

Tug Hill  
 Mathews 1-8H Rev. 3  
 Barber County, Kansas  
 As Drilled



Minimum of Curvature  
 Slot Location: 1501263.36', 1333108.69'  
 Plane of Vertical Section: 182.13°

Measured Depth Feet	BORE Inc Degrees	HOLE Direction Degrees	True Vert. Depth Up Dip In Well Path	RECTANGULAR COORDINATES		LAMBERT COORDINATES		Vertical Section Feet	CLOSURES		Dogleg Severity Deg/100'
				North(-South) Feet	East(-West) Feet	Y Feet	X Feet		Distance Feet	Direction Deg	
0.00	0.00	0.00	0.00	0.00	0.00	1501263.4	1333108.7	0.00	0.00	0.00	0.00
100.00	0.50	298.60	100.00	0.21	-0.38	1501263.6	1333108.3	-0.19	0.44	298.60	0.50
200.00	1.50	295.10	199.98	0.97	-1.95	1501264.3	1333106.7	-0.90	2.18	296.50	1.00
300.00	1.20	302.80	299.95	2.10	-4.02	1501265.5	1333104.7	-1.94	4.53	297.55	0.35
400.00	1.00	282.00	399.94	2.84	-5.75	1501266.2	1333102.9	-2.63	6.42	296.32	0.44
500.00	0.80	251.60	499.92	2.81	-7.27	1501266.2	1333101.4	-2.53	7.79	291.11	0.51
600.00	1.00	233.80	599.91	2.07	-8.63	1501265.4	1333100.1	-1.75	8.88	283.48	0.34
700.00	1.60	232.60	699.89	0.71	-10.45	1501264.1	1333098.2	-0.32	10.47	273.87	0.60
800.00	1.70	231.70	799.84	-1.06	-12.72	1501262.3	1333096.0	1.53	12.76	265.23	0.10
900.00	1.50	227.50	899.81	-2.86	-14.85	1501260.5	1333093.8	3.41	15.12	259.08	0.23
935.00	1.20	226.00	934.80	-3.43	-15.45	1501259.9	1333093.2	4.00	15.83	257.49	0.86
967.00	1.10	235.50	966.79	-3.84	-15.94	1501259.5	1333092.7	4.42	16.40	256.47	0.67
1060.00	1.00	242.50	1059.77	-4.72	-17.40	1501258.6	1333091.3	5.36	18.03	254.84	0.17
1151.00	0.40	283.20	1150.77	-5.01	-18.41	1501258.3	1333090.3	5.69	19.08	254.78	0.82
1243.00	0.40	284.60	1242.76	-4.86	-19.04	1501258.5	1333089.7	5.56	19.65	255.69	0.01
1336.00	0.30	323.00	1335.76	-4.58	-19.50	1501258.8	1333089.2	5.30	20.03	256.78	0.27
1427.00	0.40	265.40	1426.76	-4.41	-19.96	1501258.9	1333088.7	5.15	20.44	257.53	0.38
1519.00	0.50	231.10	1518.76	-4.69	-20.59	1501258.7	1333088.1	5.45	21.12	257.16	0.31
1611.00	0.50	252.20	1610.76	-5.07	-21.28	1501258.3	1333087.4	5.85	21.88	256.61	0.20
1703.00	0.20	326.60	1702.75	-5.06	-21.76	1501258.3	1333086.9	5.86	22.33	256.92	0.53
1795.00	0.20	254.00	1794.75	-4.97	-22.00	1501258.4	1333086.7	5.78	22.55	257.28	0.26
1887.00	0.20	262.30	1886.75	-5.03	-22.31	1501258.3	1333086.4	5.86	22.87	257.29	0.03
1979.00	0.10	236.40	1978.75	-5.10	-22.54	1501258.3	1333086.2	5.93	23.11	257.25	0.13
2070.00	0.40	272.20	2069.75	-5.13	-22.92	1501258.2	1333085.8	5.98	23.49	257.39	0.36
2163.00	0.10	288.50	2162.75	-5.09	-23.32	1501258.3	1333085.4	5.95	23.87	257.69	0.33
