



Deborah Craig OHI 8H
Ohio County, WV
SDC 40

Drawing By: GWR Date: 06/27/2017
Weatherford Drilling Services
7725 W. Reno, Ste. #220
Oklahoma City, OK 73127
+1.405.773.1100 Main
+1.405.773.1887 Fax



KB: 1355.3'
GL: 1329.3'

Plan Data for Deborah Craig OHI 8H

Plan Point Information:									
Dogleg Severity Unit: °/100.00ft		Position offsets from Slot centre							
MD	Inc	Az	TVD	+N/-S	+E/-W	VSec	DLS	Toolface	Comments
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(DLSU)	(°)	(°)
0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.0	0.0
5464.69	0.00	0.00	5464.69	0.00	0.00	0.00	0.00	0.0	0.0 Curve KOP
5830.34	25.60	226.47	5818.30	-55.32	-58.24	15.30	7.00	226.5	Build/Turn
6676.49	60.00	145.80	6470.54	-527.02	22.48	456.36	7.00	264.0	Build
6999.18	89.04	145.80	6555.74	-781.50	195.40	763.90	9.00	0.0	Landing Point
15722.36	89.04	145.80	6701.49	-7995.59	5097.39	9482.24	0.00	0.0	PBHL (-150')

Target Set Information:

Name: Deborah Craig OHI 8H							
Position offsets from Slot centre							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Lat	Long
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(°)	(°)
LP DC8H	6553.00	-645.72	103.13	14543749.17	1756795.36	40.045982	-80.584159
PBHL DC8H	6704.00	-8119.64	5181.68	14536275.25	1761873.91	40.025391	-80.566143

Plan Data for Deborah Craig OHI 8H

Field: SOUTHWESTERN_OHIO CO, WV UTM NAD 83 (17N)
Map Unit: USft Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / UTM zone 17N

