

Job# 901730585
HP 395

Devon

Crockett County, TX (NAD83) Sec 23, BLK 52, Universtiy Lands
API# 105-41761

University 52-23 11H

25'KB

Wellbore #2

Survey: Sperry MWD Surveys

Sperry Drilling Services

Combo Report

21 October, 2014

Well Coordinates: 31° 01' 28.42" N
100° 58' 40.37" W

North American Datum 1983
Texas Central Zone
10,336,946.32 N
2,094,701.43 E

Ground Level: 2,562.00 ft

Local Coordinate Origin:
Viewing Datum:
TVDs to System:

Centered on Well University 52-23 11H
well @ 2587.00ft (HP 395)

North Reference:

N
Grid

Unit System:

API US Survey Feet

Version: 5000.1 Build: 73

Report Version: Midcon Combo v1.50

HALLIBURTON

Survey Report for University 52-23 11H - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (usft)		Dogleg Rate (°/100usft)	Vertical Section (ft)	Comments
					Northing	Easting	Northing	Easting			
772.00	0.25	43.47	-1,815.03	771.97	3.55 N	4.43 E	10,336,949.87	2,094,705.86	0.00	-3.34	
894.00	0.19	21.66	-1,693.03	893.97	3.93 N	4.69 E	10,336,950.25	2,094,706.12	0.08	-3.71	First Sperry MWD Survey
987.00	0.10	350.44	-1,600.03	986.97	4.15 N	4.73 E	10,336,950.47	2,094,706.16	0.13	-3.93	
1,082.00	0.11	68.65	-1,505.03	1,081.97	4.27 N	4.80 E	10,336,950.59	2,094,706.23	0.14	-4.04	
1,176.00	0.05	21.16	-1,411.03	1,175.97	4.34 N	4.90 E	10,336,950.66	2,094,706.33	0.09	-4.11	
1,271.00	3.13	76.19	-1,316.07	1,270.93	5.00 N	7.43 E	10,336,951.32	2,094,708.86	3.26	-4.64	
1,365.00	3.32	79.45	-1,222.22	1,364.78	6.11 N	12.60 E	10,336,952.43	2,094,714.03	0.28	-5.51	
1,460.00	3.17	77.95	-1,127.38	1,459.62	7.16 N	17.88 E	10,336,953.48	2,094,719.31	0.18	-6.32	
1,555.00	3.29	80.85	-1,032.53	1,554.47	8.14 N	23.14 E	10,336,954.46	2,094,724.57	0.21	-7.05	
1,649.00	3.16	77.66	-938.68	1,648.32	9.12 N	28.33 E	10,336,955.44	2,094,729.76	0.24	-7.79	
1,743.00	5.47	77.83	-844.95	1,742.05	10.62 N	35.24 E	10,336,956.94	2,094,736.67	2.46	-8.97	
1,838.00	5.35	78.48	-750.37	1,836.63	12.46 N	44.01 E	10,336,958.78	2,094,745.44	0.14	-10.40	
1,932.00	5.17	77.30	-656.77	1,930.23	14.27 N	52.43 E	10,336,960.59	2,094,753.86	0.22	-11.81	
2,027.00	4.54	74.83	-562.11	2,024.89	16.19 N	60.24 E	10,336,962.51	2,094,761.67	0.70	-13.37	
2,121.00	6.40	85.32	-468.54	2,118.46	17.59 N	69.05 E	10,336,963.91	2,094,770.48	2.24	-14.36	
2,216.00	6.10	85.37	-374.10	2,212.90	18.43 N	79.36 E	10,336,964.75	2,094,780.79	0.32	-14.72	
