

# HALLIBURTON

## DIRECTIONAL SURVEY REPORT

**Felix Energy**  
**UL American Basin 14-21 1H**  
**Winkler County Texas**  
**USA**  
**MO-XX-0904212842**

<i>Measured Depth (feet)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (feet)</i>	<i>Latitude (feet)</i>	<i>Departure (feet)</i>	<i>Vertical Section (feet)</i>	<i>Dogleg (deg/100ft)</i>
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
166.00	0.31	181.13	166.00	0.45 S	0.01 W	-0.43	0.19
284.00	0.33	95.68	284.00	0.80 S	0.32 E	-0.86	0.37
559.00	0.87	35.96	558.98	0.81 N	2.32 E	0.17	0.28
740.00	1.55	45.48	739.94	3.64 N	4.88 E	2.23	0.39
923.00	2.88	45.52	922.80	8.60 N	9.93 E	5.69	0.72
1098.00	1.13	36.95	1097.69	13.06 N	14.10 E	8.90	1.01
1216.00	0.99	52.38	1215.67	14.61 N	15.61 E	10.00	0.27
1308.00	3.05	119.78	1307.61	13.88 N	18.37 E	8.58	3.06
1399.00	5.24	123.60	1398.37	10.38 N	23.93 E	3.74	2.43
1491.00	5.49	132.28	1489.97	5.10 N	30.68 E	-3.13	0.92
1582.00	5.62	136.63	1580.54	1.07 S	36.96 E	-10.73	0.49
1673.00	5.72	135.21	1671.10	7.52 S	43.21 E	-18.60	0.19
1764.00	5.91	137.12	1761.63	14.18 S	49.60 E	-26.70	0.30
1855.00	4.91	136.86	1852.22	20.46 S	55.45 E	-34.30	1.10
1946.00	4.55	137.41	1942.91	25.95 S	60.56 E	-40.94	0.41
2037.00	4.75	141.59	2033.61	31.56 S	65.34 E	-47.61	0.43
2131.00	4.56	140.73	2127.30	37.50 S	70.12 E	-54.60	0.22
2226.00	4.79	140.91	2221.99	43.50 S	75.01 E	-61.67	0.25
2321.00	4.80	143.57	2316.65	49.79 S	79.88 E	-69.01	0.23
2416.00	4.68	142.95	2411.33	56.08 S	84.57 E	-76.31	0.14
2511.00	4.46	140.30	2506.03	62.01 S	89.26 E	-83.27	0.32
2606.00	4.62	138.45	2600.73	67.71 S	94.16 E	-90.05	0.23
2701.00	4.81	138.93	2695.41	73.57 S	99.31 E	-97.06	0.21
2796.00	4.93	144.63	2790.07	79.90 S	104.29 E	-104.48	0.52
2892.00	4.85	146.31	2885.72	86.64 S	108.93 E	-112.20	0.17
2986.00	2.79	137.71	2979.50	91.64 S	112.67 E	-118.00	2.27
3081.00	0.31	16.66	3074.47	93.10 S	114.30 E	-119.84	3.12
3175.00	0.57	16.52	3168.47	92.41 S	114.51 E	-119.23	0.27
3270.00	0.80	58.69	3263.46	91.61 S	115.21 E	-118.64	0.57
3365.00	1.20	74.57	3358.45	91.00 S	116.74 E	-118.45	0.51
3460.00	2.66	109.99	3453.39	91.48 S	119.77 E	-119.72	1.91
3555.00	3.20	131.27	3548.27	93.99 S	123.83 E	-123.20	1.27
3649.00	3.22	129.63	3642.12	97.40 S	127.84 E	-127.55	0.10
3744.00	2.43	123.00	3737.01	100.20 S	131.59 E	-131.23	0.90
3838.00	1.01	88.86	3830.96	101.27 S	134.09 E	-132.92	1.80
3933.00	0.42	40.33	3925.96	100.99 S	135.15 E	-132.93	0.84
4028.00	0.46	28.12	4020.95	100.39 S	135.55 E	-132.45	0.11
4123.00	0.61	39.32	4115.95	99.66 S	136.05 E	-131.88	0.19
4218.00	0.88	45.58	4210.94	98.76 S	136.89 E	-131.24	0.29
4313.00	1.02	38.26	4305.93	97.59 S	137.93 E	-130.38	0.20
4408.00	1.25	28.12	4400.91	96.01 S	138.95 E	-129.12	0.32
4502.00	1.82	33.95	4494.88	93.87 S	140.26 E	-127.40	0.63
4597.00	2.17	32.72	4589.82	91.10 S	142.08 E	-125.21	0.37
4696.00	3.47	41.12	4688.70	87.27 S	145.06 E	-122.29	1.37
4791.00	2.32	46.07	4783.57	83.78 S	148.33 E	-119.78	1.24
4886.00	1.31	229.38	4878.55	83.15 S	148.89 E	-119.32	3.82
4981.00	2.61	233.57	4973.50	85.15 S	146.32 E	-120.57	1.38
5075.00	1.99	234.78	5067.42	87.36 S	143.27 E	-121.91	0.66
5170.00	1.94	236.40	5162.37	89.20 S	140.58 E	-122.98	0.08
5265.00	1.77	237.88	5257.32	90.87 S	138.00 E	-123.91	0.19
5361.00	1.86	231.36	5353.27	92.63 S	135.53 E	-124.96	0.24
5455.00	1.68	227.55	5447.22	94.51 S	133.33 E	-126.19	0.23
5550.00	1.20	185.47	5542.20	96.43 S	132.21 E	-127.76	1.18
5645.00	1.12	172.09	5637.18	98.35 S	132.24 E	-129.61	0.30

