.05	5.59	5,353.43	8,129.43	775.62 N	562.63 E	10,413,106.52	1,915,566.45	2.67	810.58	
8,763.00	93.32	1.64	5,348.32	8,124.32	867.28 N	568.42 E	10,413,198.17	1,915,572.24	4.30	902.42	
8,854.00	91.57	359.95	5,344.44	8,120.44	958.18 N	569.68 E	10,413,289.08	1,915,573.50	2.67	993.21	
8,946.00	90.34	359.62	5,342.90	8,118.90	1,050.16 N	569.33 E	10,413,381.06	1,915,573.15	1.38	1,084.98	
9,038.00	89.38	359.57	5,343.13	8,119.13	1,142.16 N	568.68 E	10,413,473.06	1,915,572.50	1.04	1,176.73	
9,129.00	89.23	0.06	5,344.23	8,120.23	1,233.15 N	568.39 E	10,413,564.05	1,915,572.21	0.56	1,267.52	
9,220.00	88.49	359.49	5,346.04	8,122.04	1,324.13 N	568.03 E	10,413,655.03	1,915,571.85	1.03	1,358.28	
9,312.00	88.89	358.93	5,348.15	8,124.15	1,416.10 N	566.76 E	10,413,747.00	1,915,570.58	0.75	1,449.97	
9,404.00	91.97	0.21	5,347.45	8,123.45	1,508.08 N	566.07 E	10,413,838.98	1,915,569.89	3.63	1,541.71	
9,497.00	91.76	359.83	5,344.43	8,120.43	1,601.03 N	566.11 E	10,413,931.93	1,915,569.93	0.47	1,634.47	
9,588.00	90.15	359.74	5,342.91	8,118.91	1,692.01 N	565.76 E	10,414,022.91	1,915,569.58	1.77	1,725.24	
9,681.00	89.72	359.76	5,343.02	8,119.02	1,785.01 N	565.36 E	10,414,115.91	1,915,569.18	0.46	1,818.01	
9,771.00	88.92	359.07	5,344.09	8,120.09	1,875.00 N	564.44 E	10,414,205.90	1,915,568.26	1.17	1,907.75	
9,866.00	92.09	1.16	5,343.25	8,119.25	1,969.98 N	564.63 E	10,414,300.88	1,915,568.45	4.00	2,002.54	
9,960.00	92.47	0.92	5,339.51	8,115.51	2,063.89 N	566.34 E	10,414,394.78	1,915,570.15	0.48	2,096.36	
10,055.00	91.79	0.67	5,335.98	8,111.98	2,158.81 N	567.65 E	10,414,489.71	1,915,571.47	0.76	2,191.17	
10,149.00	91.11	0.85	5,333.60	8,109.60	2,252.77 N	568.90 E	10,414,583.67	1,915,572.72	0.75	2,285.01	
10,244.00	90.09	0.60	5,332.60	8,108.60	2,347.76 N	570.10 E	10,414,678.66	1,915,573.92	1.11	2,379.88	
10,338.00	89.85	1.01	5,332.65	8,108.65	2,441.75 N	571.42 E	10,414,772.65	1,915,575.24	0.51	2,473.75	
10,433.00	89.26	1.94	5,333.39	8,109.39	2,536.72 N	573.87 E	10,414,867.61	1,915,577.69	1.16	2,568.67	
10,528.00	89.29	359.91	5,334.59	8,110.59	2,631.69 N	575.40 E	10,414,962.59	1,915,579.22	2.14	2,663.55	
10,622.00	89.08	359.54	5,335.93	8,111.93	2,725.68 N	574.95 E	10,415,056.57	1,915,578.77	0.45	2,757.31	
10,717.00	89.23	0.32	5,337.33	8,113.33	2,820.67 N	574.83 E	10,415,151.56	1,915,578.65	0.84	2,852.09	
10,812.00	89.23	359.62	5,338.61	8,114.61	2,915.66 N	574.78 E	10,415,246.55	1,915,578.60	0.74	2,946.88	
10,906.00	88.46	359.47	5,340.50	8,116.50	3,009.64 N	574.04 E	10,415,340.53	1,915,577.86	0.83	3,040.60	
11,001.00	89.88	359.22	5,341.88	8,117.88	3,104.62 N	572.95 E	10,415,435.51	1,915,576.77	1.52	3,135.31	
11,096.00	90.86	358.65	5,341.27	8,117.27	3,199.60 N	571.19 E	10,415,530.49	1,915,575.00	1.19	3,229.98	
11,190.00	90.06	359.21	5,340.51	8,116.51	3,293.58 N	569.43 E	10,415,624.47	1,915,573.25	1.04	3,323.64	
11,285.00	89.35	358.64	5,341.00	8,117.00	3,388.56 N	567.65 E	10,415,719.45	1,915,571.47	0.96	3,418.31	
11,379.00	90.77	359.51	5,340.90	8,116.90	3,482.54 N	566.13 E	10,415,813.44	1,915,569.95	1.77	3,511.99	
11,474.00	90.00	357.38	5,340.26	8,116.26	3,577.50 N	563.55 E	10,415,908.39	1,915,567.37	2.38	3,606.58	
11,569.00	90.31	358.89	5,340.01	8,116.01	3,672.45 N	560.46 E	10,416,003.34	1,915,564.28	1.62	3,701.13	
11,663.00	90.31	358.00	5,339.50	8,115.50	3,766.41 N	557.91 E	10,416,097.30	1,915,561.73	0.95	3,794.73	
11,758.00	89.88	356.23	5,339.34	8,115.34	3,861.28 N	553.13 E	10,416,192.18	1,915,556.95	1.92	3,889.09	
11,853.00	91.82	357.20	5,337.93	8,113.93	3,956.11 N	547.69 E	10,416,287.00	1,915,551.50	2.28	3,983.36	
11,947.00	92.47	359.19	5,334.41	8,110.41	4,049.99 N	544.73 E	10,416,380.89	1,915,548.55	2.23	4,076.85	
12,042.00	91.91	0.67	5,330.78	8,106.78	4,144.92 N	544.61 E	10,416,475.81	1,915,548.43	1.66	4,171.57	