2,310.00	5.75	83.79	-280.61	2,306.39	19.35 N	89.02 E	10,336,965.67	2,094,790.45	0.41	-15.18	
2,405.00	5.08	82.69	-186.03	2,400.97	20.40 N	97.92 E	10,336,966.72	2,094,799.35	0.71	-15.81	
2,499.00	4.84	82.27	-92.38	2,494.62	21.46 N	105.98 E	10,336,967.78	2,094,807.41	0.26	-16.50	
2,594.00	4.28	80.85	2.32	2,589.32	22.56 N	113.45 E	10,336,968.88	2,094,814.88	0.60	-17.25	
2,689.00	6.23	97.97	96.92	2,683.92	22.41 N	122.06 E	10,336,968.73	2,094,823.49	2.61	-16.70	
2,783.00	5.96	98.34	190.39	2,777.39	20.99 N	131.94 E	10,336,967.31	2,094,833.37	0.29	-14.83	
2,878.00	5.41	97.81	284.92	2,871.92	19.67 N	141.25 E	10,336,965.99	2,094,842.68	0.58	-13.07	
2,972.00	4.92	97.97	378.54	2,965.54	18.51 N	149.63 E	10,336,964.83	2,094,851.06	0.52	-11.52	
3,067.00	4.72	96.94	473.20	3,060.20	17.47 N	157.55 E	10,336,963.79	2,094,858.98	0.23	-10.11	
3,161.00	6.69	91.11	566.73	3,153.73	16.90 N	166.86 E	10,336,963.22	2,094,868.29	2.18	-9.11	
3,256.00	5.94	90.52	661.16	3,248.16	16.75 N	177.31 E	10,336,963.07	2,094,878.74	0.79	-8.47	
3,351.00	5.36	90.11	755.69	3,342.69	16.69 N	186.66 E	10,336,963.01	2,094,888.09	0.61	-7.98	
3,445.00	4.72	93.72	849.33	3,436.33	16.43 N	194.91 E	10,336,962.75	2,094,896.34	0.76	-7.34	
3,540.00	3.96	96.04	944.06	3,531.06	15.84 N	202.08 E	10,336,962.16	2,094,903.51	0.82	-6.41	
3,634.00	5.48	93.06	1,037.74	3,624.74	15.25 N	209.79 E	10,336,961.57	2,094,911.22	1.64	-5.47	
3,729.00	5.03	91.86	1,132.34	3,719.34	14.88 N	218.48 E	10,336,961.20	2,094,919.91	0.49	-4.68	
3,824.00	4.50	91.52	1,227.01	3,814.01	14.64 N	226.37 E	10,336,960.96	2,094,927.80	0.56	-4.08	
3,919.00	4.24	89.85	1,321.73	3,908.73	14.55 N	233.60 E	10,336,960.87	2,094,935.03	0.30	-3.66	
4,013.00	5.78	82.06	1,415.37	4,002.37	15.22 N	241.77 E	10,336,961.54	2,094,943.20	1.79	-3.94	
4,108.00	4.88	82.53	1,509.96	4,096.96	16.40 N	250.51 E	10,336,962.72	2,094,951.94	0.95	-4.72	
4,203.00	4.06	78.08	1,604.67	4,191.67	17.62 N	257.81 E	10,336,963.94	2,094,959.24	0.94	-5.59	
4,297.00	5.67	83.10	1,698.33	4,285.33	18.87 N	265.68 E	10,336,965.19	2,094,967.11	1.77	-6.47	
4,391.00	5.44	81.02	1,791.89	4,378.89	20.12 N	274.69 E	10,336,966.44	2,094,976.12	0.33	-7.30	
4,486.00	4.65	78.84	1,886.52	4,473.52	21.57 N	282.91 E	10,336,967.89	2,094,984.34	0.86	-8.37	
4,580.00	6.58	95.80	1,980.07	4,567.07	21.76 N	292.01 E	10,336,968.08	2,094,993.44	2.69	-8.14	