5741.00	1.20	171.39	5733.16	100.27 S	132.52 E	-131.54	0.08
5836.00	1.27	164.74	5828.13	102.27 S	132.95 E	-133.59	0.17
5931.00	0.95	167.92	5923.12	104.06 S	133.39 E	-135.43	0.34
6026.00	1.03	169.47	6018.10	105.67 S	133.71 E	-137.07	0.09
6121.00	1.19	167.08	6113.08	107.47 S	134.09 E	-138.91	0.17
6216.00	1.08	171.06	6208.07	109.32 S	134.45 E	-140.78	0.14
6311.00	0.98	166.81	6303.05	111.00 S	134.77 E	-142.49	0.13
6403.00	1.09	167.62	6395.03	112.62 S	135.14 E	-144.15	0.11
6498.00	1.17	157.03	6490.02	114.39 S	135.71 E	-146.01	0.23
6593.00	1.00	168.26	6585.00	116.09 S	136.26 E	-147.79	0.28
6688.00	1.06	155.39	6679.98	117.71 S	136.79 E	-149.49	0.25
6784.00	1.02	151.99	6775.97	119.27 S	137.56 E	-151.20	0.08
6878.00	0.90	127.69	6869.96	120.46 S	138.54 E	-152.60	0.45
6973.00	0.96	34.92	6964.95	120.26 S	139.58 E	-152.68	1.41
7068.00	1.68	29.05	7059.92	118.39 S	140.71 E	-151.18	0.77
7162.00	1.37	28.77	7153.89	116.20 S	141.92 E	-149.38	0.33
7257.00	1.57	38.30	7248.86	114.18 S	143.28 E	-147.79	0.33
7352.00	1.84	35.69	7343.81	111.92 S	144.97 E	-146.05	0.30
7447.00	0.72	39.92	7438.79	110.22 S	146.25 E	-144.75	1.19
7541.00	0.74	45.95	7532.78	109.35 S	147.06 E	-144.12	0.09
7635.00	0.68	51.57	7626.77	108.58 S	147.93 E	-143.61	0.10
7730.00	0.85	46.19	7721.77	107.74 S	148.88 E	-143.05	0.20
7825.00	0.88	68.70	7816.76	106.99 S	150.07 E	-142.63	0.36
7920.00	1.05	63.10	7911.74	106.33 S	151.53 E	-142.38	0.20
8015.00	0.96	55.78	8006.73	105.49 S	152.96 E	-141.95	0.17
8110.00	0.66	65.80	8101.72	104.82 S	154.11 E	-141.60	0.34
8205.00	0.79	69.39	8196.71	104.37 S	155.23 E	-141.46	0.15
8299.00	0.96	75.18	8290.70	103.94 S	156.59 E	-141.40	0.20
8394.00	0.49	179.19	8385.70	104.14 S	157.37 E	-141.80	1.24
8489.00	0.84	199.06	8480.69	105.21 S	157.15 E	-142.78	0.43
8583.00	0.61	170.75	8574.68	106.35 S	157.00 E	-143.84	0.45
8678.00	0.50	138.51	8669.68	107.16 S	157.35 E	-144.71	0.34
8773.00	0.38	113.99	8764.67	107.59 S	157.92 E	-145.28	0.23
8868.00	0.46	103.86	8859.67	107.81 S	158.57 E	-145.66	0.11
8963.00	0.26	92.11	8954.67	107.91 S	159.16 E	-145.91	0.22
9057.00	0.57	38.08	9048.67	107.55 S	159.66 E	-145.70	0.49
9151.00	0.87	27.38	9142.66	106.55 S	160.28 E	-144.89	0.35
9246.00	0.89	25.63	9237.65	105.25 S	160.93 E	-143.80	0.03
9341.00	0.99	48.96	9332.64	104.04 S	161.87 E	-142.89	0.41
9435.00	1.02	56.53	9426.62	103.05 S	163.18 E	-142.27	0.14
9530.00	0.87	57.34	9521.61	102.19 S	164.49 E	-141.79	0.16
9625.00	0.99	222.83	9616.60	102.40 S	164.54 E	-142.01	1.94
9720.00	1.78	201.71	9711.58	104.37 S	163.44 E	-143.62	0.97
9815.00	1.25	198.79	9806.54	106.72 S	162.56 E	-145.65	0.56
9909.00	1.52	208.18	9900.52	108.79 S	161.64 E	-147.41	0.37
10005.00	2.09	189.10	9996.47	111.64 S	160.76 E	-149.93	0.86
10099.00	1.82	214.36	10090.42	114.57 S	159.65 E	-152.46	0.95
10194.00	1.94	225.13	10185.37	116.95 S	157.66 E	-154.23	0.39
10289.00	0.99	290.65	10280.34	117.79 S	155.75 E	-154.55	1.87
10383.00	0.99	336.92	10374.33	116.76 S	154.67 E	-153.26	0.83
10478.00	1.19	6.42	10469.31	115.02 S	154.45 E	-151.53	0.62
10572.00	0.91	23.36	10563.29	113.37 S	154.86 E	-150.05	0.44
10666.00	0.97	43.84	10657.28	112.11 S	155.71 E	-149.05	0.36
10761.00	0.96	42.61	10752.27	110.94 S	156.80 E	-148.22	0.03
10855.00	1.26	58.39	10846.25	109.82 S	158.21 E	-147.51	0.46
10950.00	1.51	62.03	10941.22	108.69 S	160.21 E	-146.94	0.28
10998.00	1.98	55.63	10989.20	107.92 S	161.46 E	-146.52	1.05
11086.00	2.03	52.72	11077.15	106.12 S	163.95 E	-145.44	0.13
11132.00	1.87	58.63	11123.12	105.24 S	165.24 E	-144.93	0.55
11179.00	4.85	2.19	11170.04	102.85 S	165.97 E	-142.82	8.76
11225.00	11.63	348.47	11215.54	96.36 S	165.12 E	-136.32	15.25
11266.00	18.18	345.52	11255.14	86.10 S	162.69 E	-125.79	16.08
11319.00	21.84	345.48	11304.94	68.54 S	158.15 E	-107.66	6.91
11366.00	21.38	347.06	11348.63	51.73 S	154.04 E	-90.35	1.57
11413.00	23.76	339.85	11392.04	34.48 S	148.85 E	-72.35	7.75
11459.00	25.60	333.96	11433.84	16.85 S	141.30 E	-53.35	6.67
11505.00	31.44	333.50	11474.24	2.83 N	131.57 E	-31.81	12.69
11551.00	37.20	332.25	11512.22	25.89 N	119.74 E	-6.45	12.62
11597.00	40.96	334.58	11547.92	51.83 N	106.78 E	21.97	8.79
11643.00	45.32	340.74	11581.49	80.91 N	94.91 E	53.16	13.16

11688.00	47.77	341.24	11612.44	111.79 N	84.27 E	85.75	5.51
11734.00	51.54	341.24	11642.22	144.98 N	73.00 E	120.73	8.20
11780.00	62.02	340.93	11667.38	181.34 N	60.54 E	159.08	22.79
11826.00	68.63	340.87	11686.57	220.81 N	46.87 E	200.76	14.37
11873.00	69.17	341.45	11703.49	262.31 N	32.71 E	244.53	1.63
11920.00	69.67	341.47	11720.01	304.03 N	18.72 E	288.45	1.06
11966.00	74.78	339.92	11734.05	345.36 N	4.23 E	332.13	11.57
12013.00	80.18	337.27	11744.23	388.05 N	12.52 W	377.72	12.74
12034.00	83.73	336.41	11747.17	407.16 N	20.69 W	398.31	17.38
12065.00	83.76	335.11	11750.55	435.26 N	33.35 W	428.75	4.15
12096.00	80.81	333.25	11754.71	462.91 N	46.72 W	458.94	11.23
12127.00	81.57	333.41	11759.46	490.28 N	60.47 W	488.96	2.50
12158.00	83.60	334.28	11763.46	517.87 N	74.02 W	519.14	7.13
12189.00	86.29	335.28	11766.19	545.81 N	87.18 W	549.55	9.25
12220.00	88.74	336.51	11767.53	574.07 N	99.83 W	580.15	8.83
12252.00	90.43	337.75	11767.77	603.56 N	112.26 W	611.86	6.56
12283.00	90.89	341.12	11767.41	632.57 N	123.15 W	642.72	10.99
12345.00	91.57	346.31	11766.07	692.05 N	140.53 W	704.67	8.44
12376.00	92.19	345.87	11765.06	722.13 N	147.97 W	735.65	2.45
12417.00	90.06	345.97	11764.25	761.89 N	157.95 W	776.63	5.20
12470.00	90.96	346.09	11763.78	813.32 N	170.74 W	829.61	1.70
12563.00	92.00	350.36	11761.38	904.31 N	189.71 W	922.39	4.72
12655.00	89.94	350.43	11759.82	995.00 N	205.06 W	1013.93	2.25
12687.00	88.21	349.50	11760.33	1026.50 N	210.63 W	1045.79	6.14
12749.00	87.75	348.23	11762.52	1087.30 N	222.60 W	1107.60	2.17
12843.00	85.43	338.56	11768.12	1177.10 N	249.37 W	1201.28	10.57
12935.00	85.66	337.75	11775.27	1262.24 N	283.51 W	1292.39	0.91
12966.00	82.06	335.67	11778.58	1290.54 N	295.69 W	1322.90	13.39
12997.00	80.82	331.80	11783.20	1318.03 N	309.25 W	1352.98	12.97
13029.00	82.60	330.52	11787.81	1345.76 N	324.53 W	1383.76	6.82
13060.00	86.17	330.97	11790.85	1372.68 N	339.60 W	1413.68	11.61
13091.00	90.40	330.89	11791.77	1399.75 N	354.65 W	1443.76	13.65
13122.00	92.09	330.67	11791.10	1426.80 N	369.78 W	1473.83	5.50
13215.00	91.33	333.75	11788.33	1509.02 N	413.12 W	1564.55	3.41
13309.00	93.83	336.42	11784.10	1594.17 N	452.68 W	1657.10	3.89
13402.00	91.92	336.11	11779.43	1679.20 N	490.06 W	1748.95	2.08
13495.00	88.89	336.00	11778.77	1764.18 N	527.80 W	1840.86	3.26
13553.00	88.80	336.35	11779.94	1817.22 N	551.23 W	1898.20	0.62
13646.00	89.51	339.96	11781.32	1903.52 N	585.83 W	1990.55	3.96
13739.00	89.08	342.29	11782.47	1991.51 N	615.91 W	2083.35	2.55
13833.00	88.86	343.80	11784.16	2081.41 N	643.31 W	2177.29	1.63
13926.00	88.55	343.96	11786.26	2170.73 N	669.12 W	2270.25	0.37
14023.00	89.26	344.11	11788.11	2263.97 N	695.79 W	2367.22	0.75
14113.00	86.76	345.91	11791.24	2350.84 N	719.05 W	2457.16	3.42
14206.00	87.56	345.85	11795.84	2440.92 N	741.72 W	2550.03	0.87
14300.00	88.92	345.88	11798.72	2532.03 N	764.67 W	2643.96	1.44
14393.00	88.71	347.01	11800.65	2622.42 N	786.46 W	2736.90	1.24
14487.00	90.06	346.78	11801.66	2713.96 N	807.78 W	2830.83	1.46
14580.00	87.32	346.46	11803.79	2804.40 N	829.30 W	2923.75	2.97
14674.00	88.03	346.34	11807.61	2895.69 N	851.38 W	3017.63	0.77
14767.00	89.91	346.24	11809.28	2986.02 N	873.43 W	3110.58	2.02
14860.00	89.82	347.10	11809.51	3076.51 N	894.87 W	3203.53	0.93
14953.00	92.50	347.86	11807.63	3167.27 N	915.03 W	3296.40	3.00
15047.00	88.80	349.41	11806.57	3259.41 N	933.54 W	3390.16	4.26
15141.00	87.53	349.12	11809.58	3351.71 N	951.04 W	3483.82	1.38
15235.00	92.90	352.49	11809.22	3444.46 N	966.06 W	3577.26	6.74
15328.00	89.51	349.14	11807.27	3536.22 N	980.90 W	3669.69	5.12
15421.00	87.47	345.86	11809.72	3626.96 N	1001.01 W	3762.54	4.15
15515.00	88.52	345.76	11813.01	3718.04 N	1024.04 W	3856.47	1.12
15608.00	90.22	345.72	11814.03	3808.17 N	1046.94 W	3949.44	1.82
15701.00	90.83	345.71	11813.18	3898.29 N	1069.89 W	4042.43	0.66
15794.00	90.15	345.85	11812.38	3988.43 N	1092.73 W	4135.41	0.75
15887.00	89.08	346.01	11813.01	4078.64 N	1115.35 W	4228.39	1.17
15981.00	90.86	346.84	11813.06	4170.01 N	1137.41 W	4322.34	2.10
16074.00	89.78	346.50	11812.53	4260.50 N	1158.86 W	4415.29	1.22
16168.00	90.68	345.23	11812.15	4351.65 N	1181.82 W	4509.27	1.65
16261.00	92.84	348.11	11809.30	4442.08 N	1203.25 W	4602.16	3.87
16354.00	91.88	349.81	11805.48	4533.28 N	1221.05 W	4694.83	2.10
16448.00	90.25	348.81	11803.73	4625.63 N	1238.48 W	4788.52	2.04
16541.00	88.64	346.57	11804.63	4716.47 N	1258.31 W	4881.38	2.96
16635.00	91.14	346.84	11804.81	4807.95 N	1279.93 W	4975.32	2.68
16728.00	86.20	343.43	11806.83	4897.78 N	1303.77 W	5069.26	6.28