## Survey Report for University 10-360 6HR - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates Northing (ft)	Easting (ft)	Map Coordinates Northing (usft)	Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (ft)	Comments
12,137.00	91.20	0.21	5,328.20	8,104.20	4,239.88 N	545.34 E	10,416,570.77	1,915,549.16	0.89	4,266.38	
12,231.00	89.88	359.98	5,327.32	8,103.32	4,333.88 N	545.50 E	10,416,664.77	1,915,549.32	1.43	4,360.18	
12,326.00	89.08	359.32	5,328.18	8,104.18	4,428.87 N	544.92 E	10,416,759.76	1,915,548.74	1.09	4,454.94	
12,420.00	90.25	359.42	5,328.73	8,104.73	4,522.86 N	543.88 E	10,416,853.75	1,915,547.70	1.25	4,548.66	
12,515.00	90.56	0.79	5,328.06	8,104.06	4,617.86 N	544.06 E	10,416,948.75	1,915,547.88	1.48	4,643.47	
12,610.00	90.49	0.84	5,327.19	8,103.19	4,712.84 N	545.41 E	10,417,043.73	1,915,549.23	0.09	4,738.34	
12,705.00	92.00	1.85	5,325.12	8,101.12	4,807.79 N	547.64 E	10,417,138.68	1,915,551.46	1.91	4,833.23	
12,799.00	91.85	2.19	5,321.97	8,097.97	4,901.68 N	550.95 E	10,417,232.57	1,915,554.77	0.40	4,927.14	
12,894.00	91.76	2.36	5,318.97	8,094.97	4,996.56 N	554.72 E	10,417,327.45	1,915,558.54	0.20	5,022.06	
12,988.00	90.92	0.89	5,316.78	8,092.78	5,090.49 N	557.38 E	10,417,421.38	1,915,561.20	1.80	5,115.97	
13,083.00	90.80	0.63	5,315.35	8,091.35	5,185.47 N	558.64 E	10,417,516.36	1,915,562.46	0.30	5,210.83	
13,178.00	90.25	1.11	5,314.48	8,090.48	5,280.45 N	560.08 E	10,417,611.34	1,915,563.90	0.77	5,305.71	
13,272.00	89.20	0.85	5,314.93	8,090.93	5,374.44 N	561.69 E	10,417,705.33	1,915,565.51	1.15	5,399.59	
13,367.00	89.13	1.47	5,316.31	8,092.31	5,469.41 N	563.62 E	10,417,800.30	1,915,567.43	0.66	5,494.49	
13,461.00	89.20	2.53	5,317.68	8,093.68	5,563.34 N	566.90 E	10,417,894.23	1,915,570.71	1.13	5,588.43	
13,556.00	89.91	1.03	5,318.42	8,094.42	5,658.29 N	569.85 E	10,417,989.18	1,915,573.66	1.75	5,683.37	
13,651.00	89.91	357.63	5,318.57	8,094.57	5,753.27 N	568.74 E	10,418,084.16	1,915,572.55	3.58	5,778.08	
13,745.00	89.97	358.41	5,318.67	8,094.67	5,847.21 N	565.49 E	10,418,178.10	1,915,569.31	0.83	5,871.61	
13,840.00	89.66	358.65	5,318.98	8,094.98	5,942.18 N	563.05 E	10,418,273.07	1,915,566.87	0.41	5,966.22	