Survey Report for University 52-23 11H - 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)			
4,675.00	5.85	96.10	2,074.51	4,661.51	20.70 N	302.24 E	10,336,967.02	2,095,003.67	0.77	-6.60	
4,769.00	4.89	94.53	2,168.10	4,755.10	19.87 N	311.00 E	10,336,966.19	2,095,012.43	1.03	-5.36	
4,864.00	4.31	94.49	2,262.79	4,849.79	19.27 N	318.59 E	10,336,965.59	2,095,020.02	0.61	-4.41	
4,959.00	3.72	90.42	2,357.56	4,944.56	18.97 N	325.23 E	10,336,965.29	2,095,026.66	0.69	-3.80	
5,053.00	3.32	91.78	2,451.38	5,038.38	18.86 N	331.00 E	10,336,965.18	2,095,032.43	0.43	-3.43	
5,113.00	2.63	89.11	2,511.30	5,098.30	18.83 N	334.12 E	10,336,965.15	2,095,035.55	1.17	-3.25	
5,167.00	3.38	109.32	2,565.22	5,152.22	18.32 N	336.86 E	10,336,964.64	2,095,038.29	2.38	-2.61	
5,198.00	6.00	136.86	2,596.12	5,183.12	16.84 N	338.83 E	10,336,963.16	2,095,040.26	10.92	-1.04	
5,230.00	9.58	146.77	2,627.82	5,214.82	13.39 N	341.43 E	10,336,959.71	2,095,042.86	11.91	2.53	
5,261.00	13.19	155.97	2,658.21	5,245.21	8.00 N	344.29 E	10,336,954.32	2,095,045.72	13.00	8.05	
5,293.00	14.54	161.34	2,689.28	5,276.28	0.86 N	347.06 E	10,336,947.18	2,095,048.49	5.82	15.31	
5,324.00	17.46	165.58	2,719.07	5,306.07	7.33 S	349.46 E	10,336,938.99	2,095,050.89	10.14	23.60	
5,356.00	19.56	167.37	2,749.42	5,336.42	17.21 S	351.83 E	10,336,929.11	2,095,053.26	6.80	33.58	
5,387.00	19.74	170.18	2,778.61	5,365.61	27.43 S	353.86 E	10,336,918.89	2,095,055.29	3.10	43.89	
5,419.00	22.20	168.74	2,808.49	5,395.49	38.69 S	355.96 E	10,336,907.63	2,095,057.39	7.85	55.23	
5,450.00	25.81	169.77	2,836.81	5,423.81	51.08 S	358.30 E	10,336,895.24	2,095,059.73	11.72	67.71	
5,482.00	29.78	170.71	2,865.11	5,452.11	65.78 S	360.82 E	10,336,880.54	2,095,062.25	12.48	82.52	
5,513.00	33.13	171.52	2,891.55	5,478.55	81.76 S	363.32 E	10,336,864.56	2,095,064.75	10.89	98.60	
5,545.00	36.36	172.95	2,917.84	5,504.84	99.83 S	365.77 E	10,336,846.49	2,095,067.20	10.41	116.76	
5,576.00	38.93	173.95	2,942.38	5,529.38	118.64 S	367.93 E	10,336,827.68	2,095,069.36	8.52	135.65	
5,608.00	40.71	174.22	2,966.96	5,553.96	139.02 S	370.04 E	10,336,807.30	2,095,071.47	5.59	156.11	
5,639.00	43.63	173.52	2,989.93	5,576.93	159.71 S	372.26 E	10,336,786.61	2,095,073.69	9.54	176.88	
5,671.00	46.20	171.11	3,012.60	5,599.60	182.10 S	375.29 E	10,336,764.22	2,095,076.72	9.63	199.38	
5,702.00	48.71	170.16	3,033.56	5,620.56	204.63 S	379.01 E	10,336,741.69	2,095,080.44	8.41	222.06	
5,734.00	50.68	170.03	3,054.25	5,641.25	228.67 S	383.21 E	10,336,717.65	2,095,084.64	6.16	246.27	
5,765.00	52.51	170.84	3,073.51	5,660.51	252.62 S	387.25 E	10,336,693.70	2,095,088.68	6.25	270.38	
5,797.00	52.76	173.43	3,092.93	5,679.93	277.81 S	390.72 E	10,336,668.51	2,095,092.15	6.48	295.71	
5,828.00	55.87	176.07	3,111.02	5,698.02	302.88 S	393.02 E	10,336,643.44	2,095,094.45	12.18	320.86	
5,860.00	59.37	178.66	3,128.15	5,715.15	329.87 S	394.25 E	10,336,616.45	2,095,095.68	12.90	347.87	
5,891.00	63.08	179.56	3,143.07	5,730.07	357.03 S	394.67 E	10,336,589.29	2,095,096.09	12.24	375.03	
5,923.00	66.13	180.88	3,156.80	5,743.80	385.93 S	394.55 E	10,336,560.39	2,095,095.98	10.23	403.89	
5,954.00	69.05	180.32	3,168.61	5,755.61	414.59 S	394.25 E	10,336,531.73	2,095,095.68	9.57	432.50	
5,986.00	72.35	180.67	3,179.19	5,766.19	444.78 S	393.99 E	10,336,501.54	2,095,095.42	10.36	462.65	
6,017.00	75.77	181.18	3,187.70	5,774.70	474.58 S	393.51 E	10,336,471.74	2,095,094.94	11.15	492.40	
6,049.00	77.98	182.37	3,194.97	5,781.97	505.73 S	392.54 E	10,336,440.59	2,095,093.97	7.80	523.47	
6,080.00	80.38	183.46	3,200.79	5,787.79	536.14 S	390.99 E	10,336,410.18	2,095,092.42	8.48	553.77	
6,112.00	82.95	182.52	3,205.42	5,792.42	567.75 S	389.34 E	10,336,378.57	2,095,090.77	8.54	585.27	
6,144.00	86.27	180.25	3,208.43	5,795.43	599.60 S	388.57 E	10,336,346.73	2,095,090.00	12.55	617.04	
6,238.00	95.56	177.12	3,206.93	5,793.93	693.44 S	390.72 E	10,336,252.88	2,095,092.15	10.43	710.89	
6,333.00	93.77	177.35	3,199.20	5,786.20	788.02 S	395.29 E	10,336,158.31	2,095,096.72	1.90	805.57	
6,428.00	89.56	177.32	3,196.44	5,783.44	882.85 S	399.71 E	10,336,063.47	2,095,101.13	4.43	900.51	