16728.00 88.39 343.43 11606.82 4897.78 N 1303.77 W 5068.26 6.26

**CALCULATION BASED ON MINIMUM CURVATURE METHOD**

**SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT  
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT**

**VERTICAL SECTION RELATIVE TO WELL HEAD  
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 344.78 DEGREES (GRID)  
A TOTAL CORRECTION OF 8.33 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 16728.00 FEET  
IS 5068.33 FEET ALONG 345.09 DEGREES (GRID)**

**Date Printed:07 September 2017**

HALLIBURTON

July 17, 2018

Tina Klein, Oil Gas Division  
Texas Railroad Commission  
P.O. Box 12967, Capitol Station  
Austin, TX 78711

*Final Survey for:*  
**Company:** FELIX ENERGY HOLDINGS II, LLC  
**RRC Operator #:** 265322  
**Well Name:** UL American Basin 14-21 1H ST02  
**Drilling Permit #:** 828090  
**Abstract #:** U63  
**County/Parish & State:** Winkler County, TX  
**API #:** 42-495-33876-002  
**Sperry DS Job #:** 904212842

Dear Ms. Klein:

Enclosed you will find the original survey performed by Halliburton Energy Services, Inc. (AKA Sperry Drilling Services) on the above referenced well. In addition to the survey, I have included a certified plat on which the bottom hole location is oriented to both the surface location and the nearest lease line (or unit of lines in case of pooling) and a signed letter from the surveyor.

Other information required by your office is as follows:

**Name of Surveyor:** Rob Bell  
**Title of Surveyor:** MWD Coordinator  
**Type of Survey:** MWD  
**Dates Performed:** 8/6/2017 thru 9/8/2017  
**Drainhole Number:** Side  
**Surveyed Depths:** 166 to 16728

Should you have any questions or require additional information, please do not hesitate to contact me.

Thank you,



Diane Velasquez  
Sperry Drilling Services  
(281) 986-4437

# Survey Report for Felix Energy

**Rig** : Cactus 139  
**Well Name** : UL American Basin 14-21 1H ST02  
**Field Name** : Wolfcamp  
**Country** : USA  
**Job Number** : MO-XX-0904212842  
**Job Start Date** : 06-Aug-17  
**API Number** : 42-495-33876-002

TABLE OF CONTENTS

- 1. General Information
- 2. Operational Overview
- 3. Directional Survey Data

GENERAL INFORMATION

**Company** : Felix Energy

**Rig** : Cactus 139

**Well** : UL American Basin 14-21 1H ST02

**Field** : Wolfcamp

**State** : Texas

**County** : Winkler County

**Country** : USA

**API Number** : 42-495-33876-002

**Sperry Drilling Job Number** : MO-XX-0904212842

**Job Start Date** : 06-Aug-17

**Job End Date** : 08-Aug-17

**North Reference** : Grid

**Total Correction (deg)** : 8.334

**Dip Angle (deg)** : 59.666

**Total Magnetic Field (nT)** : 47728

**Date of Magnetic Data** : 06 August, 2017

**Well Head coordinates N** : 31 deg. 44 min 17.12 sec North

**Well Head coordinates E** : 103 deg. 12 min 16.4 sec West

**Vertical section direction (deg)** : 344.78

**Unit Number** : 11498524

**MWD Engineers** : Alexander Munro, Todd Hudson, Martin Fox, Rigo Mejia, Joel Dixon, Gary Igunbor

**Company Representatives** : Freddie, Cruiser, Adam, Brandon

**Company Geologist:** : Chris Persellin



OPERATIONAL OVERVIEW

HALLIBURTON / SPERRY DRILLING WAS CONTRACTED BY Felix Energy TO PERFORM MWD SERVICES FOR THE UL American Basin 14-21 1H WELL IN Winkler County, TX. EQUIPMENT AND PERSONNEL ARRIVED ON LOCATION ON August 06, 2017 AND RIGGED UP ACCORDINGLY.

RUN 100: 7-AUGUST-17. PICKED UP 8" DWD TOOLS. DRILLED SURFACE SECTION FROM 80 MD TO 1182 MD. POOH SECTION TD. 100% MWD RUN.

RUN 200: 9-AUGUST-17. PICKED UP 8" DWD TOOLS. DRILLED INTERMEDIATE SECTION FROM 1182 MD TO 4675 MD. POOH SECTION TD. 100% MWD RUN.

RUN 300: 11-AUGUST-17. PICKED UP 8" DGWD TOOLS. DRILLED INTERMEDIATE SECTION FROM 4675 MD TO 8200 MD. POOH DUE TO FAILED MOTOR. POOR DETECTION.

RUN 400: 14-AUGUST-17. PICKED UP 8" DGWD TOOLS. DRILLED INTERMEDIATE SECTION FROM 8200 MD TO 9163 MD. POOH DUE TO LOW ROP. 100% MWD RUN.

RUN 500: 16-AUGUST-17. PICKED UP 8" DGWD TOOLS. DRILLED INTERMEDIATE SECTION FROM 9163 MD TO 10008 MD. POOH LOW ROP. 100% MWD RUN.

RUN 600: 17-AUGUST-17. PICKED UP 8" DGWD TOOLS. DRILLED INTERMEDIATE SECTION FROM 10008 MD TO 10008 MD. POOH DUE TO NOT BEING ABLE TO DRILL. 100% MWD RUN.

