

REFERENCE WELLPATH IDENTIFICATION

Operator	GASTAR EXPLORATION INC.		Slot	Slot #7H
Area	Marshall County, WV		Well	Goudy 7H
Field	Marshall		Wellbore	Goudy 7H (AWB)
Facility	Goudy		Wellpath	Goudy 7H (AWP) Proj: 12660'
Projection System	NAD83 / UTM ZONE 17 NORTH / METERS		Sidetrack	(none)

WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
0	0.00	124.28	0.00	0.00	0.00	0.00	514676.4	4398572.2	39°44'12.899"N	80°49'43.390"W	0.00	0.00	0.00
13	0.00	124.28	13.00	0.00	0.00	0.00	514676.4	4398572.2	39°44'12.899"N	80°49'43.390"W	0.00	0.00	0.00
100	0.60	124.28	100.00	-0.42	-0.26	0.38	514676.5	4398572.1	39°44'12.897"N	80°49'43.386"W	0.46	124.28	0.69
200	0.70	159.73	199.99	-1.50	-1.12	1.02	514676.7	4398571.9	39°44'12.888"N	80°49'43.377"W	1.52	137.77	0.41
300	0.48	169.64	299.99	-2.48	-2.11	1.31	514676.8	4398571.6	39°44'12.878"N	80°49'43.374"W	2.48	148.21	0.24
400	0.33	142.09	399.98	-3.16	-2.75	1.56	514676.9	4398571.4	39°44'12.872"N	80°49'43.371"W	3.16	150.43	0.24
500	0.63	132.84	499.98	-3.97	-3.35	2.14	514677.1	4398571.2	39°44'12.866"N	80°49'43.363"W	3.98	147.43	0.31
600	1.43	140.14	599.96	-5.74	-4.68	3.34	514677.4	4398570.8	39°44'12.853"N	80°49'43.348"W	5.75	144.47	0.81
700	2.59	139.88	699.90	-9.22	-7.37	5.60	514678.1	4398570.0	39°44'12.826"N	80°49'43.319"W	9.25	142.77	1.16
800	4.25	142.59	799.72	-15.15	-12.04	9.31	514679.2	4398568.5	39°44'12.780"N	80°49'43.272"W	15.22	142.30	1.67
900	6.69	142.28	899.26	-24.64	-19.59	15.12	514681.0	4398566.2	39°44'12.705"N	80°49'43.197"W	24.75	142.34	2.44
1000	8.98	146.04	998.32	-38.24	-30.67	23.05	514683.4	4398562.9	39°44'12.596"N	80°49'43.096"W	38.37	143.08	2.35
1100	11.48	143.60	1096.72	-55.96	-45.16	33.31	514686.6	4398558.4	39°44'12.452"N	80°49'42.965"W	56.12	143.58	2.54
1200	15.02	144.84	1194.04	-78.84	-63.77	46.68	514690.6	4398552.8	39°44'12.268"N	80°49'42.794"W	79.03	143.79	3.55
1300	17.15	147.66	1290.12	-106.52	-86.82	62.04	514695.3	4398545.7	39°44'12.040"N	80°49'42.599"W	106.71	144.45	2.27
1400	15.03	142.36	1386.21	-134.18	-109.55	77.84	514700.1	4398538.8	39°44'11.815"N	80°49'42.397"W	134.39	144.60	2.58
1500	12.65	141.76	1483.30	-157.98	-128.42	92.54	514704.6	4398533.1	39°44'11.628"N	80°49'42.209"W	158.29	144.22	2.38
1600	10.45	143.68	1581.27	-177.92	-144.33	104.69	514708.3	4398528.2	39°44'11.471"N	80°49'42.054"W	178.30	144.04	2.23
1700	8.25	138.61	1679.93	-194.05	-157.02	114.81	514711.4	4398524.4	39°44'11.345"N	80°49'41.925"W	194.52	143.83	2.35
1800	6.50	137.05	1779.10	-206.69	-166.55	123.41	514714.0	4398521.5	39°44'11.251"N	80°49'41.815"W	207.29	143.46	1.76
1900	5.09	144.75	1878.59	-216.68	-174.31	129.83	514716.0	4398519.1	39°44'11.174"N	80°49'41.733"W	217.35	143.32	1.61
2000	4.19	130.87	1978.26	-224.61	-180.33	135.15	514717.6	4398517.3	39°44'11.114"N	80°49'41.665"W	225.35	143.15	1.43
2100	3.64	135.64	2078.03	-231.21	-184.99	140.13	514719.1	4398515.8	39°44'11.068"N	80°49'41.601"W	232.07	142.86	0.64
2200	3.21	141.02	2177.85	-237.09	-189.43	144.11	514720.3	4398514.5	39°44'11.024"N	80°49'41.550"W	238.02	142.74	0.54
2300	2.83	142.40	2277.71	-242.33	-193.56	147.38	514721.3	4398513.2	39°44'10.983"N	80°49'41.509"W	243.29	142.71	0.39
2400	2.34	106.03	2377.62	-246.31	-196.08	150.85	514722.4	4398512.5	39°44'10.958"N	80°49'41.464"W	247.39	142.43	1.68