Survey Report for University 52-23 11H - 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
6,522.00	89.46	177.86	3,197.25	5,784.25	976.76 S	403.66 E	10,335,969.56	2,095,105.09	0.58	994.51	
6,617.00	91.31	178.37	3,196.61	5,783.61	1,071.71 S	406.78 E	10,335,874.62	2,095,108.21	2.02	1,089.49	
6,711.00	88.28	180.07	3,196.95	5,783.95	1,165.68 S	408.06 E	10,335,780.64	2,095,109.49	3.70	1,183.43	
6,806.00	86.81	180.39	3,201.02	5,788.02	1,260.59 S	407.68 E	10,335,685.73	2,095,109.11	1.58	1,278.21	
6,901.00	88.12	180.85	3,205.22	5,792.22	1,355.49 S	406.65 E	10,335,590.83	2,095,108.08	1.46	1,372.96	
6,995.00	89.49	180.49	3,207.18	5,794.18	1,449.46 S	405.56 E	10,335,496.86	2,095,106.98	1.51	1,466.78	
7,090.00	90.81	181.34	3,206.93	5,793.93	1,544.45 S	404.04 E	10,335,401.88	2,095,105.47	1.65	1,561.59	
7,184.00	92.22	181.22	3,204.44	5,791.44	1,638.39 S	401.94 E	10,335,307.94	2,095,103.37	1.51	1,655.33	
7,279.00	90.40	180.02	3,202.27	5,789.27	1,733.35 S	400.91 E	10,335,212.97	2,095,102.34	2.29	1,750.15	
7,373.00	90.27	180.11	3,201.72	5,788.72	1,827.35 S	400.81 E	10,335,118.97	2,095,102.23	0.17	1,844.04	
7,468.00	91.51	180.81	3,200.25	5,787.25	1,922.33 S	400.04 E	10,335,023.99	2,095,101.47	1.50	1,938.88	
7,562.00	90.57	179.00	3,198.54	5,785.54	2,016.31 S	400.20 E	10,334,930.01	2,095,101.63	2.17	2,032.77	
7,657.00	91.34	178.29	3,196.96	5,783.96	2,111.27 S	402.44 E	10,334,835.05	2,095,103.87	1.10	2,127.73	
7,751.00	92.78	178.77	3,193.58	5,780.58	2,205.18 S	404.85 E	10,334,741.15	2,095,106.28	1.61	2,221.64	
7,846.00	89.70	177.92	3,191.52	5,778.52	2,300.10 S	407.60 E	10,334,646.22	2,095,109.03	3.36	2,316.59	
7,941.00	87.22	175.69	3,194.08	5,781.08	2,394.91 S	412.89 E	10,334,551.42	2,095,114.32	3.51	2,411.54	
8,035.00	88.02	177.49	3,197.98	5,784.98	2,488.66 S	418.47 E	10,334,457.67	2,095,119.90	2.09	2,505.45	
8,130.00	89.30	179.67	3,200.20	5,787.20	2,583.59 S	420.83 E	10,334,362.73	2,095,122.26	2.66	2,600.39	
8,224.00	90.67	179.82	3,200.23	5,787.23	2,677.59 S	421.25 E	10,334,268.74	2,095,122.67	1.47	2,694.31	
8,319.00	92.12	180.04	3,197.91	5,784.91	2,772.56 S	421.36 E	10,334,173.77	2,095,122.79	1.54	2,789.18	
8,413.00	93.43	180.25	3,193.36	5,780.36	2,866.45 S	421.12 E	10,334,079.88	2,095,122.55	1.41	2,882.95	
8,508.00	90.84	181.62	3,189.82	5,776.82	2,961.36 S	419.57 E	10,333,984.97	2,095,121.00	3.08	2,977.69	
8,603.00	88.35	183.09	3,190.49	5,777.49	3,056.26 S	415.67 E	10,333,890.06	2,095,117.10	3.04	3,072.31	
8,697.00	89.53	183.07	3,192.23	5,779.23	3,150.11 S	410.62 E	10,333,796.22	2,095,112.05	1.26	3,165.82	
8,791.00	90.94	183.32	3,191.85	5,778.85	3,243.96 S	405.38 E	10,333,702.36	2,095,106.81	1.52	3,259.32	
8,886.00	92.11	182.90	3,189.32	5,776.32	3,338.79 S	400.23 E	10,333,607.54	2,095,101.66	1.31	3,353.81	
8,980.00	93.66	183.39	3,184.59	5,771.59	3,432.52 S	395.08 E	10,333,513.80	2,095,096.51	1.73	3,447.20	
9,075.00	90.71	180.86	3,180.97	5,767.97	3,527.37 S	391.56 E	10,333,418.96	2,095,092.99	4.09	3,541.78	
9,169.00	89.19	179.67	3,181.05	5,768.05	3,621.36 S	391.13 E	10,333,324.96	2,095,092.56	2.05	3,635.65	
9,264.00	90.57	180.32	3,181.25	5,768.25	3,716.36 S	391.14 E	10,333,229.97	2,095,092.57	1.61	3,730.55	
9,358.00	92.08	180.94	3,179.07	5,766.07	3,810.33 S	390.10 E	10,333,136.00	2,095,091.53	1.74	3,824.36	
9,453.00	88.19	179.80	3,178.85	5,765.85	3,905.31 S	389.49 E	10,333,041.02	2,095,090.92	4.27	3,919.21	
9,548.00	85.83	180.18	3,183.81	5,770.81	4,000.17 S	389.51 E	10,332,946.16	2,095,090.94	2.52	4,013.97	
9,642.00	87.04	180.54	3,189.65	5,776.65	4,093.98 S	388.92 E	10,332,852.34	2,095,090.35	1.34	4,107.66	
9,737.00	91.04	178.44	3,191.24	5,778.24	4,188.94 S	389.76 E	10,332,757.39	2,095,091.19	4.76	4,202.55	
9,831.00	92.59	175.10	3,188.26	5,775.26	4,282.73 S	395.06 E	10,332,663.60	2,095,096.48	3.92	4,296.48	
9,926.00	93.97	175.24	3,182.83	5,769.83	4,377.23 S	403.04 E	10,332,569.09	2,095,104.47	1.46	4,391.26	
10,020.00	90.74	176.63	3,178.97	5,765.97	4,470.90 S	409.70 E	10,332,475.42	2,095,111.13	3.74	4,485.14	
10,115.00	88.86	177.96	3,179.30	5,766.30	4,565.79 S	414.18 E	10,332,380.54	2,095,115.61	2.42	4,580.13	
10,210.00	90.17	178.63	3,180.10	5,767.10	4,660.74 S	417.01 E	10,332,285.59	2,095,118.44	1.55	4,675.11	
10,304.00	91.88	179.10	3,178.42	5,765.42	4,754.71 S	418.87 E	10,332,191.62	2,095,120.30	1.89	4,769.06	

