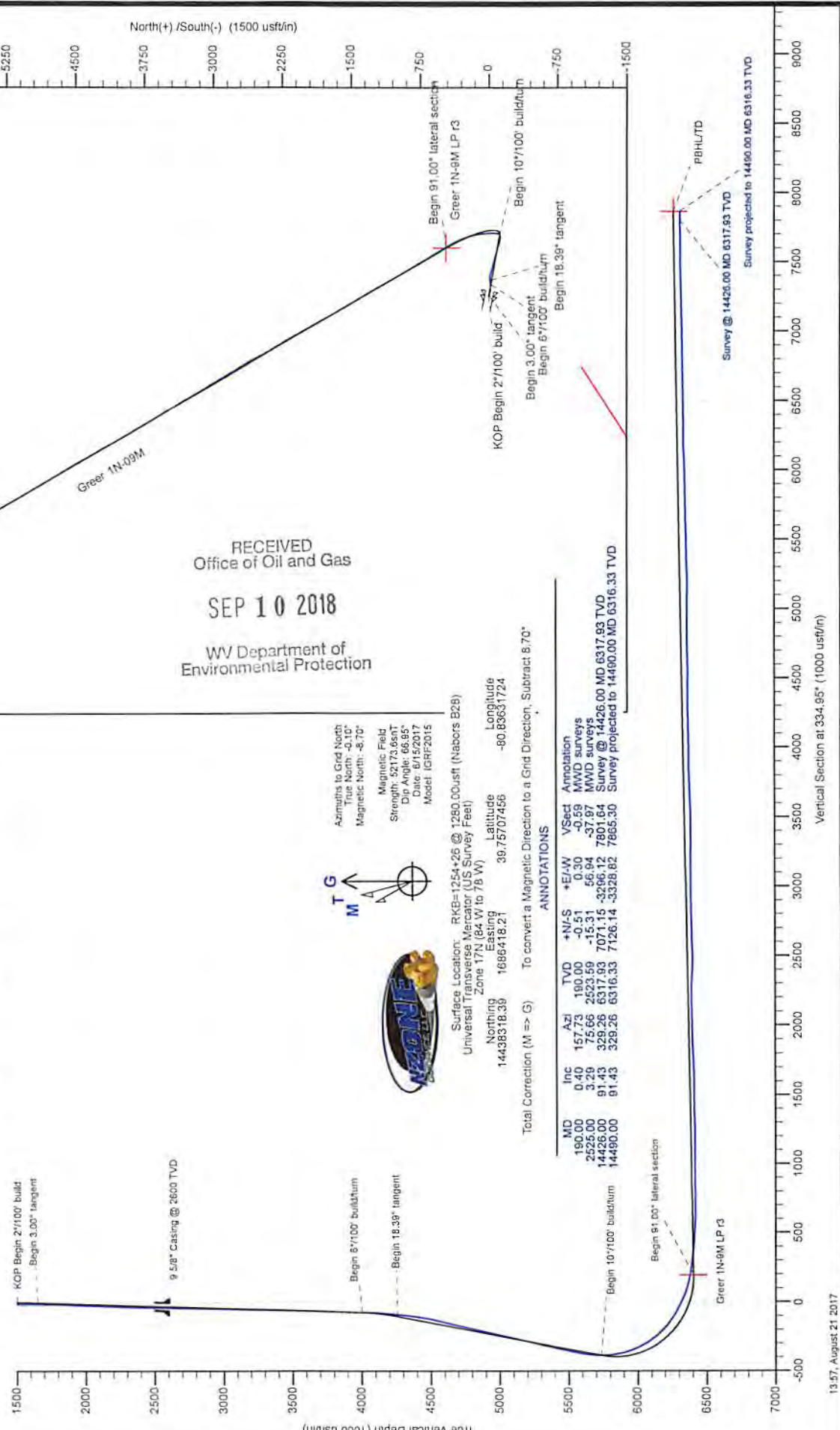




Well: Greer 1N-09M
 Site: Greer Unit N
 Project: Marshall County, West Virginia
 Design: rev3 def

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	VFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1503.00	0.00	0.00	1503.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2'100' build
3	1653.00	3.00	100.40	1652.93	-0.71	3.88	2.00	100.40	-2.28	Begin 3.00' tangent
4	4006.29	3.00	100.40	4003.00	-22.94	125.00	0.00	0.00	-73.70	Begin 6'100' build
5	4262.87	18.39	100.28	4254.36	-31.43	171.72	0.00	0.00	-101.17	Begin 16.39' tangent
6	5825.49	18.39	100.28	5737.14	-119.39	656.91	0.00	0.00	-107.26	Begin 16.39' tangent
7	6852.95	91.00	329.98	6403.00	453.85	350.49	0.00	-126.06	-107.26	Begin 91.00' lateral section
8	14552.47	91.00	329.98	6270.00	7126.89	-3390.15	0.00	0.00	7866.54	PBHL/TD