2254.00	0.20	311.40	2253.75	-4.96	-23.52	1501258.4	1333085.2	5.83	24.03	258.09	0.13
2346.00	0.20	316.80	2345.75	-4.74	-23.75	1501258.6	1333084.9	5.62	24.22	258.72	0.02

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Measured Depth Feet	BORE Inc Degrees	HOLE Direction Degrees	True Vert. Depth Up Dip In Well Path	RECTANGULAR COORDINATES		LAMBERT COORDINATES		Vertical Section Feet	CLOSURES		Dogleg Severity Deg/100'
				North(-South) Feet	East(-West) Feet	Y Feet	X Feet		Distance Feet	Direction Deg	
2438.00	0.10	11.20	2437.75	-4.54	-23.84	1501258.8	1333084.8	5.42	24.27	259.21	0.18
2530.00	0.10	0.40	2529.75	-4.38	-23.83	1501259.0	1333084.9	5.26	24.23	259.58	0.02
2622.00	0.30	193.40	2621.75	-4.54	-23.88	1501258.8	1333084.8	5.42	24.31	259.24	0.43
2713.00	0.30	138.30	2712.75	-4.95	-23.78	1501258.4	1333084.9	5.83	24.29	258.25	0.30
2805.00	0.30	195.00	2804.75	-5.36	-23.68	1501258.0	1333085.0	6.23	24.28	257.25	0.31
2897.00	0.00	228.30	2896.75	-5.59	-23.74	1501257.8	1333084.9	6.47	24.39	256.75	0.33
2988.00	0.40	189.80	2987.75	-5.90	-23.80	1501257.5	1333084.9	6.78	24.52	256.06	0.44
3080.00	0.50	22.10	3079.75	-5.85	-23.70	1501257.5	1333085.0	6.73	24.41	256.14	0.97
3174.00	0.50	63.30	3173.74	-5.29	-23.18	1501258.1	1333085.5	6.14	23.77	257.16	0.37
3269.00	0.50	38.10	3268.74	-4.77	-22.55	1501258.6	1333086.1	5.61	23.05	258.05	0.23
3364.00	0.40	80.20	3363.74	-4.39	-21.97	1501259.0	1333086.7	5.20	22.40	258.70	0.35
3459.00	0.70	82.90	3458.73	-4.26	-21.07	1501259.1	1333087.6	5.04	21.49	258.56	0.32
3553.00	0.70	98.30	3552.72	-4.27	-19.93	1501259.1	1333088.8	5.01	20.38	257.90	0.20
3648.00	0.80	113.20	3647.72	-4.62	-18.75	1501258.7	1333089.9	5.31	19.31	256.16	0.23
3742.00	0.80	157.90	3741.71	-5.49	-17.90	1501257.9	1333090.8	6.15	18.72	252.96	0.65
3837.00	0.20	140.90	3836.70	-6.23	-17.54	1501257.1	1333091.1	6.88	18.61	250.45	0.64
3932.00	0.10	62.00	3931.70	-6.32	-17.36	1501257.0	1333091.3	6.96	18.48	250.00	0.22
4026.00	0.30	116.20	4025.70	-6.39	-17.07	1501257.0	1333091.6	7.02	18.23	249.48	0.27
4086.50	0.10	110.80	4086.20	-6.48	-16.88	1501256.9	1333091.8	7.10	18.08	249.01	0.33
4119.00	5.10	162.20	4118.66	-7.86	-16.41	1501255.5	1333092.3	8.47	18.20	244.40	15.50
4150.00	7.60	167.50	4149.47	-11.18	-15.55	1501252.2	1333093.1	11.75	19.15	234.28	8.27
4181.00	11.70	171.50	4180.02	-16.29	-14.64	1501247.1	1333094.1	16.82	21.90	221.94	13.39
4212.00	15.70	173.40	4210.13	-23.57	-13.69	1501239.8	1333095.0	24.06	27.26	210.15	12.98
4242.00	19.00	178.90	4238.77	-32.49	-13.13	1501230.9	1333095.6	32.95	35.04	202.01	12.27