RUN 700: 18-AUGUST-17. PICKED UP 8" DGWD TOOLS. DRILLED INTERMEDIATE SECTION FROM 10008 MD TO 11060 MD. 100% MWD RUN.

RUN 800: 21-AUGUST-17. PICKED UP 4.75" DGWD TOOLS. DRILLED CURVE SECTION FROM 11060 MD TO 12153 MD. 100% MWD RUN.

RUN 900: 25-AUGUST-17. PICKED UP 4.75" DGWD TOOLS. FINISHED CURVE SECTION AND SIDETRACK FROM 12045' MD TO 12704' MD. TRIP FOR BIT. 100% MWD RUN

RUN 1000: 26-AUGUST-17. PICKED UP 4.75" DGWD TOOLS. DRILLED LATERAL SECTION FROM 12704 MD TO 14797 MD. LOST BHA IN HOLE. 100% MWD RT RUN

RUN 1100: 30-AUGUST-17. PICKED UP 4.75" DGWD TOOLS. FINISHED SECOND SIDETRACK. FROM 12932 MD TO 13627 MD. WHILE DRILLING: BHA TORQUED UP HAD TO POOH TO CHANGE BHA DUE TO MUCH DRAG. 100% MWD RT RUN.

RUN 1200: 4-SEPTEMBER-17. PICKED UP 4.75" DGWD TOOLS. DRILLED FROM 13627 MD TO 16828 MD. WHILE DRILLING: BHA TORQUED UP HAD TO POOH, DECIDED TO CALL TD. 100% MWD RUN.

DIRECTIONAL SURVEY DATA					
Tie-in					
0.00	0.00	0.00	0.00	0.00 N	0.00 E

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
166.00	0.31	181.13	166.00	0.45 S	0.01 W	-0.43	0.19
284.00	0.33	95.68	284.00	0.80 S	0.32 E	-0.86	0.37
559.00	0.87	35.96	558.98	0.81 N	2.32 E	0.17	0.28
740.00	1.55	45.48	739.94	3.64 N	4.88 E	2.23	0.39
923.00	2.88	45.52	922.80	8.60 N	9.93 E	5.69	0.72
1098.00	1.13	36.95	1,097.69	13.06 N	14.10 E	8.90	1.01
1216.00	0.99	52.38	1,215.67	14.61 N	15.61 E	10.00	0.27
1308.00	3.05	119.78	1,307.61	13.88 N	18.37 E	8.58	3.06
1399.00	5.24	123.60	1,398.37	10.38 N	23.93 E	3.74	2.43
1491.00	5.49	132.28	1,489.97	5.10 N	30.68 E	-3.13	0.92
1582.00	5.62	136.63	1,580.54	1.07 S	36.96 E	-10.73	0.49
1673.00	5.72	135.21	1,671.10	7.52 S	43.21 E	-18.60	0.19
1764.00	5.91	137.12	1,761.63	14.18 S	49.60 E	-26.70	0.30
1855.00	4.91	136.86	1,852.22	20.46 S	55.45 E	-34.30	1.10
1946.00	4.55	137.41	1,942.91	25.95 S	60.56 E	-40.94	0.41
2037.00	4.75	141.59	2,033.61	31.56 S	65.34 E	-47.61	0.43
2131.00	4.56	140.73	2,127.30	37.50 S	70.12 E	-54.60	0.22
2226.00	4.79	140.91	2,221.99	43.50 S	75.01 E	-61.67	0.25
2321.00	4.80	143.57	2,316.65	49.79 S	79.88 E	-69.01	0.23
2416.00	4.68	142.95	2,411.33	56.08 S	84.57 E	-76.31	0.14
2511.00	4.46	140.30	2,506.03	62.01 S	89.26 E	-83.27	0.32
2606.00	4.62	138.45	2,600.73	67.71 S	94.16 E	-90.05	0.23
2701.00	4.81	138.93	2,695.41	73.57 S	99.31 E	-97.06	0.21
2796.00	4.93	144.63	2,790.07	79.90 S	104.29 E	-104.48	0.52
2892.00	4.85	146.31	2,885.72	86.64 S	108.93 E	-112.20	0.17
2986.00	2.79	137.71	2,979.50	91.64 S	112.67 E	-118.00	2.27
3081.00	0.31	16.66	3,074.47	93.10 S	114.30 E	-119.84	3.12
3175.00	0.57	16.52	3,168.47	92.41 S	114.51 E	-119.23	0.27
3270.00	0.80	58.69	3,263.46	91.61 S	115.21 E	-118.64	0.57
3365.00	1.20	74.57	3,358.45	91.00 S	116.74 E	-118.45	0.51
3460.00	2.66	109.99	3,453.39	91.48 S	119.77 E	-119.72	1.91
3555.00	3.20	131.27	3,548.27	93.99 S	123.83 E	-123.20	1.27
3649.00	3.22	129.63	3,642.12	97.40 S	127.84 E	-127.55	0.10
3744.00	2.43	123.00	3,737.01	100.20 S	131.59 E	-131.23	0.90
3838.00	1.01	88.86	3,830.96	101.27 S	134.09 E	-132.92	1.80
3933.00	0.42	40.33	3,925.96	100.99 S	135.15 E	-132.93	0.84
4028.00	0.46	28.12	4,020.95	100.39 S	135.55 E	-132.45	0.11
4123.00	0.61	39.32	4,115.95	99.66 S	136.05 E	-131.88	0.19
4218.00	0.88	45.58	4,210.94	98.76 S	136.89 E	-131.24	0.29
4313.00	1.02	38.26	4,305.93	97.59 S	137.93 E	-130.38	0.20
4408.00	1.25	28.12	4,400.91	96.01 S	138.95 E	-129.12	0.32

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
4502.00	1.82	33.95	4,494.88	93.87 S	140.26 E	-127.40	0.63
4597.00	2.17	32.72	4,589.82	91.10 S	142.08 E	-125.21	0.37
4696.00	3.47	41.12	4,688.70	87.27 S	145.06 E	-122.29	1.37
4791.00	2.32	46.07	4,783.57	83.78 S	148.33 E	-119.78	1.24
4886.00	1.31	229.38	4,878.55	83.15 S	148.89 E	-119.32	3.82
4981.00	2.61	233.57	4,973.50	85.15 S	146.32 E	-120.57	1.38
5075.00	1.99	234.78	5,067.42	87.36 S	143.27 E	-121.91	0.66
5170.00	1.94	236.40	5,162.37	89.20 S	140.58 E	-122.98	0.08
5265.00	1.77	237.88	5,257.32	90.87 S	138.00 E	-123.91	0.19
5361.00	1.86	231.36	5,353.27	92.63 S	135.53 E	-124.96	0.24
5455.00	1.68	227.55	5,447.22	94.51 S	133.33 E	-126.19	0.23
5550.00	1.20	185.47	5,542.20	96.43 S	132.21 E	-127.76	1.18
5645.00	1.12	172.09	5,637.18	98.35 S	132.24 E	-129.61	0.30
5741.00	1.20	171.39	5,733.16	100.27 S	132.52 E	-131.54	0.08
5836.00	1.27	164.74	5,828.13	102.27 S	132.95 E	-133.59	0.17
5931.00	0.95	167.92	5,923.12	104.06 S	133.39 E	-135.43	0.34
6026.00	1.03	169.47	6,018.10	105.67 S	133.71 E	-137.07	0.09
6121.00	1.19	167.08	6,113.08	107.47 S	134.09 E	-138.91	0.17
6216.00	1.08	171.06	6,208.07	109.32 S	134.45 E	-140.78	0.14
6311.00	0.98	166.81	6,303.05	111.00 S	134.77 E	-142.49	0.13
6403.00	1.09	167.62	6,395.03	112.62 S	135.14 E	-144.15	0.11
6498.00	1.17	157.03	6,490.02	114.39 S	135.71 E	-146.01	0.23
6593.00	1.00	168.26	6,585.00	116.09 S	136.26 E	-147.79	0.28
6688.00	1.06	155.39	6,679.98	117.71 S	136.79 E	-149.49	0.25
6784.00	1.02	151.99	6,775.97	119.27 S	137.56 E	-151.20	0.08
6878.00	0.90	127.69	6,869.96	120.46 S	138.54 E	-152.60	0.45
6973.00	0.96	34.92	6,964.95	120.26 S	139.58 E	-152.68	1.41
7068.00	1.68	29.05	7,059.92	118.39 S	140.71 E	-151.18	0.77
7162.00	1.37	28.77	7,153.89	116.20 S	141.92 E	-149.38	0.33
7257.00	1.57	38.30	7,248.86	114.18 S	143.28 E	-147.79	0.33
7352.00	1.84	35.69	7,343.81	111.92 S	144.97 E	-146.05	0.30
7447.00	0.72	39.92	7,438.79	110.22 S	146.25 E	-144.75	1.19
7541.00	0.74	45.95	7,532.78	109.35 S	147.06 E	-144.12	0.09
7635.00	0.68	51.57	7,626.77	108.58 S	147.93 E	-143.61	0.10
7730.00	0.85	46.19	7,721.77	107.74 S	148.88 E	-143.05	0.20
7825.00	0.88	68.70	7,816.76	106.99 S	150.07 E	-142.63	0.36
7920.00	1.05	63.10	7,911.74	106.33 S	151.53 E	-142.38	0.20
8015.00	0.96	55.78	8,006.73	105.49 S	152.96 E	-141.95	0.17
8110.00	0.66	65.80	8,101.72	104.82 S	154.11 E	-141.60	0.34
8205.00	0.79	69.39	8,196.71	104.37 S	155.23 E	-141.46	0.15
8299.00	0.96	75.18	8,290.70	103.94 S	156.59 E	-141.40	0.20
8394.00	0.49	179.19	8,385.70	104.14 S	157.37 E	-141.80	1.24
8489.00	0.84	199.06	8,480.69	105.21 S	157.15 E	-142.78	0.43
8583.00	0.61	170.75	8,574.68	106.35 S	157.00 E	-143.84	0.45
8678.00	0.50	138.51	8,669.68	107.16 S	157.35 E	-144.71	0.34



DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
8773.00	0.38	113.99	8,764.67	107.59 S	157.92 E	-145.28	0.23
8868.00	0.46	103.86	8,859.67	107.81 S	158.57 E	-145.66	0.11
8963.00	0.26	92.11	8,954.67	107.91 S	159.16 E	-145.91	0.22
9057.00	0.57	38.08	9,048.67	107.55 S	159.66 E	-145.70	0.49
9151.00	0.87	27.38	9,142.66	106.55 S	160.28 E	-144.89	0.35
9246.00	0.89	25.63	9,237.65	105.25 S	160.93 E	-143.80	0.03
9341.00	0.99	48.96	9,332.64	104.04 S	161.87 E	-142.89	0.41
9435.00	1.02	56.53	9,426.62	103.05 S	163.18 E	-142.27	0.14
9530.00	0.87	57.34	9,521.61	102.19 S	164.49 E	-141.79	0.16
9625.00	0.99	222.83	9,616.60	102.40 S	164.54 E	-142.01	1.94
9720.00	1.78	201.71	9,711.58	104.37 S	163.44 E	-143.62	0.97
9815.00	1.25	198.79	9,806.54	106.72 S	162.56 E	-145.65	0.56
9909.00	1.52	208.18	9,900.52	108.79 S	161.64 E	-147.41	0.37
10005.00	2.09	189.10	9,996.47	111.64 S	160.76 E	-149.93	0.86
10099.00	1.82	214.36	10,090.42	114.57 S	159.65 E	-152.46	0.95
10194.00	1.94	225.13	10,185.37	116.95 S	157.66 E	-154.23	0.39
10289.00	0.99	290.65	10,280.34	117.79 S	155.75 E	-154.55	1.87
10383.00	0.99	336.92	10,374.33	116.76 S	154.67 E	-153.26	0.83
10478.00	1.19	6.42	10,469.31	115.02 S	154.45 E	-151.53	0.62
10572.00	0.91	23.36	10,563.29	113.37 S	154.86 E	-150.05	0.44
10666.00	0.97	43.84	10,657.28	112.11 S	155.71 E	-149.05	0.36
10761.00	0.96	42.61	10,752.27	110.94 S	156.80 E	-148.22	0.03
10855.00	1.26	58.39	10,846.25	109.82 S	158.21 E	-147.51	0.46
10950.00	1.51	62.03	10,941.22	108.69 S	160.21 E	-146.94	0.28
10998.00	1.98	55.63	10,989.20	107.92 S	161.46 E	-146.52	1.05
11086.00	2.03	52.72	11,077.15	106.12 S	163.95 E	-145.44	0.13
11132.00	1.87	58.63	11,123.12	105.24 S	165.24 E	-144.93	0.55
11179.00	4.85	2.19	11,170.04	102.85 S	165.97 E	-142.82	8.76
11225.00	11.63	348.47	11,215.54	96.36 S	165.12 E	-136.32	15.25
11266.00	18.18	345.52	11,255.14	86.10 S	162.69 E	-125.79	16.08
11319.00	21.84	345.48	11,304.94	68.54 S	158.15 E	-107.66	6.91
11366.00	21.38	347.06	11,348.63	51.73 S	154.04 E	-90.35	1.57
11413.00	23.76	339.85	11,392.04	34.48 S	148.85 E	-72.35	7.75
11459.00	25.60	333.96	11,433.84	16.85 S	141.30 E	-53.35	6.67
11505.00	31.44	333.50	11,474.24	2.83 N	131.57 E	-31.81	12.69
11551.00	37.20	332.25	11,512.22	25.89 N	119.74 E	-6.45	12.62
11597.00	40.96	334.58	11,547.92	51.83 N	106.78 E	21.97	8.79
11643.00	45.32	340.74	11,581.49	80.91 N	94.91 E	53.16	13.16
11688.00	47.77	341.24	11,612.44	111.79 N	84.27 E	85.75	5.51
11734.00	51.54	341.24	11,642.22	144.98 N	73.00 E	120.73	8.20
11780.00	62.02	340.93	11,667.38	181.34 N	60.54 E	159.08	22.79
11826.00	68.63	340.87	11,686.57	220.81 N	46.87 E	200.76	14.37
11873.00	69.17	341.45	11,703.49	262.31 N	32.71 E	244.53	1.63
11920.00	69.67	341.47	11,720.01	304.03 N	18.72 E	288.45	1.06
11966.00	74.78	339.92	11,734.05	345.36 N	4.23 E	332.13	11.57