51-01588

Environmental Protection
WV Department of
Office of Oil and Gas

WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
2500	2.22	102.92	2477.54	-249.20	-197.08	154.70	514723.5	4398512.2	39°44'10.948"N	80°49'41.415"W	250.54	141.87	0.17
2600	1.73	110.18	2577.48	-251.77	-198.03	158.00	514724.5	4398511.9	39°44'10.939"N	80°49'41.373"W	253.34	141.42	0.55
2650	1.59	123.19	2627.46	-253.00	-198.67	159.29	514724.9	4398511.7	39°44'10.933"N	80°49'41.356"W	254.65	141.28	0.80
2677	1.47	123.28	2654.45	-253.66	-199.07	159.89	514725.1	4398511.6	39°44'10.929"N	80°49'41.349"W	255.33	141.23	0.44
2721	1.51	119.01	2698.43	-254.68	-199.66	160.87	514725.4	4398511.4	39°44'10.923"N	80°49'41.336"W	256.41	141.14	0.27
2766	1.55	114.27	2743.42	-255.70	-200.20	161.95	514725.7	4398511.2	39°44'10.918"N	80°49'41.322"W	257.50	141.03	0.29
2810	1.48	118.56	2787.40	-256.70	-200.71	162.99	514726.1	4398511.1	39°44'10.912"N	80°49'41.309"W	258.56	140.92	0.30
2855	1.58	114.22	2832.39	-257.72	-201.25	164.06	514726.4	4398510.9	39°44'10.907"N	80°49'41.295"W	259.65	140.81	0.34
2900	1.54	118.36	2877.37	-258.76	-201.79	165.16	514726.7	4398510.7	39°44'10.902"N	80°49'41.281"W	260.76	140.70	0.27
2945	1.38	117.90	2922.35	-259.76	-202.33	166.17	514727.0	4398510.6	39°44'10.896"N	80°49'41.268"W	261.82	140.60	0.36
2989	0.60	151.13	2966.35	-260.45	-202.78	166.75	514727.2	4398510.4	39°44'10.892"N	80°49'41.261"W	262.54	140.57	2.13
3034	0.41	200.19	3011.35	-260.78	-203.14	166.81	514727.2	4398510.3	39°44'10.888"N	80°49'41.260"W	262.85	140.61	1.01
3079	0.39	195.31	3056.35	-260.98	-203.44	166.72	514727.2	4398510.2	39°44'10.885"N	80°49'41.261"W	263.02	140.67	0.09
3124	0.47	185.68	3101.34	-261.23	-203.77	166.66	514727.2	4398510.1	39°44'10.882"N	80°49'41.262"W	263.24	140.72	0.24
3168	0.28	164.06	3145.34	-261.48	-204.05	166.67	514727.2	4398510.0	39°44'10.879"N	80°49'41.262"W	263.47	140.76	0.53
3213	0.41	186.43	3190.34	-261.71	-204.32	166.68	514727.2	4398510.0	39°44'10.877"N	80°49'41.262"W	263.68	140.79	0.41
3258	0.40	180.83	3235.34	-261.97	-204.63	166.66	514727.2	4398509.9	39°44'10.874"N	80°49'41.262"W	263.91	140.84	0.09
3302	0.26	171.88	3279.34	-262.19	-204.88	166.67	514727.2	4398509.8	39°44'10.871"N	80°49'41.262"W	264.12	140.87	0.34
3347	0.30	163.30	3324.34	-262.39	-205.10	166.72	514727.2	4398509.7	39°44'10.869"N	80°49'41.261"W	264.31	140.89	0.13
3392	0.15	191.21	3369.34	-262.55	-205.27	166.74	514727.2	4398509.7	39°44'10.867"N	80°49'41.261"W	264.46	140.91	0.40
3436	0.17	190.39	3413.34	-262.64	-205.39	166.72	514727.2	4398509.6	39°44'10.866"N	80°49'41.261"W	264.54	140.93	0.05
3481	0.28	193.04	3458.34	-262.77	-205.56	166.68	514727.2	4398509.6	39°44'10.864"N	80°49'41.262"W	264.65	140.96	0.25
3526	0.29	174.80	3503.34	-262.95	-205.78	166.67	514727.2	4398509.5	39°44'10.862"N	80°49'41.262"W	264.81	141.00	0.20
3571	0.22	206.58	3548.34	-263.09	-205.97	166.64	514727.2	4398509.4	39°44'10.860"N	80°49'41.262"W	264.94	141.03	0.34
3616	0.74	274.94	3593.34	-262.96	-206.03	166.31	514727.1	4398509.4	39°44'10.860"N	80°49'41.267"W	264.78	141.09	1.53
3660	2.01	304.89	3637.32	-262.08	-205.56	165.40	514726.8	4398509.6	39°44'10.864"N	80°49'41.278"W	263.84	141.18	3.22
3705	2.74	304.03	3682.28	-260.37	-204.51	163.86	514726.3	4398509.9	39°44'10.875"N	80°49'41.298"W	262.05	141.30	1.62
3750	3.32	309.36	3727.22	-258.15	-203.08	161.96	514725.7	4398510.3	39°44'10.889"N	80°49'41.322"W	259.75	141.43	1.43
3795	3.83	301.63	3772.13	-255.56	-201.46	159.67	514725.1	4398510.8	39°44'10.905"N	80°49'41.352"W	257.07	141.60	1.56
3839	4.71	299.75	3816.01	-252.65	-199.80	156.85	514724.2	4398511.3	39°44'10.922"N	80°49'41.388"W	254.01	141.87	2.02
3884	5.67	306.28	3860.83	-248.95	-197.56	153.46	514723.2	4398512.0	39°44'10.944"N	80°49'41.431"W	250.16	142.16	2.50
3929	7.27	314.80	3905.54	-244.11	-194.24	149.64	514722.0	4398513.0	39°44'10.977"N	80°49'41.480"W	245.20	142.39	4.14