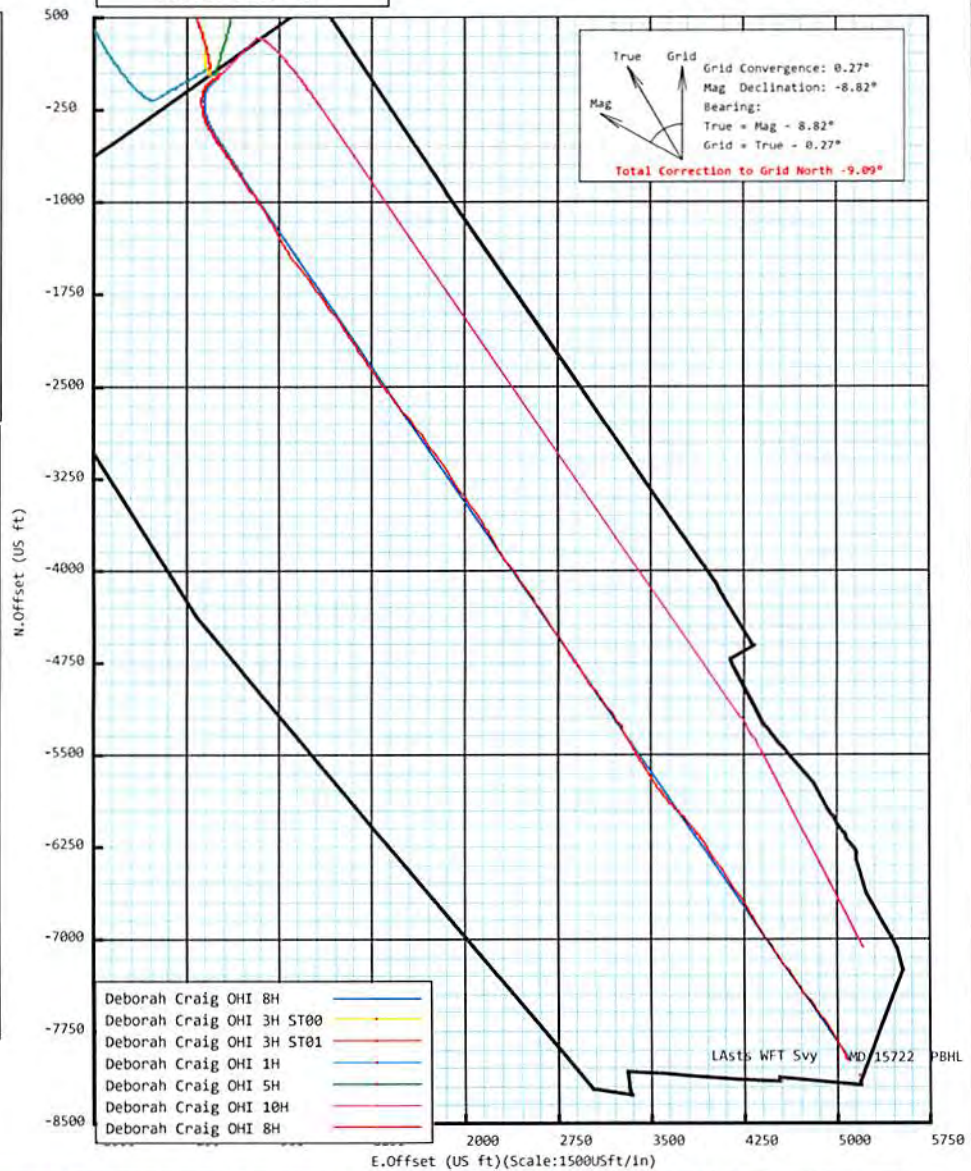
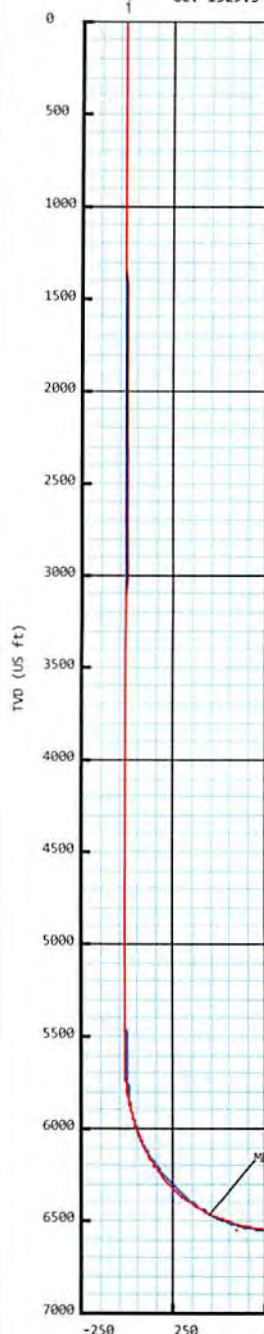
Site: Deborah Craig Pad
Unit: USFeet TVD Reference:
Company Name: SOUTHWESTERN ENERGY
Position: Northing: 14544424.86USft Latitude: 40.047840°
Easting: 1756629.10USft Longitude: -80.584742°
North Reference: Grid Grid Convergence: 0.27°
Elevation Above VRD: 1329.30USft

Slot: Deborah Craig OHI 8H
Position:
Offset is from Site centre
+N/-S: -29.97USft Northing: 14544394.89USft Latitude: 40.047756°
+E/-W: 63.13USft Easting: 1756692.23USft Longitude: -80.584517°
Elevation Above VRD: 1329.30USft

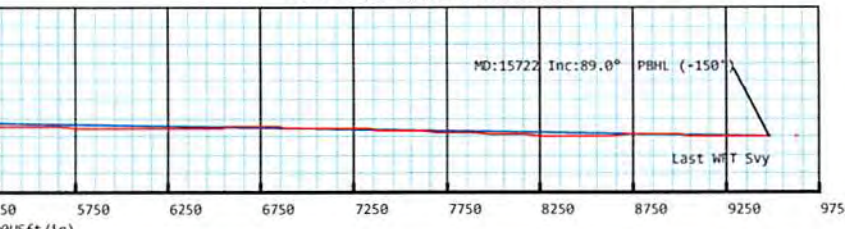
Well: Deborah Craig OHI 8H
Type: Main-Well
File Number:

Plan Folder: P1 Plan: P1:V2
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 147.46°
+E/-W: 0.00USft

Magnetic Parameters:
Model: bggm2017 Field Strength: 52375(nT) Declination: -8.82° Dip: 67.15° Date: 2017-05-22



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SURVEY REPORT

Report Date: 7/8/2017
 Customer: SWN Production Co., LLC Field: Panhandle
 Job Name: NE-12532431 Rig: SDC 40
 Well Name: Deborah Craig OHI 8H Rig Loc: Ohio Co., WV

Survey Calculation Method:		Minimum Curvature				
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
Grid North	147.46 deg	52375 nT	67.15 deg	-8.82 deg	0.27 deg	-9.09 deg
Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	0.00 ft	0.00 deg	0.00 deg	0.00 ft	0.00 ft	0.00 ft

