

51-01619



GASTAR EXPLORATION USA, INC.

Location: Marshall County, WV
 Field: Marshall
 Facility: Armstrong

Slot: Slot #8
 Well: Armstrong_8H
 Wellbore: Armstrong_8H (PWB)



Location Information

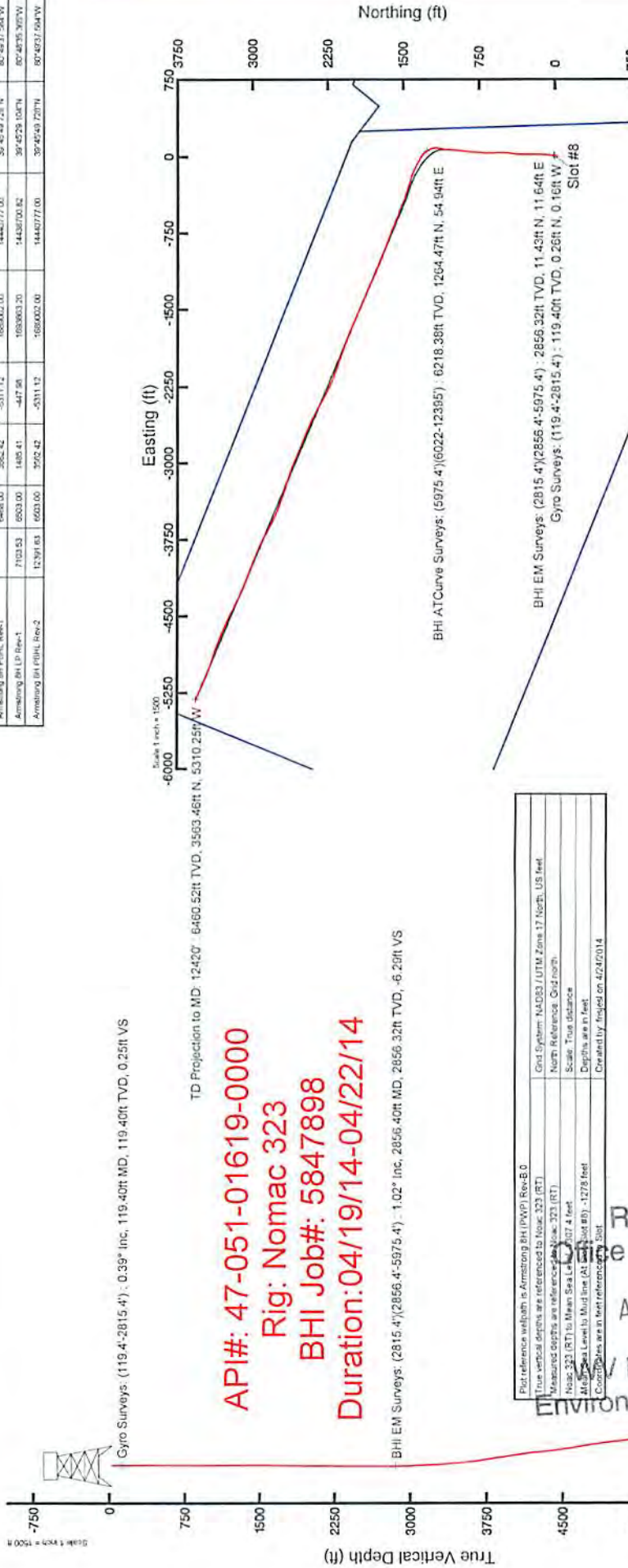
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Armstrong	1694263.000	14437151.000	39°45'13.773"N	80°48'50.287"W
Slot	Local E (ft)	Local N (US ft)	Latitude	Longitude
Slot #8	55.03	48.02	39°45'14.415"N	80°48'29.670"W
Mean Sea Level to Mud line (At Slot: Slot #8)				
Note: 323 (RT) to Mean Sea Level				