Survey Report for University 52-23 11H - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates Northing (ft)	Local Coordinates Easting (ft)	Map Coordinates Northing (usft)	Map Coordinates Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (ft)	Comments
10,399.00	87.62	178.64	3,178.83	5,765.83	4,849.66 S	420.74 E	10,332,096.66	2,095,122.17	4.51	4,864.00	
10,494.00	86.40	179.80	3,183.79	5,770.79	4,944.52 S	422.03 E	10,332,001.81	2,095,123.46	1.77	4,958.81	
10,588.00	87.54	179.96	3,188.76	5,775.76	5,038.39 S	422.23 E	10,331,907.94	2,095,123.66	1.22	5,052.59	
10,683.00	89.19	181.54	3,191.47	5,778.47	5,133.34 S	420.99 E	10,331,812.99	2,095,122.42	2.40	5,147.37	
10,778.00	90.74	181.75	3,191.53	5,778.53	5,228.29 S	418.26 E	10,331,718.04	2,095,119.69	1.65	5,242.10	
10,873.00	92.32	182.02	3,188.99	5,775.99	5,323.21 S	415.14 E	10,331,623.12	2,095,116.56	1.69	5,336.77	
10,967.00	93.63	182.31	3,184.11	5,771.11	5,417.01 S	411.59 E	10,331,529.32	2,095,113.02	1.43	5,430.30	
11,062.00	95.36	182.09	3,176.67	5,763.67	5,511.65 S	407.95 E	10,331,434.69	2,095,109.38	1.84	5,524.67	
11,156.00	94.74	180.37	3,168.39	5,755.39	5,605.25 S	405.94 E	10,331,341.08	2,095,107.37	1.94	5,618.08	
11,251.00	88.63	177.22	3,165.60	5,752.60	5,700.14 S	407.94 E	10,331,246.20	2,095,109.37	7.23	5,712.95	
11,345.00	88.05	177.11	3,168.32	5,755.32	5,793.98 S	412.59 E	10,331,152.35	2,095,114.02	0.63	5,806.91	
11,440.00	89.53	177.32	3,170.33	5,757.33	5,888.84 S	417.21 E	10,331,057.49	2,095,118.64	1.57	5,901.89	
11,534.00	91.05	176.43	3,169.85	5,756.85	5,982.70 S	422.33 E	10,330,963.63	2,095,123.76	1.87	5,995.88	
11,629.00	89.30	179.14	3,169.56	5,756.56	6,077.62 S	426.00 E	10,330,868.72	2,095,127.43	3.40	6,090.86	
11,723.00	90.37	179.16	3,169.83	5,756.83	6,171.60 S	427.40 E	10,330,774.73	2,095,128.82	1.14	6,184.81	
11,818.00	91.75	178.97	3,168.08	5,755.08	6,266.57 S	428.95 E	10,330,679.76	2,095,130.37	1.47	6,279.75	
11,913.00	92.08	181.15	3,164.90	5,751.90	6,361.51 S	428.85 E	10,330,584.82	2,095,130.28	2.32	6,374.58	
12,007.00	93.63	181.11	3,160.22	5,747.22	6,455.38 S	426.99 E	10,330,490.96	2,095,128.42	1.65	6,468.26	
12,040.00	90.24	179.36	3,159.10	5,746.10	6,488.35 S	426.86 E	10,330,457.98	2,095,128.29	11.56	6,501.19	