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3974	9.04	320.15	3950.08	-237.83	-189.52	145.36	514720.7	4398514.5	39°44'11.023"N	80°49'41.534"W	238.85	142.51	4.28
4018	10.99	324.29	3993.41	-230.22	-183.46	140.69	514719.3	4398516.3	39°44'11.083"N	80°49'41.594"W	231.20	142.52	4.72
4063	11.10	335.85	4037.58	-221.64	-176.03	136.42	514718.0	4398518.6	39°44'11.157"N	80°49'41.649"W	222.70	142.23	4.92
4108	10.35	348.21	4081.80	-213.57	-168.11	133.82	514717.2	4398521.0	39°44'11.235"N	80°49'41.682"W	214.87	141.48	5.36
4153	10.70	359.48	4126.05	-206.22	-159.98	132.95	514716.9	4398523.5	39°44'11.316"N	80°49'41.693"W	208.01	140.27	4.63
4197	11.37	4.14	4169.24	-199.25	-151.57	133.23	514717.0	4398526.0	39°44'11.399"N	80°49'41.689"W	201.80	138.68	2.53
4241	12.38	2.58	4212.30	-191.88	-142.53	133.76	514717.2	4398528.8	39°44'11.488"N	80°49'41.682"W	195.46	136.82	2.41
4287	14.31	1.19	4257.05	-183.09	-131.92	134.10	514717.3	4398532.0	39°44'11.593"N	80°49'41.677"W	188.11	134.53	4.25
4332	15.80	359.95	4300.51	-173.26	-120.23	134.21	514717.3	4398535.6	39°44'11.708"N	80°49'41.676"W	180.19	131.86	3.39
4376	15.42	359.61	4342.88	-163.21	-108.39	134.16	514717.3	4398539.2	39°44'11.825"N	80°49'41.676"W	172.48	128.94	0.89
4421	15.71	358.18	4386.23	-152.87	-96.32	133.93	514717.2	4398542.9	39°44'11.945"N	80°49'41.678"W	164.97	125.72	1.07
4466	15.62	355.30	4429.56	-142.24	-84.19	133.24	514717.0	4398546.6	39°44'12.065"N	80°49'41.687"W	157.61	122.29	1.74
4511	15.01	350.38	4472.97	-131.49	-72.41	131.77	514716.5	4398550.1	39°44'12.181"N	80°49'41.706"W	150.35	118.79	3.19
4555	14.66	349.38	4515.50	-121.05	-61.32	129.79	514715.9	4398553.5	39°44'12.291"N	80°49'41.731"W	143.54	115.29	0.99
4600	15.30	349.65	4558.97	-110.24	-49.88	127.67	514715.3	4398557.0	39°44'12.404"N	80°49'41.757"W	137.07	111.34	1.43
4645	15.97	348.65	4602.30	-98.95	-37.97	125.39	514714.6	4398560.6	39°44'12.521"N	80°49'41.786"W	131.01	106.85	1.60
4690	16.39	348.68	4645.52	-87.23	-25.68	122.92	514713.9	4398564.4	39°44'12.643"N	80°49'41.818"W	125.58	101.80	0.93
4735	17.02	351.76	4688.62	-75.28	-12.93	120.73	514713.2	4398568.3	39°44'12.769"N	80°49'41.845"W	121.42	96.12	2.41
4779	17.00	352.43	4730.70	-63.55	-0.19	118.96	514712.6	4398572.1	39°44'12.895"N	80°49'41.868"W	118.96	90.09	0.45
4824	17.42	353.25	4773.68	-51.49	13.03	117.30	514712.1	4398576.2	39°44'13.026"N	80°49'41.889"W	118.02	83.66	1.08
4869	17.40	353.18	4816.62	-39.33	26.40	115.71	514711.7	4398580.2	39°44'13.158"N	80°49'41.909"W	118.68	77.15	0.06
4913	16.53	351.76	4858.71	-27.66	39.12	114.03	514711.1	4398584.1	39°44'13.284"N	80°49'41.930"W	120.56	71.06	2.19
4958	15.69	349.37	4901.94	-16.15	51.44	111.99	514710.5	4398587.9	39°44'13.405"N	80°49'41.956"W	123.24	65.33	2.38
5003	14.74	350.35	4945.36	-5.21	63.06	109.91	514709.9	4398591.4	39°44'13.520"N	80°49'41.982"W	126.72	60.16	2.19
5047	15.35	348.96	4988.05	4.70	73.57	108.00	514709.3	4398594.6	39°44'13.624"N	80°49'42.006"W	130.68	55.74	3.25
5092	13.33	348.41	5031.83	14.40	83.75	105.96	514708.7	4398597.7	39°44'13.725"N	80°49'42.032"W	135.06	51.68	0.29
5137	13.54	348.94	5075.60	24.17	94.00	103.91	514708.1	4398600.8	39°44'13.826"N	80°49'42.058"W	140.12	47.87	0.54
5182	12.51	348.92	5119.44	33.63	103.95	101.96	514707.5	4398603.9	39°44'13.925"N	80°49'42.083"W	145.61	44.45	2.29
5227	12.23	348.99	5163.40	42.62	113.42	100.12	514706.9	4398606.8	39°44'14.018"N	80°49'42.106"W	151.28	41.44	0.62
5271	12.95	348.97	5206.34	51.56	122.83	98.28	514706.3	4398609.6	39°44'14.111"N	80°49'42.129"W	157.31	38.67	1.64
5316	11.94	348.23	5250.28	60.63	132.34	96.37	514705.8	4398612.5	39°44'14.205"N	80°49'42.154"W	163.71	36.06	2.27
5361	11.78	346.72	5294.32	69.34	141.36	94.36	514705.2	4398615.3	39°44'14.294"N	80°49'42.179"W	169.97	33.72	0.78