13,935.00	90.49	359.34	5,318.85	8,094.85	6,037.16 N	561.38 E	10,418,368.05	1,915,565.20	1.14	6,060.89	
14,030.00	90.37	0.34	5,318.14	8,094.14	6,132.16 N	561.12 E	10,418,463.05	1,915,564.94	1.06	6,155.67	
14,124.00	89.66	359.97	5,318.11	8,094.11	6,226.16 N	561.37 E	10,418,557.04	1,915,565.19	0.85	6,249.49	
14,219.00	89.38	0.59	5,318.91	8,094.91	6,321.15 N	561.84 E	10,418,652.04	1,915,565.66	0.72	6,344.31	
14,313.00	90.15	0.47	5,319.30	8,095.30	6,415.15 N	562.71 E	10,418,746.03	1,915,566.53	0.83	6,438.16	
14,408.00	89.69	359.98	5,319.43	8,095.43	6,510.14 N	563.08 E	10,418,841.03	1,915,566.90	0.71	6,532.99	
14,502.00	89.23	0.56	5,320.31	8,096.31	6,604.14 N	563.52 E	10,418,935.03	1,915,567.34	0.79	6,626.81	
14,597.00	90.49	0.10	5,320.55	8,096.55	6,699.13 N	564.07 E	10,419,030.02	1,915,567.89	1.41	6,721.64	
14,691.00	90.40	0.03	5,319.82	8,095.82	6,793.13 N	564.18 E	10,419,124.02	1,915,568.00	0.12	6,815.44	
14,786.00	90.37	0.81	5,319.18	8,095.18	6,888.13 N	564.87 E	10,419,219.01	1,915,568.69	0.82	6,910.28	
14,881.00	90.57	2.17	5,318.40	8,094.40	6,983.09 N	567.34 E	10,419,313.97	1,915,571.16	1.45	7,005.21	
14,976.00	90.00	2.09	5,317.93	8,093.93	7,078.02 N	570.87 E	10,419,408.91	1,915,574.69	0.61	7,100.17	
15,070.00	90.65	1.22	5,317.39	8,093.39	7,171.98 N	573.59 E	10,419,502.87	1,915,577.41	1.16	7,194.10	
15,165.00	91.05	1.07	5,315.98	8,091.98	7,266.95 N	575.49 E	10,419,597.84	1,915,579.31	0.45	7,288.99	
15,259.00	89.29	0.10	5,315.70	8,091.70	7,360.94 N	576.45 E	10,419,691.83	1,915,580.27	2.14	7,382.85	
15,354.00	89.78	357.92	5,316.48	8,092.48	7,455.92 N	574.81 E	10,419,786.80	1,915,578.62	2.35	7,477.52	
15,449.00	90.00	359.24	5,316.66	8,092.66	7,550.88 N	572.45 E	10,419,881.77	1,915,576.27	1.41	7,572.13	
15,544.00	90.62	0.37	5,316.14	8,092.14	7,645.88 N	572.13 E	10,419,976.77	1,915,575.95	1.36	7,666.90	
15,638.00	89.97	359.51	5,315.66	8,091.66	7,739.88 N	572.03 E	10,420,070.76	1,915,575.85	1.15	7,760.70	
15,732.00	90.06	1.19	5,315.64	8,091.64	7,833.87 N	572.60 E	10,420,164.76	1,915,576.42	1.79	7,854.53	
15,828.00	89.97	358.56	5,315.61	8,091.61	7,929.86 N	572.39 E	10,420,260.75	1,915,576.21	2.74	7,950.30	
15,923.00	90.95	358.29	5,314.85	8,090.85	8,024.82 N	569.78 E	10,420,355.71	1,915,573.60	1.07	8,044.89	