12,072.00	89.66	177.98	3,159.13	5,746.13	6,520.34 S	427.60 E	10,330,425.99	2,095,129.03	4.68	6,533.18	
12,103.00	89.93	178.27	3,159.24	5,746.24	6,551.32 S	428.62 E	10,330,395.01	2,095,130.05	1.28	6,564.18	
12,166.00	90.94	176.70	3,158.77	5,745.77	6,614.26 S	431.38 E	10,330,332.07	2,095,132.81	2.96	6,627.17	
12,261.00	91.08	175.35	3,157.09	5,744.09	6,709.01 S	437.97 E	10,330,237.32	2,095,139.39	1.43	6,722.13	
12,355.00	92.46	175.90	3,154.19	5,741.19	6,802.69 S	445.13 E	10,330,143.64	2,095,146.56	1.58	6,816.04	
12,450.00	90.67	175.93	3,151.59	5,738.59	6,897.41 S	451.90 E	10,330,048.92	2,095,153.33	1.88	6,910.97	
12,544.00	89.93	175.88	3,151.10	5,738.10	6,991.17 S	458.61 E	10,329,955.16	2,095,160.04	0.79	7,004.94	
12,639.00	91.42	177.16	3,149.98	5,736.98	7,085.98 S	464.38 E	10,329,860.35	2,095,165.81	2.07	7,099.92	
12,734.00	90.40	178.50	3,148.47	5,735.47	7,180.90 S	467.97 E	10,329,765.43	2,095,169.40	1.77	7,194.90	
12,828.00	90.37	179.75	3,147.84	5,734.84	7,274.88 S	469.41 E	10,329,671.45	2,095,170.84	1.33	7,288.85	
12,923.00	89.87	178.22	3,147.64	5,734.64	7,369.87 S	471.09 E	10,329,576.47	2,095,172.52	1.69	7,383.81	
13,017.00	91.21	180.55	3,146.76	5,733.76	7,463.85 S	472.10 E	10,329,482.49	2,095,173.53	2.86	7,477.74	
13,112.00	89.69	181.43	3,146.01	5,733.01	7,558.83 S	470.46 E	10,329,387.51	2,095,171.89	1.85	7,572.54	
13,206.00	90.47	182.13	3,145.88	5,732.88	7,652.78 S	467.54 E	10,329,293.55	2,095,168.97	1.11	7,666.25	
13,301.00	89.73	181.24	3,145.71	5,732.71	7,747.74 S	464.75 E	10,329,198.60	2,095,166.17	1.22	7,760.98	
13,395.00	89.87	182.72	3,146.04	5,733.04	7,841.68 S	461.50 E	10,329,104.66	2,095,162.93	1.58	7,854.66	
13,490.00	91.49	183.14	3,144.91	5,731.91	7,936.54 S	456.64 E	10,329,009.79	2,095,158.07	1.76	7,949.20	
13,585.00	89.19	184.13	3,144.35	5,731.35	8,031.34 S	450.62 E	10,328,914.99	2,095,152.05	2.64	8,043.62	
13,679.00	88.75	184.33	3,146.04	5,733.04	8,125.07 S	443.69 E	10,328,821.26	2,095,145.12	0.51	8,136.92	
13,774.00	89.66	184.31	3,147.36	5,734.36	8,219.79 S	436.53 E	10,328,726.54	2,095,137.96	0.96	8,231.20	
13,868.00	90.47	185.55	3,147.25	5,734.25	8,313.44 S	428.45 E	10,328,632.89	2,095,129.88	1.58	8,324.38	
13,963.00	90.98	186.14	3,146.05	5,733.05	8,407.94 S	418.78 E	10,328,538.40	2,095,120.21	0.82	8,418.32	