SI-01588

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5406	12.16	347.22	5338.34	78.15	150.46	92.26	514704.5	4398618.0	39°44'14.384"N	80°49'42.206"W	176.49	31.52	0.88
5450	12.20	347.87	5381.35	86.89	159.52	90.26	514703.9	4398620.8	39°44'14.474"N	80°49'42.231"W	183.29	29.50	0.32
5495	12.34	348.52	5425.32	95.85	168.88	88.30	514703.3	4398623.7	39°44'14.566"N	80°49'42.256"W	190.57	27.60	0.44
5540	12.26	348.09	5469.29	104.83	178.27	86.36	514702.7	4398626.5	39°44'14.659"N	80°49'42.281"W	198.09	25.85	0.27
5585	12.23	348.38	5513.27	113.77	187.61	84.41	514702.1	4398629.4	39°44'14.752"N	80°49'42.305"W	205.73	24.23	0.15
5629	12.43	351.76	5556.25	122.46	196.86	82.80	514701.6	4398632.2	39°44'14.843"N	80°49'42.326"W	213.57	22.81	1.70
5674	12.88	351.73	5600.16	131.47	206.62	81.38	514701.2	4398635.2	39°44'14.940"N	80°49'42.344"W	222.07	21.50	1.00
5719	13.14	351.06	5644.00	140.76	216.64	79.86	514700.7	4398638.2	39°44'15.039"N	80°49'42.363"W	230.89	20.24	0.67
5763	13.30	351.42	5686.84	149.99	226.58	78.33	514700.3	4398641.2	39°44'15.137"N	80°49'42.382"W	239.74	19.07	0.41
5811	13.78	351.51	5733.50	160.28	237.70	76.66	514699.8	4398644.6	39°44'15.247"N	80°49'42.403"W	249.75	17.88	1.00
5856	12.25	350.76	5777.35	169.59	247.71	75.11	514699.3	4398647.7	39°44'15.346"N	80°49'42.423"W	258.84	16.87	3.42
5901	12.29	351.08	5821.32	178.38	257.15	73.60	514698.8	4398650.6	39°44'15.439"N	80°49'42.442"W	267.48	15.97	0.18
5946	12.31	349.21	5865.29	187.25	266.60	71.96	514698.3	4398653.4	39°44'15.532"N	80°49'42.463"W	276.14	15.11	0.89
5990	13.39	346.97	5908.18	196.43	276.17	69.93	514697.7	4398656.3	39°44'15.627"N	80°49'42.489"W	284.88	14.21	2.70
6035	16.82	343.19	5951.62	207.63	287.48	66.87	514696.8	4398659.8	39°44'15.739"N	80°49'42.527"W	295.15	13.10	7.93
6080	19.93	339.96	5994.32	221.41	300.92	62.36	514695.4	4398663.9	39°44'15.872"N	80°49'42.585"W	307.31	11.71	7.27
6125	22.29	334.82	6036.31	237.38	315.85	56.10	514693.5	4398668.4	39°44'16.020"N	80°49'42.665"W	320.80	10.07	6.66
6170	24.32	329.85	6077.64	255.11	331.59	47.81	514691.0	4398673.2	39°44'16.175"N	80°49'42.770"W	335.02	8.21	6.28
6214	28.11	326.98	6117.10	274.54	348.12	37.61	514687.9	4398678.3	39°44'16.339"N	80°49'42.901"W	350.15	6.17	9.08
6259	32.81	327.80	6155.88	297.34	367.34	25.33	514684.1	4398684.1	39°44'16.529"N	80°49'43.057"W	368.21	3.94	10.48
6304	37.73	330.12	6192.61	323.31	389.61	11.96	514680.0	4398690.9	39°44'16.749"N	80°49'43.228"W	389.79	1.76	11.33
6349	41.83	331.25	6227.19	352.06	414.72	-2.12	514675.8	4398698.6	39°44'16.998"N	80°49'43.407"W	414.72	359.71	9.25
6393	47.01	331.12	6258.60	382.79	441.69	-16.96	514671.2	4398706.8	39°44'17.265"N	80°49'43.597"W	442.01	357.80	11.77
6438	52.61	330.67	6287.63	417.10	471.71	-33.68	514666.1	4398715.9	39°44'17.562"N	80°49'43.810"W	472.91	355.92	12.47
6483	58.40	330.11	6313.11	454.14	503.94	-52.00	514660.6	4398725.7	39°44'17.880"N	80°49'44.044"W	506.61	354.11	12.91
6528	63.48	330.02	6334.96	493.43	538.01	-71.62	514654.6	4398736.1	39°44'18.218"N	80°49'44.294"W	542.76	352.42	11.29
6572	67.93	329.46	6353.06	533.50	572.64	-91.83	514648.4	4398746.7	39°44'18.560"N	80°49'44.552"W	579.96	350.89	10.18
6617	70.81	329.23	6368.91	575.59	608.87	-113.30	514641.9	4398757.7	39°44'18.919"N	80°49'44.826"W	619.32	349.46	6.42
6662	72.92	329.06	6382.92	618.34	645.58	-135.23	514635.2	4398768.9	39°44'19.282"N	80°49'45.106"W	659.59	348.17	4.70
6707	73.91	329.31	6395.76	661.46	682.61	-157.33	514628.5	4398780.2	39°44'19.648"N	80°49'45.388"W	700.51	347.02	2.26
6751	74.97	329.58	6407.56	703.83	719.12	-178.87	514621.9	4398791.3	39°44'20.009"N	80°49'45.663"W	741.03	346.03	2.48
6796	78.48	329.40	6417.89	747.60	756.84	-201.11	514615.1	4398802.8	39°44'20.383"N	80°49'45.946"W	783.11	345.12	7.81