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg ( <sup>°</sup> /100')
12013.00	80.18	337.27	11,744.23	388.05 N	12.52 W	377.72	12.74
12034.00	83.73	336.41	11,747.17	407.16 N	20.69 W	398.31	17.38
12065.00	83.76	335.11	11,750.55	435.26 N	33.35 W	428.75	4.15
12096.00	80.81	333.25	11,754.71	462.91 N	46.72 W	458.94	11.23
12127.00	81.57	333.41	11,759.46	490.28 N	60.47 W	488.96	2.50
12158.00	83.60	334.28	11,763.46	517.87 N	74.02 W	519.14	7.13
12189.00	86.29	335.28	11,766.19	545.81 N	87.18 W	549.55	9.25
12220.00	88.74	336.51	11,767.53	574.07 N	99.83 W	580.15	8.83
12252.00	90.43	337.75	11,767.77	603.56 N	112.26 W	611.86	6.56
12283.00	90.89	341.12	11,767.41	632.57 N	123.15 W	642.72	10.99
12345.00	91.57	346.31	11,766.07	692.05 N	140.53 W	704.67	8.44
12376.00	92.19	345.87	11,765.06	722.13 N	147.97 W	735.65	2.45
12417.00	90.06	345.97	11,764.25	761.89 N	157.95 W	776.63	5.20
12470.00	90.96	346.09	11,763.78	813.32 N	170.74 W	829.61	1.70
12563.00	92.00	350.36	11,761.38	904.31 N	189.71 W	922.39	4.72
12655.00	89.94	350.43	11,759.82	995.00 N	205.06 W	1013.93	2.25
12687.00	88.21	349.50	11,760.33	1,026.50 N	210.63 W	1045.79	6.14
12749.00	87.75	348.23	11,762.52	1,087.30 N	222.60 W	1107.60	2.17
12843.00	85.43	338.56	11,768.12	1,177.10 N	249.37 W	1201.28	10.57
12935.00	85.66	337.75	11,775.27	1,262.24 N	283.51 W	1292.39	0.91
12966.00	82.06	335.67	11,778.58	1,290.54 N	295.69 W	1322.90	13.39
12997.00	80.82	331.80	11,783.20	1,318.03 N	309.25 W	1352.98	12.97
13029.00	82.60	330.52	11,787.81	1,345.76 N	324.53 W	1383.76	6.82
13060.00	86.17	330.97	11,790.85	1,372.68 N	339.60 W	1413.68	11.61
13091.00	90.40	330.89	11,791.77	1,399.75 N	354.65 W	1443.76	13.65
13122.00	92.09	330.67	11,791.10	1,426.80 N	369.78 W	1473.83	5.50
13215.00	91.33	333.75	11,788.33	1,509.02 N	413.12 W	1564.55	3.41
13309.00	93.83	336.42	11,784.10	1,594.17 N	452.68 W	1657.10	3.89
13402.00	91.92	336.11	11,779.43	1,679.20 N	490.06 W	1748.95	2.08
13495.00	88.89	336.00	11,778.77	1,764.18 N	527.80 W	1840.86	3.26
13553.00	88.80	336.35	11,779.94	1,817.22 N	551.23 W	1898.20	0.62
13646.00	89.51	339.96	11,781.32	1,903.52 N	585.83 W	1990.55	3.96
13739.00	89.08	342.29	11,782.47	1,991.51 N	615.91 W	2083.35	2.55
13833.00	88.86	343.80	11,784.16	2,081.41 N	643.31 W	2177.29	1.63
13926.00	88.55	343.96	11,786.26	2,170.73 N	669.12 W	2270.25	0.37
14023.00	89.26	344.11	11,788.11	2,263.97 N	695.79 W	2367.22	0.75
14113.00	86.76	345.91	11,791.24	2,350.84 N	719.05 W	2457.16	3.42
14206.00	87.56	345.85	11,795.84	2,440.92 N	741.72 W	2550.03	0.87
14300.00	88.92	345.88	11,798.72	2,532.03 N	764.67 W	2643.96	1.44
14393.00	88.71	347.01	11,800.65	2,622.42 N	786.46 W	2736.90	1.24
14487.00	90.06	346.78	11,801.66	2,713.96 N	807.78 W	2830.83	1.46
14580.00	87.32	346.46	11,803.79	2,804.40 N	829.30 W	2923.75	2.97
14674.00	88.03	346.34	11,807.61	2,895.69 N	851.38 W	3017.63	0.77
14767.00	89.91	346.24	11,809.28	2,986.02 N	873.43 W	3110.58	2.02
14860.00	89.82	347.10	11,809.51	3,076.51 N	894.87 W	3203.53	0.93

<div><div>HALLIBURTON</div><div>Sperry Drilling</div></div>							
DIRECTIONAL SURVEY DATA							
Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
14953.00	92.50	347.86	11,807.63	3,167.27 N	915.03 W	3296.40	3.00
15047.00	88.80	349.41	11,806.57	3,259.41 N	933.54 W	3390.16	4.26
15141.00	87.53	349.12	11,809.58	3,351.71 N	951.04 W	3483.82	1.38
15235.00	92.90	352.49	11,809.22	3,444.46 N	966.06 W	3577.26	6.74
15328.00	89.51	349.14	11,807.27	3,536.22 N	980.90 W	3669.69	5.12
15421.00	87.47	345.86	11,809.72	3,626.96 N	1,001.01 W	3762.54	4.15
15515.00	88.52	345.76	11,813.01	3,718.04 N	1,024.04 W	3856.47	1.12
15608.00	90.22	345.72	11,814.03	3,808.17 N	1,046.94 W	3949.44	1.82
15701.00	90.83	345.71	11,813.18	3,898.29 N	1,069.89 W	4042.43	0.66
15794.00	90.15	345.85	11,812.38	3,988.43 N	1,092.73 W	4135.41	0.75
15887.00	89.08	346.01	11,813.01	4,078.64 N	1,115.35 W	4228.39	1.17
15981.00	90.86	346.84	11,813.06	4,170.01 N	1,137.41 W	4322.34	2.10
16074.00	89.78	346.50	11,812.53	4,260.50 N	1,158.86 W	4415.29	1.22
16168.00	90.68	345.23	11,812.15	4,351.65 N	1,181.82 W	4509.27	1.65
16261.00	92.84	348.11	11,809.30	4,442.08 N	1,203.25 W	4602.16	3.87
16354.00	91.88	349.81	11,805.48	4,533.28 N	1,221.05 W	4694.83	2.10
16448.00	90.25	348.81	11,803.73	4,625.63 N	1,238.48 W	4788.52	2.04
16541.00	88.64	346.57	11,804.63	4,716.47 N	1,258.31 W	4881.38	2.96
16635.00	91.14	346.84	11,804.81	4,807.95 N	1,279.93 W	4975.32	2.68
16728.00	86.39	343.43	11,806.82	4,897.78 N	1,303.77 W	5068.26	6.28
16828.00	86.39	343.43	11,813.11	4,993.43 N	1,332.22 W	5168.03	0.00
SURVEY FOOTER							
SURVEYS CALCULATED USING SHORT COLLAR METHOD. WELL ASSUMED VERTICAL AT WELLHEAD. SURVEYS FROM 166' MD TO 16728' MD PROVIDED BY SPERRY DRILLING. SURVEY AT 16728' MD IS PROJECTED TO TD AT 16828' MD. SPERRY DRILLING ENGINEERS: R. MEJIA AND L. IGUNBOR							

DIRECTIONAL SURVEY DATA NOTES

- Calculation based on minimum curvature method.
- Survey coordinates relative to well system reference point.
- TVD values given relative to drilling measurement point.
- Vertical section relative to well head.
- Vertical section is computed along a direction of 344.78 degrees (Grid)
- A total correction of 8.33 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 16,828.00 feet is 5,168.09 feet along 345.06 degrees (Grid)



WARRANTY

HALLIBURTON ENERGY SERVICES, INC. WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON ENERGY SERVICES, INC. CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING VENTURE, DRILLING RIG OR ITS CREW OR ANY THIRD PARTY. THE CUSTOMER HAS FULL RESPONSIBILITY FOR ALL DRILLING, COMPLETION, AND PRODUCTION OPERATION. HALLIBURTON ENERGY SERVICES, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE SERVICES RENDERED. IN NO EVENT WILL HALLIBURTON ENERGY SERVICES, INC. SERVICES BE LIABLE FOR FAILURE TO OBTAIN ANY PARTICULAR RESULTS OR FOR ANY DAMAGES, INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, RESULTING FROM THE USE OF ANY INFORMATION OR INTERPRETATION PROVIDED BY HALLIBURTON ENERGY SERVICES, INC.