4273.00	24.00	175.30	4267.60	-43.82	-12.52	1501219.5	1333096.2	44.26	45.57	195.94	16.67
4304.00	27.80	175.50	4295.48	-57.32	-11.43	1501206.0	1333097.3	57.70	58.45	191.28	12.26
4334.00	31.50	180.10	4321.55	-72.14	-10.90	1501191.2	1333097.8	72.49	72.95	188.59	14.47

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				North(-South) Feet	East(-West) Feet	Y Feet	X Feet		Distance Feet	Direction Deg	
4365.00	35.80	183.80	4347.36	-89.29	-11.51	1501174.1	1333097.2	89.66	90.03	187.35	15.36
4395.00	39.00	186.40	4371.19	-107.43	-13.15	1501155.9	1333095.5	107.85	108.23	186.98	11.89
4426.00	41.60	187.40	4394.83	-127.34	-15.56	1501136.0	1333093.1	127.83	128.28	186.97	8.64
4456.00	44.00	187.00	4416.84	-147.56	-18.11	1501115.8	1333090.6	148.13	148.66	187.00	8.05
4487.00	46.40	186.80	4438.68	-169.39	-20.75	1501094.0	1333087.9	170.05	170.66	186.98	7.76
4518.00	48.80	186.70	4459.58	-192.12	-23.44	1501071.2	1333085.2	192.86	193.55	186.96	7.75
4548.00	52.40	185.00	4478.62	-215.18	-25.80	1501048.2	1333082.9	215.99	216.72	186.84	12.77
4579.00	56.20	182.50	4496.71	-240.29	-27.43	1501023.1	1333081.3	241.15	241.86	186.51	13.90
4610.00	59.40	180.90	4513.23	-266.51	-28.20	1500996.8	1333080.5	267.37	268.00	186.04	11.21
4640.00	60.00	180.30	4528.36	-292.41	-28.47	1500970.9	1333080.2	293.27	293.79	185.56	2.64
4671.00	60.20	181.30	4543.82	-319.28	-28.85	1500944.1	1333079.8	320.13	320.58	185.16	2.87
4701.00	60.60	181.30	4558.64	-345.36	-29.44	1500918.0	1333079.3	346.21	346.61	184.87	1.33
4732.00	61.40	181.40	4573.66	-372.46	-30.08	1500890.9	1333078.6	373.32	373.68	184.62	2.60
4762.00	65.20	181.40	4587.14	-399.25	-30.73	1500864.1	1333078.0	400.12	400.43	184.40	12.67
4793.00	69.50	181.30	4599.08	-427.85	-31.41	1500835.5	1333077.3	428.72	429.00	184.20	13.87
4824.00	74.10	180.90	4608.76	-457.28	-31.97	1500806.1	1333076.7	458.15	458.40	184.00	14.89
4855.00	78.50	180.50	4616.10	-487.39	-32.34	1500776.0	1333076.4	488.26	488.46	183.80	14.25
4885.00	82.80	179.70	4620.97	-516.99	-32.39	1500746.4	1333076.3	517.83	518.00	183.58	14.57
4915.00	87.60	177.30	4623.48	-546.86	-31.60	1500716.5	1333077.1	547.66	547.77	183.31	17.87
4946.00	91.60	176.80	4623.70	-577.81	-30.01	1500685.5	1333078.7	578.53	578.59	182.97	13.00
4977.00	92.50	177.00	4622.59	-608.75	-28.33	1500654.6	1333080.4	609.38	609.40	182.66	2.97
5007.00	92.90	176.60	4621.17	-638.67	-26.66	1500624.7	1333082.0	639.21	639.22	182.39	1.88
5085.00	93.20	176.80	4617.02	-716.43	-22.18	1500546.9	1333086.5	716.76	716.77	181.77	0.46