51-01588

Environmental Protection Department of Gas

Gas

WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
6841	85.04	328.68	6424.34	792.10	795.01	-224.01	514608.2	4398814.4	39°44'20.760"N	80°49'46.239"W	825.97	344.26	14.66
6886	89.88	328.72	6426.33	837.04	833.41	-247.36	514601.0	4398826.1	39°44'21.140"N	80°49'46.536"W	869.35	343.47	10.76
6930	89.97	328.89	6426.39	881.03	871.05	-270.15	514594.1	4398837.6	39°44'21.513"N	80°49'46.827"W	911.98	342.77	0.44
6975	89.85	329.19	6426.46	926.02	909.64	-293.29	514587.0	4398849.4	39°44'21.894"N	80°49'47.123"W	955.75	342.13	0.72
7020	89.85	329.43	6426.58	971.00	948.34	-316.26	514580.0	4398861.1	39°44'22.277"N	80°49'47.416"W	999.68	341.56	0.53
7064	89.94	329.83	6426.66	1014.98	986.30	-338.51	514573.3	4398872.7	39°44'22.653"N	80°49'47.700"W	1042.77	341.06	0.93
7109	89.94	329.24	6426.71	1059.96	1025.09	-361.32	514566.3	4398884.5	39°44'23.037"N	80°49'47.991"W	1086.90	340.58	1.31
7154	89.42	328.33	6426.96	1104.95	1063.57	-384.64	514559.2	4398896.2	39°44'23.417"N	80°49'48.288"W	1130.99	340.12	2.33
7199	89.32	329.26	6427.45	1149.94	1102.06	-407.96	514552.1	4398908.0	39°44'23.798"N	80°49'48.586"W	1175.14	339.69	2.08
7243	89.32	328.07	6427.98	1193.93	1139.64	-430.84	514545.1	4398919.4	39°44'24.170"N	80°49'48.878"W	1218.35	339.29	2.70
7288	89.42	326.80	6428.47	1238.93	1177.56	-455.06	514537.8	4398931.0	39°44'24.545"N	80°49'49.187"W	1262.43	338.87	2.83
7333	89.32	325.43	6428.97	1283.91	1214.91	-480.14	514530.1	4398942.4	39°44'24.915"N	80°49'49.507"W	1306.35	338.44	3.05
7378	89.45	324.91	6429.45	1328.86	1251.85	-505.84	514522.3	4398953.6	39°44'25.280"N	80°49'49.835"W	1350.18	338.00	1.19
7422	89.26	325.03	6429.94	1372.80	1287.87	-531.10	514514.6	4398964.6	39°44'25.637"N	80°49'50.158"W	1393.08	337.59	0.51
7467	89.91	324.42	6430.27	1417.73	1324.61	-557.08	514506.7	4398975.8	39°44'26.000"N	80°49'50.489"W	1436.99	337.19	1.98
7512	90.03	323.38	6430.29	1462.63	1360.97	-583.60	514498.6	4398986.9	39°44'26.360"N	80°49'50.828"W	1480.82	336.79	2.33
7557	90.06	322.20	6430.26	1507.46	1396.81	-610.81	514490.3	4398997.8	39°44'26.715"N	80°49'51.175"W	1524.52	336.38	2.62
7602	90.37	320.90	6430.09	1552.19	1432.05	-638.79	514481.8	4399008.5	39°44'27.064"N	80°49'51.533"W	1568.06	335.96	2.97
7646	90.34	320.22	6429.82	1595.83	1466.03	-666.74	514473.3	4399018.9	39°44'27.400"N	80°49'51.890"W	1610.52	335.54	1.55
7691	90.34	320.34	6429.55	1640.45	1500.64	-695.50	514464.5	4399029.4	39°44'27.743"N	80°49'52.257"W	1653.98	335.13	0.27
7736	90.37	321.41	6429.27	1685.12	1535.55	-723.89	514455.9	4399040.1	39°44'28.088"N	80°49'52.620"W	1697.63	334.76	2.38
7780	90.37	322.18	6428.99	1728.87	1570.12	-751.11	514447.6	4399050.6	39°44'28.430"N	80°49'52.967"W	1740.53	334.44	1.75
7825	90.37	324.87	6428.70	1773.74	1606.31	-777.85	514439.4	4399061.6	39°44'28.788"N	80°49'53.309"W	1784.73	334.16	5.98
7870	90.37	327.57	6428.41	1818.72	1643.70	-802.87	514431.8	4399073.0	39°44'29.158"N	80°49'53.628"W	1829.31	333.97	6.00
7914	90.34	327.54	6428.13	1862.72	1680.84	-826.48	514424.6	4399084.3	39°44'29.526"N	80°49'53.929"W	1873.04	333.82	0.10
7959	90.34	327.65	6427.87	1907.72	1718.83	-850.59	514417.2	4399095.9	39°44'29.902"N	80°49'54.237"W	1917.78	333.67	0.24
8004	90.37	327.28	6427.59	1952.72	1756.76	-874.79	514409.9	4399107.5	39°44'30.277"N	80°49'54.546"W	1962.52	333.53	0.82
8049	90.37	327.09	6427.30	1997.71	1794.58	-899.18	514402.4	4399119.0	39°44'30.651"N	80°49'54.857"W	2007.25	333.39	0.42
8093	90.37	327.78	6427.01	2041.71	1831.66	-922.86	514395.2	4399130.3	39°44'31.018"N	80°49'55.160"W	2051.02	333.26	1.57
8138	90.40	328.44	6426.71	2086.71	1869.87	-946.63	514388.0	4399141.9	39°44'31.396"N	80°49'55.463"W	2095.84	333.15	1.47
8183	90.28	328.73	6426.44	2131.71	1908.27	-970.09	514380.8	4399153.6	39°44'31.776"N	80°49'55.762"W	2140.70	333.05	0.70
8228	90.40	328.76	6426.18	2176.70	1946.74	-993.44	514373.7	4399165.3	39°44'32.157"N	80°49'56.060"W	2185.57	332.96	0.27