RAILROAD COMMISSION OF TEXAS  
OIL & GAS DIVISION

PERMIT TO DRILL, DEEPEN, PLUG BACK, OR RE-ENTER ON A REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

PERMIT NUMBER 828090	DATE PERMIT ISSUED OR AMENDED Jun 28, 2017	DISTRICT * 08																																					
API NUMBER 42-495-33876	FORM W-1 RECEIVED Jun 22, 2017	COUNTY WINKLER																																					
TYPE OF OPERATION NEW DRILL	WELLBORE PROFILE(S) Horizontal	ACRES 638.89																																					
OPERATOR FELIX ENERGY HOLDINGS II, LLC FELIX ENERGY 1530 16TH ST SUITE 500 DENVER, CO 80202-0000 265322		NOTICE This permit and any allowable assigned may be revoked if payment for fee(s) submitted to the Commission is not honored. District Office Telephone No: (432) 684-5581																																					
LEASE NAME UL AMERICAN BASIN 14-21		WELL NUMBER 1H																																					
LOCATION 2.68 miles SW direction from WINK		TOTAL DEPTH 12500																																					
Section, Block and/or Survey SECTION ⚡ 23                      BLOCK ⚡ 21                      ABSTRACT ⚡ U63 SURVEY ⚡ UL																																							
DISTANCE TO SURVEY LINES 255 ft. NW    380 ft. SW		DISTANCE TO NEAREST LEASE LINE 200 ft.																																					
DISTANCE TO LEASE LINES 255 ft. NW    380 ft. SW		DISTANCE TO NEAREST WELL ON LEASE See FIELD(s) Below																																					
FIELD(s) and LIMITATIONS: * SEE FIELD DISTRICT FOR REPORTING PURPOSES *																																							
<table><thead><tr><th>FIELD NAME LEASE NAME</th><th>ACRES NEAREST LEASE</th><th>DEPTH NEAREST LEASE</th><th>WELL # NEAREST WE</th><th>DIST</th></tr></thead><tbody><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>PHANTOM (WOLFCAMP) UL AMERICAN BASIN 14-21</td><td>638.89 200</td><td>12,500</td><td>1H 0</td><td>08</td></tr><tr><td colspan="5">-----</td></tr><tr><td colspan="5">WELLBORE PROFILE(s) FOR FIELD: Horizontal</td></tr><tr><td colspan="5">-----</td></tr><tr><td colspan="5">RESTRICTIONS: This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.  Lateral: TH1 Penetration Point Location Lease Lines:            200.0 F SE L                               480.0 F SW L  Terminus Location BH County: WINKLER Section: 14                      Block: 21                      Abstract: Survey: UL Lease Lines:            50.0 F NW L                               480.0 F SW L Survey Lines:            50.0 F NW L                               480.0 F SW L</td></tr></tbody></table>					FIELD NAME LEASE NAME	ACRES NEAREST LEASE	DEPTH NEAREST LEASE	WELL # NEAREST WE	DIST	-----	-----	-----	-----	-----	PHANTOM (WOLFCAMP) UL AMERICAN BASIN 14-21	638.89 200	12,500	1H 0	08	-----					WELLBORE PROFILE(s) FOR FIELD: Horizontal					-----					RESTRICTIONS: This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.  Lateral: TH1 Penetration Point Location Lease Lines:            200.0 F SE L 480.0 F SW L  Terminus Location BH County: WINKLER Section: 14                      Block: 21                      Abstract: Survey: UL Lease Lines:            50.0 F NW L 480.0 F SW L Survey Lines:            50.0 F NW L 480.0 F SW L				
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THE FOLLOWING RESTRICTIONS APPLY TO ALL FIELDS																																							

RAILROAD COMMISSION OF TEXAS  
OIL & GAS DIVISION

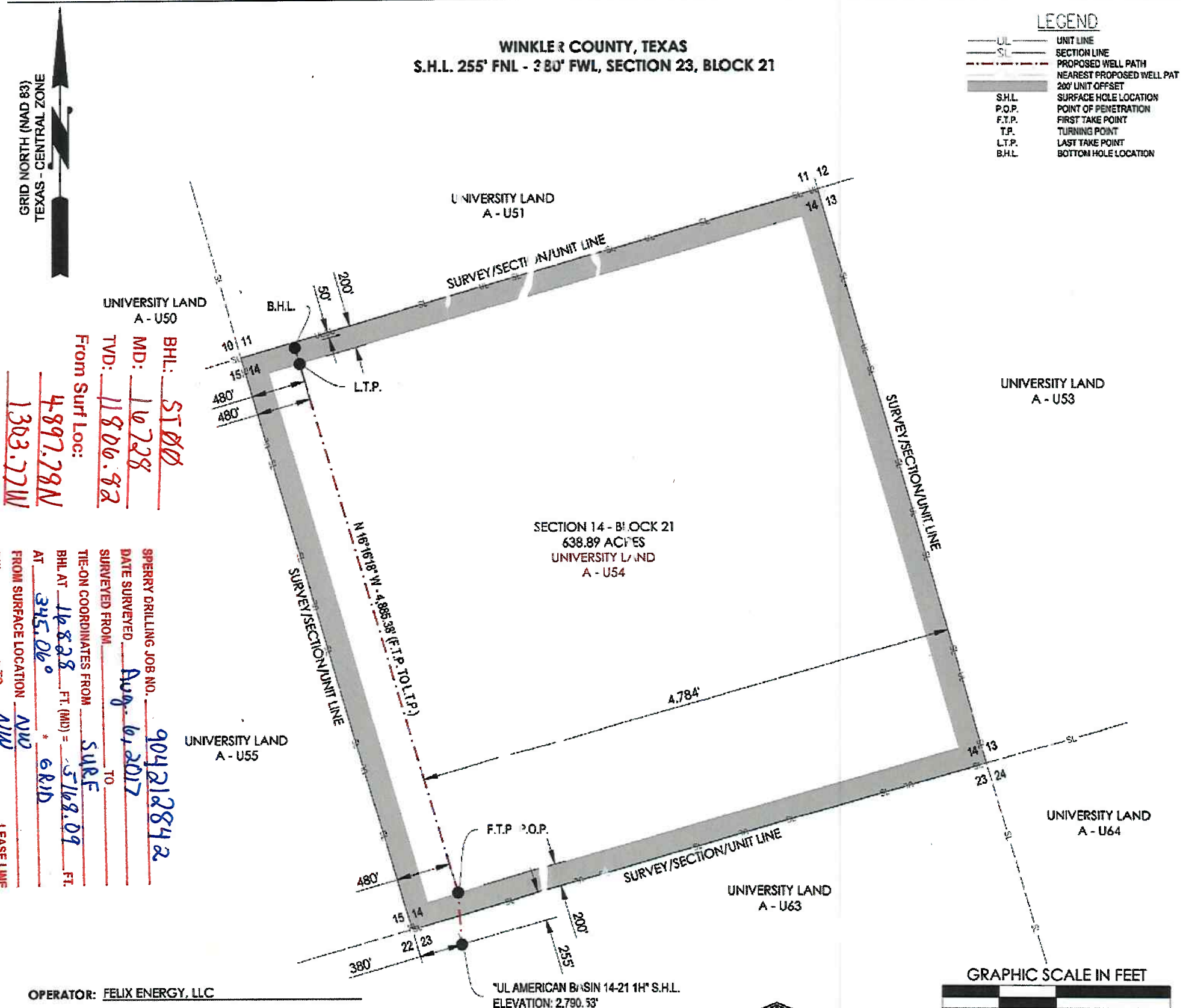
PERMIT TO DRILL, DEEPEN, PLUG BACK, OR RE-ENTER ON A REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

PERMIT NUMBER 828090	DATE PERMIT ISSUED OR AMENDED Jun 28, 2017	DISTRICT * 08
API NUMBER 42-495-33876	FORM W-1 RECEIVED Jun 22, 2017	COUNTY WINKLER
TYPE OF OPERATION NEW DRILL	WELLBORE PROFILE(S) Horizontal	ACRES 638.89
OPERATOR FELIX ENERGY HOLDINGS II, LLC FELIX ENERGY 1530 16TH ST SUITE 500 DENVER, CO 80202-0000 265322		NOTICE This permit and any allowable assigned may be revoked if payment for fee(s) submitted to the Commission is not honored. District Office Telephone No: (432) 684-5581
LEASE NAME UL AMERICAN BASIN 14-21		WELL NUMBER 1H
LOCATION 2.68 miles SW direction from WINK		TOTAL DEPTH 12500
Section, Block and/or Survey SECTION ⤵ 23                      BLOCK ⤵ 21                      ABSTRACT ⤵ U63 SURVEY ⤵ UL		
DISTANCE TO SURVEY LINES 255 ft. NW    380 ft. SW		DISTANCE TO NEAREST LEASE LINE 200 ft.
DISTANCE TO LEASE LINES 255 ft. NW    380 ft. SW		DISTANCE TO NEAREST WELL ON LEASE See FIELD(s) Below
FIELD(s) and LIMITATIONS:  * SEE FIELD DISTRICT FOR REPORTING PURPOSES *		
FIELD NAME LEASE NAME  ACRES NEAREST LEASE  DEPTH  WELL # NEAREST WE  DIST		
<p>This well shall be completed and produced in compliance with applicable special field or statewide spacing and density rules. If this well is to be used for brine mining, underground storage of liquid hydrocarbons in salt formations, or underground storage of gas in salt formations, a permit for that specific purpose must be obtained from Environmental Services prior to construction, including drilling, of the well in accordance with Statewide Rules 81, 95, and 97.</p> <p>This well must comply to the new SWR 3.13 requirements concerning the isolation of any potential flow zones and zones with corrosive formation fluids. See approved permit for those formations that have been identified for the county in which you are drilling the well in.</p> <p>The designated interval for one or more of the fields approved in this permit appears to overlap with the designated interval of another field or fields in this district. In the case of conflicting designated intervals you will be required to be consistent in field designation on this lease. Further, if the designated interval overlap of wells on this lease results in an actual or potential double assignment of reservoir and the applicant cannot conclusively demonstrate that there is no double assignment, the permitted well may not be assigned an allowable until the conflict is resolved. Because of the overlapping designated intervals in this area, issuance of this permit does not guarantee that the completion of the well will be approved or that the well will receive an allowable in any given field, even if that field is listed on the approved permit application.</p>		