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Surface Location: RKB=1254+26 @ 1260.00usft (Nabors B28)
 Universal Transverse Mercator (US Survey Feet)
 Zone 17N (84 W to 78 W)

Northing: 14438318.39
 Easting: 1686418.21
 Longitude: -80.83631724

Latitude: 39.75707456

Total Correction (M => G) To convert a Magnetic Direction to a Grid Direction, Subtract 8.70°

ANNOTATIONS

MD	Inc	Azi	TVD	+N/S	+E/W	VSect	Annotation
180.00	0.40	157.73	180.00	-0.51	0.30	-0.59	MWD surveys
2525.00	3.29	75.66	2523.59	-15.31	56.94	-37.87	MWD surveys
14426.00	91.43	329.28	6317.93	7071.15	-3286.12	7801.64	Survey @ 14426.00 MD 6317.53 TVD
14490.00	91.43	329.28	6316.33	7126.14	-3328.82	7866.30	Survey projected to 14490.00 MD 6316.33 TVD

Company: Tug Hill Operating LLC
 Lease/Well: Greer/1N-9HM

Rig Name: Nabors B28
 State/County: West Virginia/Marshall
 VS-Azi: 0.00 Degrees
 Latitude: 39.75707, Longitude: -80.83617
 Grid North = True North +0.85 degs (NAD 27)
 Grid Correction Applied = +0.85 degs

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Depth Reference: RKB : 25 Feet
 DRILLOG HA GYRO SURVEY CALCULATIONS
 Error Model: VESSI_GYROFLEX.IPM
 Minimum Curvature Method
 Report Date/Time: 5/6/2017 / 01:29
 VES Survey International
 Morgantown, WV
 (304)777-2189
 Tim Dillon



Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	N/S FT	E/W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.17	138.97	100.00	-0.11	0.10	-0.11	0.15	138.97	0.17
200.00	0.43	158.54	200.00	-0.57	0.33	-0.57	0.66	150.01	0.28
300.00	0.40	199.27	300.00	-1.24	0.35	-1.24	1.29	164.21	0.29
400.00	0.40	208.94	399.99	-1.87	0.07	-1.87	1.88	177.87	0.07
500.00	0.14	247.51	499.99	-2.23	-0.21	-2.23	2.24	185.45	0.30
600.00	0.02	30.24	599.99	-2.25	-0.32	-2.25	2.28	187.96	0.16
700.00	0.25	277.95	699.99	-2.21	-0.52	-2.21	2.27	193.31	0.26
800.00	0.22	161.56	799.99	-2.36	-0.68	-2.36	2.45	196.03	0.40
900.00	0.34	232.10	899.99	-2.72	-0.85	-2.72	2.85	197.32	0.34
1000.00	0.23	112.52	999.99	-2.98	-0.90	-2.98	3.11	196.79	0.49
1100.00	1.12	89.30	1099.98	-3.04	0.26	-3.04	3.06	175.19	0.91
1200.00	2.41	106.73	1199.93	-3.64	3.24	-3.64	4.87	138.28	1.39
1300.00	2.67	106.40	1299.83	-4.90	7.50	-4.90	8.96	123.18	0.26
1400.00	2.02	101.43	1399.75	-5.91	11.46	-5.91	12.89	117.28	0.69
1500.00	1.50	91.89	1499.70	-6.30	14.49	-6.30	15.80	113.50	0.59
1600.00	1.54	92.23	1599.67	-6.40	17.15	-6.40	18.30	110.46	0.04
1700.00	1.58	70.50	1699.63	-5.99	19.79	-5.99	20.68	106.83	0.59

1800.00	2.02	78.79	1799.58	-5.18	22.83	-5.18	23.41	102.79	0.51
1900.00	2.93	110.40	1899.49	-5.73	26.95	-5.73	27.56	102.00	1.61
2000.00	3.78	106.53	1999.32	-7.56	32.52	-7.56	33.38	103.09	0.88
2100.00	3.54	118.16	2099.12	-9.96	38.40	-9.96	39.67	104.54	0.78
2200.00	2.18	141.24	2198.99	-12.90	42.32	-12.90	44.24	106.95	1.76
2300.00	2.07	123.57	2298.93	-15.38	45.01	-15.38	47.57	108.87	0.66
2400.00	3.27	89.40	2398.82	-16.35	49.38	-16.35	52.01	108.33	1.94
2437.00	3.77	84.06	2435.75	-16.22	51.64	-16.22	54.13	107.43	1.61

HORIZONTAL DISPLACEMENT IS
54.13 FEET AT 107.43 DEGREES

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