51-01588

Environmental Protection
MN Department of

Office of Oil and Gas
REGULATORY
VEHICLE

WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
8272	90.40	328.82	6425.87	2220.69	1984.37	-1016.24	514366.8	4399176.8	39°44'32.529"N	80°49'56.351"W	2229.46	332.88	0.14
8317	90.34	328.91	6425.58	2265.68	2022.89	-1039.50	514359.7	4399188.5	39°44'32.910"N	80°49'56.648"W	2274.35	332.80	0.24
8362	90.31	328.92	6425.32	2310.67	2061.43	-1062.74	514352.6	4399200.3	39°44'33.292"N	80°49'56.945"W	2319.24	332.73	0.07
8407	90.34	328.84	6425.07	2355.66	2099.95	-1085.99	514345.5	4399212.0	39°44'33.673"N	80°49'57.242"W	2364.14	332.65	0.19
8452	90.40	328.25	6424.78	2400.66	2138.34	-1109.48	514338.4	4399223.7	39°44'34.052"N	80°49'57.541"W	2409.03	332.58	1.32
8496	90.34	327.27	6424.49	2444.66	2175.55	-1132.95	514331.2	4399235.0	39°44'34.421"N	80°49'57.841"W	2452.87	332.49	2.23
8541	90.43	327.07	6424.19	2489.65	2213.36	-1157.34	514323.8	4399246.6	39°44'34.795"N	80°49'58.152"W	2497.68	332.40	0.49
8586	90.37	326.44	6423.88	2534.65	2251.00	-1182.01	514316.3	4399258.0	39°44'35.167"N	80°49'58.467"W	2542.47	332.30	1.41
8630	90.22	325.78	6423.65	2578.63	2287.52	-1206.55	514308.8	4399269.2	39°44'35.529"N	80°49'58.780"W	2586.22	332.19	1.54
8675	90.62	325.32	6423.32	2623.59	2324.63	-1232.00	514301.0	4399280.5	39°44'35.896"N	80°49'59.105"W	2630.92	332.08	1.35
8720	90.65	324.79	6422.82	2668.53	2361.51	-1257.78	514293.2	4399291.7	39°44'36.261"N	80°49'59.435"W	2675.58	331.96	1.18
8765	90.71	324.64	6422.29	2713.47	2398.24	-1283.77	514285.3	4399302.9	39°44'36.624"N	80°49'59.766"W	2720.23	331.84	0.36
8810	90.74	324.39	6421.72	2758.39	2434.88	-1309.89	514277.3	4399314.1	39°44'36.987"N	80°50'00.100"W	2764.86	331.72	0.56
8854	90.68	324.79	6421.17	2802.32	2470.74	-1335.38	514269.5	4399325.0	39°44'37.342"N	80°50'00.425"W	2808.52	331.61	0.92
8899	90.55	324.49	6420.69	2847.25	2507.44	-1361.42	514261.6	4399336.2	39°44'37.705"N	80°50'00.758"W	2853.19	331.50	0.73
8944	90.68	324.15	6420.21	2892.16	2543.99	-1387.67	514253.6	4399347.3	39°44'38.067"N	80°50'01.093"W	2897.84	331.39	0.81
8989	90.58	323.32	6419.71	2937.04	2580.27	-1414.28	514245.5	4399358.4	39°44'38.426"N	80°50'01.433"W	2942.44	331.27	1.86
9033	90.65	322.69	6419.24	2980.89	2615.41	-1440.76	514237.4	4399369.1	39°44'38.773"N	80°50'01.771"W	2985.99	331.15	1.44
9078	90.77	323.55	6418.68	3025.73	2651.40	-1467.76	514229.2	4399380.0	39°44'39.130"N	80°50'02.116"W	3030.55	331.03	1.93
9123	90.80	324.18	6418.06	3070.62	2687.74	-1494.29	514221.1	4399391.1	39°44'39.489"N	80°50'02.455"W	3075.20	330.93	1.40
9168	90.77	324.67	6417.45	3115.54	2724.34	-1520.47	514213.1	4399402.3	39°44'39.851"N	80°50'02.789"W	3119.91	330.83	1.09
9212	90.68	325.27	6416.89	3159.48	2760.36	-1545.73	514205.5	4399413.2	39°44'40.208"N	80°50'03.111"W	3163.68	330.75	1.38
9257	90.74	326.14	6416.33	3204.45	2797.54	-1571.08	514197.7	4399424.6	39°44'40.576"N	80°50'03.435"W	3208.51	330.68	1.94
9302	90.77	327.71	6415.74	3249.44	2835.24	-1595.63	514190.2	4399436.0	39°44'40.949"N	80°50'03.749"W	3253.40	330.63	3.49
9347	90.68	328.59	6415.17	3294.43	2873.46	-1619.38	514183.0	4399447.7	39°44'41.327"N	80°50'04.052"W	3298.36	330.60	1.97
9391	90.83	329.75	6414.59	3338.42	2911.24	-1641.93	514176.1	4399459.2	39°44'41.701"N	80°50'04.339"W	3342.34	330.58	2.66
9436	90.68	329.98	6414.00	3383.38	2950.16	-1664.52	514169.3	4399471.1	39°44'42.086"N	80°50'04.628"W	3387.33	330.57	0.61
9481	90.80	330.00	6413.42	3428.35	2989.12	-1687.02	514162.4	4399482.9	39°44'42.471"N	80°50'04.915"W	3432.33	330.56	0.27
9526	90.71	329.15	6412.82	3473.32	3027.92	-1709.81	514155.5	4399494.7	39°44'42.855"N	80°50'05.206"W	3477.32	330.55	1.90
9570	90.86	328.40	6412.22	3517.31	3065.54	-1732.61	514148.5	4399506.2	39°44'43.227"N	80°50'05.497"W	3521.29	330.53	1.74
9615	90.71	328.49	6411.61	3562.30	3103.88	-1756.16	514141.3	4399517.9	39°44'43.607"N	80°50'05.797"W	3566.26	330.50	0.39
9660	90.71	328.59	6411.05	3607.29	3142.27	-1779.65	514134.2	4399529.6	39°44'43.986"N	80°50'06.097"W	3611.23	330.48	0.22