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head			Vsect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)			
163.00	0.50	25.85	163.00	0.64	0.31	-0.37	0.31	
255.00	0.70	22.25	254.99	1.52	0.70	-0.91	0.22	
347.00	0.40	0.75	346.99	2.36	0.91	-1.50	0.39	
454.00	0.10	52.75	453.99	2.79	0.99	-1.82	0.32	
547.00	0.20	220.05	546.99	2.72	0.95	-1.78	0.32	
638.00	0.10	108.25	637.99	2.57	0.93	-1.67	0.28	
686.00	0.30	297.45	685.99	2.62	0.86	-1.74	0.83	
781.00	0.19	247.54	780.99	2.67	0.49	-1.99	0.24	
874.00	0.14	247.42	873.99	2.57	0.24	-2.03	0.05	
967.00	0.10	119.13	966.99	2.48	0.21	-1.98	0.23	
1059.00	0.30	113.05	1058.98	2.35	0.50	-1.71	0.22	
1152.00	0.46	90.82	1151.98	2.25	1.10	-1.31	0.23	
1245.00	0.49	87.13	1244.98	2.27	1.87	-0.91	0.05	
1338.00	0.52	93.80	1337.98	2.26	2.69	-0.46	0.07	
1427.00	0.71	96.08	1426.97	2.17	3.64	0.13	0.22	
1520.00	0.64	123.03	1519.96	1.83	4.65	0.96	0.35	
1613.00	0.66	138.37	1612.96	1.14	5.44	1.96	0.19	
1706.00	0.73	135.70	1705.95	0.32	6.21	3.07	0.08	
1798.00	0.48	171.84	1797.95	-0.48	6.67	3.99	0.48	
1891.00	0.66	227.28	1890.94	-1.23	6.33	4.44	0.60	
1984.00	0.69	217.84	1983.94	-2.04	5.60	4.73	0.12	
2077.00	0.66	208.69	2076.93	-2.95	4.99	5.17	0.12	
2203.00	1.03	225.72	2202.92	-4.37	3.84	5.75	0.35	
2292.00	1.05	221.23	2291.90	-5.55	2.73	6.14	0.09	
2382.00	0.96	228.55	2381.89	-6.67	1.62	6.49	0.17	
2472.00	1.03	236.81	2471.87	-7.61	0.37	6.61	0.18	
2565.00	0.79	239.65	2564.86	-8.39	-0.88	6.60	0.26	
2657.00	0.83	243.28	2656.85	-9.01	-2.02	6.51	0.07	
2750.00	0.76	331.48	2749.85	-8.77	-2.92	5.82	1.19	
2840.00	1.02	340.10	2839.84	-7.49	-3.47	4.45	0.32	
2930.00	0.80	310.19	2929.82	-6.33	-4.23	3.07	0.57	
3022.00	1.10	328.85	3021.81	-5.16	-5.17	1.57	0.46	
3115.00	1.12	324.51	3114.79	-3.66	-6.16	-0.23	0.09	
3205.00	0.98	321.94	3204.78	-2.34	-7.15	-1.87	0.16	
3298.00	1.81	298.98	3297.75	-1.00	-8.92	-3.96	1.06	