5147.00	91.80	179.20	4614.32	-778.32	-20.02	1500485.0	1333088.7	778.53	778.58	181.47	4.48
5239.00	89.50	180.20	4613.28	-870.31	-19.53	1500393.1	1333089.2	870.43	870.53	181.29	2.73
5331.00	88.30	178.80	4615.04	-962.28	-18.73	1500301.1	1333090.0	962.32	962.47	181.12	2.00
5423.00	88.40	182.70	4617.69	-1054.22	-19.94	1500209.1	1333088.8	1054.23	1054.41	181.08	4.24

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				North(-South) Feet	East(-West) Feet	Y Feet	X Feet		Distance Feet	Direction Deg	
5515.00	90.70	182.80	4618.41	-1146.11	-24.35	1500117.3	1333084.3	1146.22	1146.36	181.22	2.50
5606.00	89.90	182.70	4617.94	-1237.00	-28.71	1500026.4	1333080.0	1237.21	1237.33	181.33	0.89
5699.00	90.00	182.30	4618.02	-1329.91	-32.77	1499933.5	1333075.9	1330.21	1330.31	181.41	0.44
5791.00	87.70	182.90	4619.87	-1421.79	-36.94	1499841.6	1333071.7	1422.18	1422.27	181.49	2.58
5882.00	88.70	182.10	4622.72	-1512.66	-40.91	1499750.7	1333067.8	1513.13	1513.21	181.55	1.41
5974.00	88.30	181.90	4625.13	-1604.57	-44.12	1499658.8	1333064.6	1605.10	1605.18	181.58	0.49
6066.00	88.00	181.00	4628.10	-1696.49	-46.45	1499566.9	1333062.2	1697.05	1697.13	181.57	1.03
6158.00	88.20	180.10	4631.15	-1788.43	-47.33	1499474.9	1333061.4	1788.96	1789.06	181.52	1.00
6250.00	88.80	179.90	4633.56	-1880.40	-47.33	1499383.0	1333061.4	1880.86	1881.00	181.44	0.69
6342.00	90.80	181.60	4633.88	-1972.39	-48.53	1499291.0	1333060.2	1972.83	1972.98	181.41	2.85
6434.00	89.90	182.50	4633.32	-2064.32	-51.82	1499199.0	1333056.9	2064.82	2064.97	181.44	1.38
6526.00	88.90	182.70	4634.28	-2156.22	-56.00	1499107.1	1333052.7	2156.82	2156.95	181.49	1.11
6618.00	88.70	184.10	4636.21	-2248.04	-61.45	1499015.3	1333047.2	2248.77	2248.88	181.57	1.54
6709.00	89.10	184.50	4637.96	-2338.76	-68.27	1498924.6	1333040.4	2339.69	2339.76	181.67	0.62
6801.00	90.30	183.80	4638.44	-2430.52	-74.93	1498832.8	1333033.8	2431.63	2431.67	181.77	1.51
6893.00	91.20	183.60	4637.23	-2522.32	-80.87	1498741.0	1333027.8	2523.58	2523.62	181.84	1.00
6984.00	90.20	183.50	4636.12	-2613.14	-86.50	1498650.2	1333022.2	2614.55	2614.57	181.90	1.10
7076.00	90.90	180.90	4635.24	-2705.06	-90.03	1498558.3	1333018.7	2706.53	2706.55	181.91	2.93
7168.00	89.30	179.50	4635.08	-2797.05	-90.35	1498466.3	1333018.3	2798.48	2798.51	181.85	2.31
7262.00	90.10	179.80	4635.57	-2891.05	-89.78	1498372.3	1333018.9	2892.39	2892.44	181.78	0.91
7357.00	88.40	178.90	4636.81	-2986.03	-88.70	1498277.3	1333020.0	2987.26	2987.35	181.70	2.02