51-01588

Office of Oil & Gas
REGISTRATION
DIVISION

WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
9705	90.77	327.68	6410.47	3652.29	3180.48	-1803.40	514126.9	4399541.2	39°44'44.364"N	80°50'06.400"W	3656.19	330.45	2.03
9749	90.46	327.24	6409.99	3696.29	3217.57	-1827.06	514119.7	4399552.5	39°44'44.731"N	80°50'06.702"W	3700.13	330.41	1.22
9794	90.49	326.60	6409.62	3741.28	3255.28	-1851.63	514112.3	4399564.0	39°44'45.104"N	80°50'07.016"W	3745.04	330.37	1.42
9839	90.34	325.27	6409.30	3786.25	3292.55	-1876.83	514104.6	4399575.4	39°44'45.473"N	80°50'07.338"W	3789.91	330.32	2.97
9884	90.12	324.99	6409.11	3831.20	3329.47	-1902.56	514096.7	4399586.6	39°44'45.839"N	80°50'07.666"W	3834.72	330.26	0.79
9928	89.94	324.60	6409.09	3875.14	3365.42	-1927.92	514089.0	4399597.6	39°44'46.194"N	80°50'07.990"W	3878.53	330.19	0.98
9973	90.00	325.25	6409.12	3920.09	3402.25	-1953.78	514081.1	4399608.8	39°44'46.559"N	80°50'08.320"W	3923.34	330.13	1.45
10018	90.00	325.06	6409.12	3965.04	3439.18	-1979.49	514073.3	4399620.0	39°44'46.924"N	80°50'08.649"W	3968.17	330.08	0.42
10062	89.91	324.58	6409.15	4008.98	3475.15	-2004.84	514065.6	4399631.0	39°44'47.280"N	80°50'08.972"W	4011.99	330.02	1.11
10107	90.03	324.09	6409.17	4053.90	3511.71	-2031.08	514057.6	4399642.1	39°44'47.642"N	80°50'09.307"W	4056.77	329.96	1.12
10152	89.94	324.39	6409.18	4098.81	3548.22	-2057.38	514049.6	4399653.3	39°44'48.003"N	80°50'09.643"W	4101.55	329.89	0.70
10197	89.75	325.66	6409.31	4143.76	3585.09	-2083.17	514041.7	4399664.5	39°44'48.368"N	80°50'09.972"W	4146.39	329.84	2.85
10241	89.63	326.45	6409.54	4187.73	3621.59	-2107.74	514034.2	4399675.6	39°44'48.729"N	80°50'10.286"W	4190.29	329.80	1.82
10286	89.66	326.84	6409.82	4232.72	3659.18	-2132.48	514026.7	4399687.1	39°44'49.101"N	80°50'10.602"W	4235.22	329.77	0.87
10331	90.09	327.23	6409.92	4277.72	3696.94	-2156.97	514019.2	4399698.6	39°44'49.475"N	80°50'10.915"W	4280.17	329.74	1.29
10376	90.12	327.45	6409.84	4322.72	3734.82	-2181.25	514011.8	4399710.1	39°44'49.850"N	80°50'11.225"W	4325.13	329.71	0.49
10420	90.18	327.28	6409.72	4366.72	3771.87	-2204.98	514004.6	4399721.4	39°44'50.216"N	80°50'11.528"W	4369.09	329.69	0.41
10465	90.18	327.34	6409.58	4411.71	3809.75	-2229.29	513997.2	4399733.0	39°44'50.591"N	80°50'11.838"W	4414.06	329.67	0.13
10510	90.12	327.57	6409.46	4456.71	3847.68	-2253.49	513989.8	4399744.5	39°44'50.966"N	80°50'12.147"W	4459.02	329.64	0.53
10555	90.06	327.43	6409.39	4501.71	3885.63	-2277.67	513982.4	4399756.1	39°44'51.342"N	80°50'12.456"W	4503.99	329.62	0.34
10599	90.22	327.67	6409.29	4545.71	3922.76	-2301.28	513975.3	4399767.4	39°44'51.709"N	80°50'12.757"W	4547.96	329.60	0.66
10644	90.22	327.80	6409.11	4590.71	3960.81	-2325.30	513967.9	4399779.0	39°44'52.086"N	80°50'13.064"W	4592.94	329.58	0.29
10689	90.12	326.22	6408.98	4635.71	3998.56	-2349.80	513960.5	4399790.5	39°44'52.459"N	80°50'13.376"W	4637.89	329.56	3.52
10734	90.09	326.68	6408.90	4680.69	4036.06	-2374.67	513952.9	4399801.9	39°44'52.830"N	80°50'13.694"W	4682.83	329.53	1.02
10778	90.40	326.94	6408.71	4724.69	4072.88	-2398.76	513945.6	4399813.1	39°44'53.195"N	80°50'14.001"W	4726.78	329.50	0.92
10823	90.37	328.18	6408.41	4769.68	4110.86	-2422.90	513938.2	4399824.7	39°44'53.570"N	80°50'14.310"W	4771.75	329.49	2.76
10868	90.43	329.00	6408.09	4814.68	4149.26	-2446.35	513931.1	4399836.4	39°44'53.950"N	80°50'14.609"W	4816.74	329.48	1.83
10913	90.40	329.03	6407.77	4859.67	4187.84	-2469.52	513924.0	4399848.1	39°44'54.332"N	80°50'14.905"W	4861.74	329.47	0.09
10957	90.62	328.77	6407.38	4903.66	4225.51	-2492.24	513917.1	4399859.6	39°44'54.705"N	80°50'15.195"W	4905.73	329.47	0.77
11002	90.65	328.60	6406.88	4948.65	4263.96	-2515.63	513909.9	4399871.3	39°44'55.085"N	80°50'15.493"W	4950.73	329.46	0.38
11047	90.58	327.54	6406.39	4993.65	4302.14	-2539.43	513902.7	4399883.0	39°44'55.463"N	80°50'15.797"W	4995.71	329.45	2.36
11091	90.71	327.11	6405.90	5037.64	4339.18	-2563.18	513895.5	4399894.3	39°44'55.829"N	80°50'16.100"W	5039.68	329.43	1.02