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Depth (ft)	Inc (deg)	Azimuth (deg)	TVD (ft)	Well Head		VSection (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
3391.00	0.60	290.51	3390.73	-0.12	-10.67	-5.64	1.31
3483.00	0.33	289.96	3482.73	0.14	-11.37	-6.23	0.29
3576.00	0.49	289.82	3575.72	0.37	-11.99	-6.76	0.17
3666.00	0.72	57.71	3665.72	0.80	-11.88	-7.06	1.21
3759.00	0.84	56.99	3758.71	1.48	-10.81	-7.07	0.13
3851.00	0.86	44.22	3850.70	2.35	-9.76	-7.23	0.21
3944.00	0.68	32.71	3943.69	3.31	-8.98	-7.62	0.25
4037.00	0.53	19.39	4036.69	4.18	-8.54	-8.12	0.22
4130.00	0.55	342.88	4129.69	5.01	-8.53	-8.81	0.36
4223.00	0.43	162.10	4222.68	5.11	-8.55	-8.90	1.05
4315.00	0.53	153.57	4314.68	4.40	-8.25	-8.15	0.13
4408.00	0.46	139.43	4407.68	3.73	-7.82	-7.35	0.15
4501.00	0.25	139.34	4500.68	3.29	-7.44	-6.78	0.23
4594.00	0.29	187.09	4593.67	2.90	-7.34	-6.40	0.24
4686.00	0.09	170.45	4685.67	2.60	-7.36	-6.15	0.22
4779.00	0.08	202.55	4778.67	2.47	-7.37	-6.05	0.05
4872.00	0.09	53.88	4871.67	2.45	-7.34	-6.01	0.18
4965.00	0.15	65.35	4964.67	2.55	-7.17	-6.00	0.07
5058.00	0.21	87.25	5057.67	2.61	-6.89	-5.90	0.10
5150.00	0.40	77.71	5149.67	2.68	-6.40	-5.71	0.21
5243.00	0.51	93.30	5242.67	2.73	-5.67	-5.35	0.18
5336.00	0.83	243.34	5335.67	2.40	-5.86	-5.18	1.39
5429.00	2.60	238.70	5428.62	1.00	-8.27	-5.29	1.91
5475.00	5.89	238.29	5474.49	-0.78	-11.17	-5.35	7.15
5522.00	9.02	241.30	5521.08	-3.82	-16.45	-5.63	6.71
5568.00	12.35	241.05	5566.28	-7.93	-23.92	-6.18	7.24
5611.00	15.32	238.93	5608.03	-13.09	-32.81	-6.61	7.01
5658.00	18.10	233.64	5653.04	-20.62	-44.01	-6.29	6.74
5704.00	20.16	227.85	5696.50	-30.18	-55.65	-4.49	6.08
5751.00	22.26	222.87	5740.32	-42.14	-67.71	-0.89	5.88
5814.00	24.76	218.40	5798.09	-61.23	-84.03	6.42	4.87
5860.00	23.69	213.59	5840.04	-76.48	-95.12	13.31	4.88
5906.00	22.92	208.15	5882.30	-92.08	-104.46	21.43	4.97
5953.00	23.90	202.18	5925.43	-108.97	-112.38	31.42	5.46
5999.00	24.96	196.16	5967.32	-126.92	-118.60	43.21	5.88
6045.00	26.19	189.43	6008.82	-146.26	-122.96	57.16	6.85
6092.00	27.26	184.54	6050.81	-167.23	-125.52	73.46	5.20
6138.00	28.45	180.68	6091.48	-188.69	-126.48	91.04	4.70
6185.00	30.12	177.37	6132.47	-211.67	-126.07	110.63	4.95
6231.00	32.97	173.84	6171.67	-235.65	-124.20	131.85	7.38
6277.00	35.78	170.91	6209.64	-261.38	-120.73	155.41	7.09
6324.00	39.04	166.03	6246.98	-289.32	-114.98	182.06	9.37
6370.00	42.07	160.69	6281.93	-317.94	-106.38	210.81	10.01
6417.00	45.21	156.07	6315.95	-348.06	-94.41	242.64	9.52
6463.00	47.93	153.72	6347.57	-378.30	-80.22	275.76	6.98
6510.00	51.17	152.40	6378.06	-410.17	-64.01	311.35	7.22
6556.00	53.73	150.82	6406.10	-442.25	-46.67	347.72	6.20
6602.00	56.97	149.35	6432.25	-475.03	-27.79	385.51	7.52
6649.00	61.54	147.41	6456.27	-509.41	-6.61	425.89	10.35
6695.00	65.81	145.41	6476.67	-543.74	16.21	466.00	10.07