WINKLER COUNTY, TEXAS  
S.H.L. 255' FNL - 380' FWL, SECTION 23, BLOCK 21

LEGEND

UL	UNIT LINE
SL	SECTION LINE
---	PROPOSED WELL PATH
---	NEAREST PROPOSED WELL PAT
---	200' UNIT OFFSET
S.H.L.	SURFACE HOLE LOCATION
P.O.P.	POINT OF PENETRATION
F.T.P.	FIRST TAKE POINT
T.P.	TURNING POINT
L.T.P.	LAST TAKE POINT
B.H.L.	BOTTOM HOLE LOCATION



OPERATOR: FELIX ENERGY, LLC

WELL NAME: UL AMERICAN BASIN 14-21 WELL NO: 1H

TOPOGRAPHIC & VEGETATION: FLAT LOCATION WITH LOW LYING BRUSH

GOOD DRILL SITE: YES

REFERENCE STAKES OR ALTERNATE LOCATION  
STAKES SET: NONE

BEST ACCESSIBILITY TO LOCATION: FROM WEST

DISTANCE & DIRECTION

FROM HWY JCT OR TOWN: ±2.68 MILES SOUTHWEST OF WINK, TX  
FROM THE INTERSECTION OF STATE HIGHWAY 115 AND FM 1232 IN WINK, TEXAS, HEAD  
NORTHWEST ON FM 1232 FOR 1.49 MILES, THEN TURN LEFT ONTO COUNTY ROAD 201 AND  
TRAVEL ±1.27 MILES, TURN LEFT ON AN EXISTING LEASE ROAD AND TRAVEL SOUTH ±1.22 MILES,  
THEN TURN RIGHT ON A EXISTING LEASE ROAD AND TRAVEL WEST ±0.49 MILES, THEN TURN  
RIGHT ON A EXISTING LEASE ROAD AND TRAVEL NORTH ±0.10 MILES, THEN TURN RIGHT ONTO  
A PROPOSED LEASE ROAD AND TRAVEL EAST ±0.26 MILES TO PAD LOCATION.

SURFACE HOLE LOCATION:

255' FNL & 380' FWL  
GROUND ELEVATION: 2,790.53'  
NAD 27 TEXAS CENTRAL ZONE  
NORTHING: 764888.17, EASTING: 1107465.39  
LATITUDE: N 31.73808840°, LONGITUDE: W 103.20455634°  
NAD 83 TEXAS CENTRAL ZONE  
NORTHING: 10607464.56, EASTING: 1403930.48  
LATITUDE: N 31.73821721°, LONGITUDE: W 103.20500149°

FIRST TAKE POINT / POINT OF PENETRATION:

200' FSL & 480' FWL (SEC. 14)  
NAD 27 TEXAS CENTRAL ZONE  
NORTHING: 765353.57, EASTING: 1107433.75  
LATITUDE: N 31.73936515°, LONGITUDE: W -103.20469673°

GENERAL NOTES

- THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON REASONABLE VISUAL OBSERVATION. LOCATIONS OF UNDERGROUND UTILITIES/ STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREIN. ADDITIONAL BURIED UTILITIES/ STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/ STRUCTURES. BEFORE EXCAVATIONS ARE BEGUN, THE OFFICES OF THE VARIOUS UTILITIES SERVICING THIS AREA SHOULD BE CONTACTED FOR THEIR UTILITY LOCATION.
- BASIS OF BEARINGS: TEXAS STATE PLANE GRID, CENTRAL ZONE, NAD83 AS DETERMINED BY GPS OBSERVATION.
- COMBINED SCALE FACTOR AT S.H.L. - 0.999830926
- VERTICAL DATUM IS NAVD 88
- AREAS, DISTANCES, AND COORDINATES ARE "GRID" BASED ON U.S. SURVEY FEET.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY.

WELL PATH DATA

LINE	BEARING	DISTANCE
S.H.L. TO F.T.P./P.O.P.	N 03°53'25" W	466.49'
F.T.P. TO L.T.P.	N 16°16'18" W	4,885.38'
L.T.P. TO B.H.L.	N 16°16'18" W	150.00'

LAST TAKE POINT:

200' FNL & 480' FWL (SEC. 14)  
NAD 27 TEXAS CENTRAL ZONE  
NORTHING: 770043.18, EASTING: 1106065.00  
LATITUDE: N 31.75215562°, LONGITUDE: W -103.20948798°

UNIT CORNERS

LOCATION	NAD27	
	STATE PLANE TEXAS CENTRAL (32039)	GEOGRAPHIC (4267)
NE CORNER BLK 21-SEC 14	N: 771580.98 E: 1110613.30	LAT: 31.75670407° LONG: -103.19498795°
SE CORNER BLK 21-SEC 14	N: 766510.41 E: 1112076.08	LAT: 31.74287285° LONG: -103.18986459°
SW CORNER BLK 21-SEC 14	N: 765025.75 E: 1107029.41	LAT: 31.73843557° LONG: -103.20596967°
NW CORNER BLK 21-SEC 14	N: 770100.43 E: 1105548.27	LAT: 31.75227622° LONG: -103.21115452°

CALLS FROM SECTION LINE

S.H.L.	255' FNL, 380' FWL (SEC. 23)
F.T.P./P.O.P.	200' FSL, 480' FWL (SEC. 14)
L.T.P.	200' FNL, 480' FWL (SEC. 14)
B.H.L.	50' FNL, 480' FWL (SEC. 14)

BOTTOM HOLE LOCATION:

50' FNL & 480' FWL (SEC. 14)  
NAD 27 TEXAS CENTRAL ZONE  
NORTHING: 770187.17, EASTING: 1106022.97  
LATITUDE: N 31.75254833°, LONGITUDE: W -103.20963511°



CONTACT INFORMATION:

Shannon D. Ozment  
Crafton Tull (16193715)  
1000 LedgeLawn Dr.  
Conway, AR 72034

REVISION

6/21 CHANGE WELLPATH LOCATION

"UL AMERICAN BASIN 14-21 1H"

SECTION 14, BLOCK 21  
638.89 ACRES  
PROPOSED DRILL SITE  
WINKLER COUNTY, TEXAS

SCALE: 1" = 1000'

PLOT DATE: 06-21-2017

CHECKED BY:

DRAWN BY:

SO APPROVED BY:

HFD SHEET NO.: 1 OF 1

C.GRA



1000 LedgeLawn Dr  
Conway, Arkansas 72034  
501.328.3316 | 501.328.3325 f  
www.craftontull.com



## **HALLIBURTON**

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3950 Interwood S. Pkwy • Houston, TX 77032  
PHONE 281.986.4400 • FAX 281.986.4499

### State of Texas, Winkler County

I, Rob Bell, certify that I am employed by Halliburton Energy Services, Inc. (aka Sperry Drilling) and that on the dates of August 06, 2017 through September 08, 2017, I did conduct or supervise the taking of MWD directional surveys for the UL American Basin 14-21 1H ST02 well from a depth of 166' MD to a depth of 16728' MD. This data is true, correct, complete and within the limitations of the tools as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling). I am authorized and qualified to make this report and these surveys were conducted at the request of Felix, for the UL American Basin 14-21 1H ST02 well, API # 42-495-33876 in Winkler County, Texas. I have reviewed this report and find that it confirms to the principles and procedures as set forth by Halliburton Energy Services, Inc. (aka Sperry Drilling).



Rob Bell  
Service Coordinator