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WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
11136	90.74	327.88	6405.33	5082.64	4377.13	-2587.36	513888.1	4399905.8	39°44'56.205"N	80°50'16.409"W	5084.65	329.41	1.71
11181	90.71	327.86	6404.76	5127.63	4415.23	-2611.29	513880.8	4399917.4	39°44'56.582"N	80°50'16.714"W	5129.63	329.40	0.08
11225	90.65	326.91	6404.24	5171.63	4452.29	-2635.00	513873.6	4399928.7	39°44'56.948"N	80°50'17.017"W	5173.60	329.38	2.16
11270	90.62	326.10	6403.74	5216.61	4489.81	-2659.84	513866.0	4399940.2	39°44'57.320"N	80°50'17.334"W	5218.54	329.36	1.80
11315	90.37	325.00	6403.35	5261.58	4526.92	-2685.29	513858.3	4399951.5	39°44'57.687"N	80°50'17.659"W	5263.44	329.32	2.51
11360	90.37	323.34	6403.06	5306.48	4563.40	-2711.63	513850.2	4399962.6	39°44'58.048"N	80°50'17.996"W	5308.26	329.28	3.69
11404	90.31	321.23	6402.80	5350.28	4598.21	-2738.55	513842.0	4399973.2	39°44'58.392"N	80°50'18.339"W	5351.93	329.22	4.80
11449	90.06	321.06	6402.65	5394.97	4633.25	-2766.78	513833.4	4399983.9	39°44'58.739"N	80°50'18.700"W	5396.48	329.16	0.67
11494	89.94	321.75	6402.65	5439.69	4668.42	-2794.85	513824.9	4399994.6	39°44'59.087"N	80°50'19.059"W	5441.08	329.09	1.56
11538	89.97	322.88	6402.69	5483.49	4703.24	-2821.75	513816.7	4400005.2	39°44'59.432"N	80°50'19.402"W	5484.77	329.04	2.57
11583	89.94	324.79	6402.72	5528.38	4739.57	-2848.30	513808.6	4400016.2	39°44'59.791"N	80°50'19.741"W	5529.59	329.00	4.24
11628	89.91	326.67	6402.78	5573.35	4776.75	-2873.64	513800.9	4400027.6	39°45'00.159"N	80°50'20.065"W	5574.51	328.97	4.18
11673	90.06	328.42	6402.79	5618.35	4814.72	-2897.79	513793.5	4400039.1	39°45'00.535"N	80°50'20.373"W	5619.49	328.96	3.90
11717	89.97	328.07	6402.78	5662.35	4852.14	-2920.94	513786.5	4400050.5	39°45'00.905"N	80°50'20.669"W	5663.49	328.95	0.82
11762	90.03	327.37	6402.78	5707.35	4890.18	-2944.97	513779.1	4400062.1	39°45'01.281"N	80°50'20.976"W	5708.48	328.94	1.56
11807	90.18	327.91	6402.70	5752.35	4928.19	-2969.06	513771.8	4400073.7	39°45'01.658"N	80°50'21.283"W	5753.47	328.93	1.25
11852	90.28	329.04	6402.52	5797.34	4966.55	-2992.59	513764.6	4400085.4	39°45'02.037"N	80°50'21.584"W	5798.47	328.93	2.52
11896	90.12	329.64	6402.37	5841.32	5004.40	-3015.03	513757.8	4400096.9	39°45'02.411"N	80°50'21.870"W	5842.46	328.93	1.41
11941	90.09	329.44	6402.28	5886.30	5043.19	-3037.84	513750.8	4400108.8	39°45'02.795"N	80°50'22.161"W	5887.46	328.94	0.45
11986	90.09	329.21	6402.21	5931.29	5081.89	-3060.80	513743.8	4400120.5	39°45'03.178"N	80°50'22.454"W	5932.46	328.94	0.51
12031	90.09	329.05	6402.14	5976.28	5120.52	-3083.88	513736.8	4400132.3	39°45'03.560"N	80°50'22.749"W	5977.46	328.94	0.36
12075	90.03	329.09	6402.10	6020.26	5158.26	-3106.50	513729.9	4400143.8	39°45'03.934"N	80°50'23.038"W	6021.46	328.94	0.16
12120	90.12	328.39	6402.04	6065.26	5196.73	-3129.85	513722.8	4400155.5	39°45'04.314"N	80°50'23.336"W	6066.46	328.94	1.57
12165	90.15	327.75	6401.93	6110.26	5234.92	-3153.65	513715.6	4400167.2	39°45'04.692"N	80°50'23.639"W	6111.45	328.93	1.42
12209	90.18	326.81	6401.80	6154.25	5271.94	-3177.43	513708.3	4400178.5	39°45'05.058"N	80°50'23.943"W	6155.44	328.92	2.14
12254	90.12	326.47	6401.69	6199.25	5309.52	-3202.18	513700.8	4400189.9	39°45'05.430"N	80°50'24.259"W	6200.40	328.91	0.77
12299	90.09	325.80	6401.60	6244.23	5346.89	-3227.25	513693.1	4400201.3	39°45'05.800"N	80°50'24.579"W	6245.35	328.89	1.49
12344	90.06	325.05	6401.54	6289.19	5383.94	-3252.79	513685.3	4400212.6	39°45'06.167"N	80°50'24.905"W	6290.27	328.86	1.67
12388	90.03	324.44	6401.51	6333.12	5419.87	-3278.19	513677.6	4400223.5	39°45'06.522"N	80°50'25.230"W	6334.15	328.83	1.39
12433	90.09	323.70	6401.46	6378.03	5456.31	-3304.59	513669.6	4400234.6	39°45'06.883"N	80°50'25.567"W	6379.00	328.80	1.65
12478	90.06	323.98	6401.40	6422.92	5492.64	-3331.15	513661.5	4400245.7	39°45'07.242"N	80°50'25.906"W	6423.83	328.76	0.63
12523	90.12	324.27	6401.33	6467.83	5529.10	-3357.52	513653.4	4400256.8	39°45'07.603"N	80°50'26.243"W	6468.68	328.73	0.66

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12567	90.09	324.95	6401.25	6511.76	5564.97	-3383.00	513645.7	4400267.7	39°45'07.958"N	80°50'26.568"W	6512.57	328.70	1.55
12612	90.15	326.11	6401.16	6556.72	5602.07	-3408.47	513637.9	4400279.0	39°45'08.325"N	80°50'26.894"W	6557.50	328.68	2.58
12635	90.12	327.12	6401.10	6579.72	5621.27	-3421.12	513634.1	4400284.9	39°45'08.515"N	80°50'27.055"W	6580.49	328.68	4.39
12660	90.12	327.12	6401.05	6604.72	5642.27	-3434.69	513629.9	4400291.3	39°45'08.723"N	80°50'27.228"W	6605.48	328.67	0.00

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