7451.00	88.60	180.30	4639.28	-3079.99	-88.05	1498183.4	1333020.6	3081.14	3081.25	181.64	1.50
7546.00	87.70	179.70	4642.34	-3174.94	-88.05	1498088.4	1333020.6	3176.02	3176.16	181.59	1.14
7640.00	89.70	179.10	4644.47	-3268.91	-87.06	1497994.5	1333021.6	3269.88	3270.06	181.53	2.22
7735.00	90.90	179.00	4643.98	-3363.89	-85.49	1497899.5	1333023.2	3364.74	3364.98	181.46	1.27
7770.00	88.70	181.10	4644.10	-3398.89	-85.52	1497864.5	1333023.2	3399.72	3399.96	181.44	8.69
7862.00	87.70	181.10	4646.99	-3490.82	-87.28	1497772.5	1333021.4	3491.66	3491.91	181.43	1.09

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7954.00	88.50	183.10	4650.04	-3582.70	-90.65	1497680.7	1333018.0	3583.60	3583.85	181.45	2.34
8046.00	88.70	183.10	4652.29	-3674.54	-95.63	1497588.8	1333013.1	3675.56	3675.79	181.49	0.22
8138.00	88.60	182.80	4654.46	-3766.39	-100.36	1497497.0	1333008.3	3767.52	3767.73	181.53	0.34
8230.00	89.70	182.10	4655.82	-3858.30	-104.29	1497405.1	1333004.4	3859.51	3859.71	181.55	1.42
8322.00	89.50	182.40	4656.46	-3950.22	-107.90	1497313.1	1333000.8	3951.51	3951.70	181.56	0.39
8414.00	90.00	181.50	4656.86	-4042.17	-111.04	1497221.2	1332997.7	4043.51	4043.69	181.57	1.12
8505.00	89.40	182.60	4657.34	-4133.11	-114.29	1497130.3	1332994.4	4134.50	4134.69	181.58	1.38
8689.00	91.50	181.80	4655.90	-4316.95	-121.35	1496946.4	1332987.3	4318.48	4318.66	181.61	1.22
8780.00	91.90	182.20	4653.20	-4407.86	-124.53	1496855.5	1332984.2	4409.44	4409.62	181.62	0.62
8872.00	90.70	181.80	4651.11	-4499.78	-127.74	1496763.6	1332981.0	4501.42	4501.59	181.63	1.37
8964.00	88.20	181.40	4651.99	-4591.73	-130.31	1496671.6	1332978.4	4593.40	4593.58	181.63	2.75
9058.00	89.00	181.00	4654.29	-4685.68	-132.27	1496577.7	1332976.4	4687.36	4687.55	181.62	0.95
9152.00	89.00	181.00	4655.93	-4779.65	-133.91	1496483.7	1332974.8	4781.33	4781.53	181.60	0.00
9246.00	89.00	180.40	4657.57	-4873.63	-135.06	1496389.7	1332973.6	4875.28	4875.50	181.59	0.64
9340.00	87.20	180.80	4660.69	-4967.57	-136.05	1496295.8	1332972.6	4969.20	4969.43	181.57	1.96
9435.00	89.00	180.70	4663.84	-5062.50	-137.29	1496200.9	1332971.4	5064.11	5064.37	181.55	1.90
9529.00	90.70	181.30	4664.08	-5156.49	-138.93	1496106.9	1332969.8	5158.09	5158.36	181.54	1.92
9624.00	91.40	181.40	4662.34	-5251.44	-141.17	1496011.9	1332967.5	5253.06	5253.34	181.54	0.74
9651.00	91.40	181.50	4661.68	-5278.43	-141.85	1495984.9	1332966.8	5280.05	5280.33	181.54	0.37
9698.00	91.40	181.50	4660.53	-5325.40	-143.08	1495938.0	1332965.6	5327.04	5327.32	181.54	0.00

Final Station Closure Distance: 5327.32' Direction: 181.54°