## Survey Report for University 10-360 6HR - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates Northing (ft)	Easting (ft)	Map Coordinates Northing (usft)	Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (ft)	Comments
16,017.00	90.55	356.83	5,313.62	8,089.62	8,118.73 N	565.78 E	10,420,449.61	1,915,569.60	1.61	8,138.34	
16,112.00	89.81	356.62	5,313.32	8,089.32	8,213.57 N	560.35 E	10,420,544.46	1,915,564.17	0.81	8,232.63	
16,207.00	90.03	359.05	5,313.45	8,089.45	8,308.50 N	556.77 E	10,420,639.38	1,915,560.58	2.57	8,327.12	
16,301.00	90.15	1.26	5,313.30	8,089.30	8,402.49 N	557.02 E	10,420,733.37	1,915,560.84	2.35	8,420.93	Final Sperry MWD Survey
16,376.00	90.15	1.26	5,313.11	8,089.11	8,477.47 N	558.67 E	10,420,808.36	1,915,562.49	0.00	8,495.86	Projection to TD

### Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
47.00	47.00	-0.11	-0.05	First Sperry MWD Survey
16,301.00	8,089.30	8,402.49	557.02	Final Sperry MWD Survey
16,376.00	8,089.11	8,477.47	558.67	Projection to TD

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	+E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	3.73	Slot	0.00	0.00	0.00

### Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
47.00	16,376.00	Sperry MWD Surveys	MWD

### Design Targets

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

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Survey Report for University 10-360 6HR - Sperry MWD Surveys

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Directional Difficulty Index

Average Dogleg over Survey: 1.43 °/100usft

Maximum Dogleg over Survey: 21.35 °/100usft at 8,224.00  
ft

Net Tortosity applicable to Plans: 0.58 °/100usft

Directional Difficulty Index: 6.625

Audit Info



## North Reference Sheet for Section 36 BLK 10 - University 10-360 6HR - 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 @ 2776.00ft (HP 267 25'KB). Northing and Easting are relative to University 10-360 6HR

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: 2,296,583.33usft, False Northing: 9,842,500.00usft, Scale Reduction: 0.99988951

Grid Coordinates of Well: 10,412,330.90 usft N, 1,915,003.82 usft E

Geographical Coordinates of Well: 31° 13' 39.64" N, 101° 33' 15.15" W

Grid Convergence at Surface is: -0.63°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,376.00ft  
the Bottom Hole Displacement is 8,495.86ft in the Direction of 3.77° (Grid).

Magnetic Convergence at surface is: -6.96° ( 9 August 2013, , BGGM2013)