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Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
6742.00	68.68	144.67	6494.84	-579.25	41.04	510.40	6.28
6788.00	71.90	144.58	6510.36	-614.56	66.11	553.64	7.00
6834.00	74.08	145.18	6523.81	-650.54	91.41	597.58	4.90
6881.00	76.75	145.81	6535.65	-688.02	117.18	643.04	5.83
6924.00	79.77	146.27	6544.39	-722.93	140.69	685.12	7.10
6970.00	82.46	146.20	6551.50	-760.71	165.95	730.55	5.85
7017.00	86.54	145.39	6556.00	-799.39	192.24	777.31	8.85
7110.00	87.84	144.85	6560.56	-875.59	245.36	870.12	1.51
7202.00	88.03	146.37	6563.88	-951.46	297.29	962.01	1.66
7295.00	87.72	147.44	6567.33	-1029.32	348.03	1054.94	1.20
7388.00	87.53	147.25	6571.18	-1107.55	398.17	1147.86	0.29
7481.00	88.89	148.08	6574.08	-1186.09	447.89	1240.81	1.71
7574.00	88.58	153.68	6576.14	-1267.28	493.12	1333.58	6.03
7666.00	87.90	149.51	6578.97	-1348.15	536.85	1425.28	4.59
7759.00	87.90	145.02	6582.38	-1426.31	587.09	1518.19	4.82
7852.00	88.71	143.43	6585.13	-1501.72	641.44	1611.00	1.92
7945.00	88.40	144.04	6587.47	-1576.68	696.43	1703.77	0.74
8038.00	88.40	143.26	6590.07	-1651.56	751.53	1796.53	0.84
8130.00	88.33	142.55	6592.69	-1724.91	807.00	1888.20	0.78
8223.00	88.70	144.43	6595.10	-1799.63	862.31	1980.94	2.06
8316.00	88.95	144.61	6597.01	-1875.35	916.27	2073.80	0.33
8409.00	88.71	144.26	6598.91	-1950.98	970.35	2166.65	0.46
8501.00	89.75	143.90	6600.15	-2025.48	1024.32	2258.48	1.20
8594.00	89.88	147.17	6600.45	-2102.14	1076.94	2351.42	3.52
8687.00	89.51	148.35	6600.94	-2180.80	1126.55	2444.41	1.33
8780.00	89.44	146.58	6601.79	-2259.20	1176.57	2537.40	1.90
8873.00	88.64	144.82	6603.35	-2336.01	1228.96	2630.34	2.08
8966.00	88.46	144.76	6605.71	-2411.97	1282.57	2723.21	0.20
9058.00	89.88	143.34	6607.04	-2486.44	1336.57	2815.03	2.18
9151.00	89.32	141.03	6607.69	-2559.90	1393.59	2907.63	2.56
9244.00	89.75	141.71	6608.44	-2632.55	1451.64	3000.10	0.87
9337.00	89.32	141.54	6609.20	-2705.46	1509.37	3092.62	0.50
9429.00	89.44	142.45	6610.19	-2777.94	1566.02	3184.19	1.00
9522.00	89.57	145.34	6611.00	-2853.07	1620.81	3277.00	3.11
9615.00	89.01	143.96	6612.15	-2928.92	1674.61	3369.88	1.60
9708.00	89.26	143.79	6613.55	-3004.03	1729.43	3462.69	0.33
9801.00	88.70	145.49	6615.21	-3079.86	1783.24	3555.55	1.92
9893.00	89.01	145.40	6617.05	-3155.61	1835.42	3647.48	0.35
9986.00	89.01	147.16	6618.65	-3232.95	1887.03	3740.44	1.89
10079.00	88.95	147.13	6620.31	-3311.06	1937.48	3833.43	0.07
10172.00	89.26	145.44	6621.76	-3388.41	1989.09	3926.39	1.85
10264.00	88.83	145.23	6623.30	-3464.07	2041.41	4018.32	0.52
10357.00	88.64	145.52	6625.35	-3540.58	2094.24	4111.23	0.37
10450.00	88.64	147.60	6627.56	-3618.16	2145.47	4204.19	2.24
10543.00	88.83	149.89	6629.61	-3697.63	2193.71	4297.14	2.47
10635.00	88.83	150.19	6631.49	-3777.32	2239.65	4389.02	0.33
10728.00	88.89	147.46	6633.34	-3856.87	2287.77	4481.97	2.94
10821.00	88.64	144.54	6635.34	-3933.94	2339.76	4574.91	3.15
10911.00	88.89	144.11	6637.28	-4007.04	2392.24	4664.75	0.55
11000.00	88.58	145.43	6639.25	-4079.72	2443.56	4753.63	1.52