Survey Report for University 52-23 11H - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates Northing (ft)	Local Coordinates Easting (ft)	Map Coordinates Northing (usft)	Map Coordinates Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (ft)	Comments
14,058.00	92.23	186.23	3,143.39	5,730.39	8,502.35 S	408.55 E	10,328,443.99	2,095,109.98	1.32	8,512.15	Final Sperry MWD Survey
14,136.00	92.23	186.23	3,140.35	5,727.35	8,579.83 S	400.09 E	10,328,366.51	2,095,101.52	0.00	8,589.15	Projection to TD

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
894.00				First Sperry MWD Survey
14,058.00	5,730.39	-8,502.35	408.55	Final Sperry MWD Survey
14,136.00	5,727.35	-8,579.83	400.09	Projection to TD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	177.33	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
100.00	772.00	Gyros	NS-Gyro-MS
894.00	14,136.00	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									
()									

Survey Report for University 52-23 11H - Sperry MWD Surveys

Directional Difficulty Index

Average Dogleg over Survey:	2.27 °/100usft	Maximum Dogleg over Survey:	13.00 °/100usft at 5,261.00 ft
Net Tortosity applicable to Plans:	0.27 °/100usft	Directional Difficulty Index:	6.845

Audit Info

SAP=346244

North Reference Sheet for Sec 23, BLK 52, Universtiy Lands - University 52-23 11H - Wellbore #2

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

Vertical Depths are relative to well @ 2587.00ft (HP 395). Northing and Easting are relative to University 52-23 11H

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: 0.99988182

Grid Coordinates of Well: 10,336,946.32 usft N, 2,094,701.43 usft E

Geographical Coordinates of Well: 31° 01' 28.42" N, 100° 58' 40.37" W

Grid Convergence at Surface is: -0.33°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,136.00ft the Bottom Hole Displacement is 8,589.15ft in the Direction of 177.33° (Grid).

Magnetic Convergence at surface is: -6.26° (20 October 2014, , BGGM2014)