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Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
11093.00	88.58	144.60	6641.55	-4155.89	2496.87	4846.52	0.89
11183.00	88.95	145.86	6643.49	-4229.80	2548.18	4936.43	1.46
11274.00	88.52	147.67	6645.50	-4305.89	2598.04	5027.39	2.04
11367.00	88.58	147.36	6647.86	-4384.32	2647.97	5120.36	0.34
11460.00	89.14	145.87	6649.71	-4461.95	2699.14	5213.33	1.71
11553.00	89.65	144.29	6650.69	-4538.20	2752.37	5306.24	1.79
11646.00	89.69	144.96	6651.22	-4614.03	2806.21	5399.13	0.72
11738.00	89.69	145.69	6651.72	-4689.69	2858.55	5491.06	0.79
11831.00	88.83	147.08	6652.92	-4767.13	2910.03	5584.03	1.76
11924.00	89.01	146.58	6654.68	-4844.96	2960.90	5677.01	0.57
12017.00	88.95	146.72	6656.33	-4922.63	3012.02	5769.99	0.16
12109.00	89.12	146.05	6657.88	-4999.24	3062.94	5861.96	0.75
12202.00	89.82	142.88	6658.74	-5074.90	3116.98	5954.81	3.49
12294.00	90.06	141.30	6658.84	-5147.49	3173.51	6046.41	1.74
12387.00	89.94	144.34	6658.84	-5221.57	3229.71	6139.09	3.27
12480.00	90.80	149.58	6658.24	-5299.50	3280.39	6232.05	5.71
12572.00	89.88	150.96	6657.69	-5379.39	3326.01	6323.94	1.80
12665.00	89.94	152.71	6657.84	-5461.38	3369.91	6416.66	1.88
12757.00	91.11	152.15	6656.99	-5542.92	3412.49	6508.31	1.41
12850.00	90.25	147.37	6655.89	-5623.24	3459.31	6601.20	5.22
12940.00	90.12	146.89	6655.60	-5698.83	3508.15	6691.20	0.55
13035.00	89.94	145.28	6655.55	-5777.66	3561.16	6786.17	1.71
13128.00	88.85	139.18	6656.53	-5851.14	3618.09	6878.73	6.66
13218.00	88.71	135.85	6658.45	-5917.48	3678.85	6967.35	3.70
13310.00	88.83	138.77	6660.42	-5985.08	3741.21	7057.88	3.18
13403.00	88.89	141.10	6662.27	-6056.24	3801.05	7150.05	2.51
13496.00	88.46	140.64	6664.42	-6128.36	3859.73	7242.41	0.68
13589.00	88.89	145.96	6666.58	-6202.88	3915.27	7335.11	5.74
13682.00	88.21	147.78	6668.93	-6280.73	3966.08	7428.07	2.09
13774.00	88.02	147.13	6671.96	-6358.24	4015.55	7520.02	0.74
13867.00	87.90	146.75	6675.27	-6436.14	4066.25	7612.95	0.43
13960.00	88.21	147.25	6678.42	-6514.09	4116.87	7705.90	0.63
14053.00	87.78	146.51	6681.68	-6591.93	4167.65	7798.83	0.92
14146.00	87.90	146.68	6685.18	-6669.51	4218.82	7891.76	0.22
14238.00	87.66	146.38	6688.75	-6746.20	4269.52	7983.68	0.42
14331.00	87.90	149.20	6692.35	-6824.82	4319.05	8076.60	3.04
14424.00	87.96	146.72	6695.71	-6903.59	4368.35	8169.52	2.67
14517.00	88.58	146.20	6698.52	-6981.07	4419.71	8262.47	0.87
14609.00	88.58	145.62	6700.80	-7057.24	4471.26	8354.40	0.63
14702.00	91.11	145.41	6701.05	-7133.89	4523.91	8447.34	2.73
14795.00	90.68	145.00	6699.60	-7210.25	4576.97	8540.26	0.64
14888.00	90.62	146.46	6698.54	-7287.10	4629.33	8633.21	1.57
14981.00	90.80	146.00	6697.39	-7364.40	4681.03	8726.18	0.53
15074.00	90.18	144.01	6696.59	-7440.58	4734.36	8819.09	2.24
15166.00	90.06	144.66	6696.40	-7515.33	4788.00	8910.95	0.72
15259.00	88.89	145.82	6697.25	-7591.72	4841.02	9003.87	1.77
15352.00	89.08	147.49	6698.90	-7669.40	4892.13	9096.84	1.81
15445.00	89.20	148.32	6700.30	-7748.18	4941.53	9189.83	0.90
15535.00	89.20	149.39	6701.55	-7825.20	4988.08	9279.79	1.19
15624.00	89.26	151.76	6702.75	-7902.70	5031.79	9368.65	2.66

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Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
15706.00	88.95	154.12	6704.03	-7975.71	5069.09	9450.26	2.90
Projected to Total Depth:							
15729.00	88.95	154.12	6704.45	-7996.40	5079.13	9473.10	0.00

- * SWN surveys from 163.00 ft MD to 686.00 ft MD *
- * Weatherford surveys from 781.00 ft MD to 15706.00 ft MD *
- * TD at 15729 ft MD *
- * The total correction is -9.09 deg relative to Grid North *

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