Well Profile Data

Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (7/100ft)	VS (ft)
The Oh	5975.00	21.597	3.854	5798.02	1003.20	63.64	0.00	331.08
Pro	6030.00	21.597	3.854	5849.16	1023.40	65.00	0.00	337.67
End of 3D Arc	6258.36	28.000	358.000	6056.39	1110.01	65.96	3.00	373.94
End of 3D Arc	7013.54	83.591	266.796	6497.96	1454.75	-363.62	10.01	600.21
Landing Pt.	7103.53	90.000	293.127	6503.00	1462.41	-447.90	10.01	600.85
BHL	12391.63	50.000	293.127	6503.00	3562.42	-5311.12	0.00	6277.90

Targets

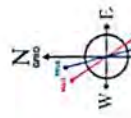
Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Armstrong BH PWB, Rev-1	6486.00	5849.16	-5311.12	-447.90	1089002.00	1444277.00	39°45'49.728"N	80°48'37.544"W
Armstrong BH LP Rev-1	7103.53	6030.00	1480.41	-447.90	1089003.20	14438700.82	39°45'29.104"N	80°48'35.307"W
Armstrong BH PWB, Rev-2	12391.63	6263.66	3562.42	-5311.12	3686002.00	14440771.00	39°45'49.728"N	80°48'37.544"W



API#: 47-051-01619-0000
Rig: Nomac 323
BHI Job#: 5847898
Duration: 04/19/14-04/22/14

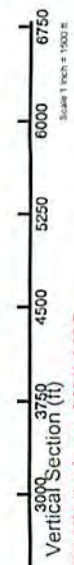
Plot reference wellpath is Armstrong_8H (PWB) Rev-B-0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to Noac 323 (RT)	North Reference: Grid north
Measured depths are referenced to Noac 323 (RT)	Scale: True distance
Note: 323 (RT) to Mean Sea Level is 1278 feet	Depths are in feet
Mean Sea Level to Mud line (At Slot: Slot #8) - 1278 feet	Created by: fojles on 4/24/2014
Coordinates are in feet referenced to Slot	

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10/16/2015

TD Projection to MD: 12420' - 90.18° inc, 12420.00ft MD, 6460.52ft TVD, 6277.51ft VS



Acumath 292.86° with reference 0.00 H, 0.00 E

51-01619

REFERENCE WELLPATH IDENTIFICATION			
Operator	GASTAR EXPLORATION INC.	Slot	Slot #8
Area	Marshall County, WV	Well	Armstrong 8H
Field	Marshall	Wellbore	Armstrong 8H (AWB)
Facility	Armstrong	Wellpath	Armstrong 8H (AWP) Proj: 12,420'
		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]
0.00	0.00	328.49	0.00	0.00	0.00	0.00	516427.0	4400472.1	39°45'14.415"N	80°48'29.670"W	0.00	0.00	0.00
29.40	0.00	328.49	29.40	0.00	0.00	0.00	516427.0	4400472.1	39°45'14.415"N	80°48'29.670"W	0.00	0.00	0.00
119.40	0.39	328.49	119.40	0.25	0.26	-0.16	516427.0	4400472.3	39°45'14.417"N	80°48'29.672"W	0.31	328.49	0.43
219.40	0.48	336.51	219.40	0.83	0.94	-0.50	516426.9	4400472.5	39°45'14.424"N	80°48'29.676"W	1.06	331.64	0.11
319.40	0.40	352.15	319.39	1.31	1.67	-0.72	516426.8	4400472.7	39°45'14.431"N	80°48'29.679"W	1.81	336.63	0.14
419.40	0.53	18.78	419.39	1.52	2.45	-0.62	516426.8	4400473.0	39°45'14.439"N	80°48'29.678"W	2.53	345.83	0.25
519.40	0.35	40.01	519.39	1.46	3.12	-0.27	516426.9	4400473.2	39°45'14.446"N	80°48'29.673"W	3.13	355.00	0.24
619.40	0.34	39.97	619.39	1.29	3.58	0.11	516427.1	4400473.3	39°45'14.450"N	80°48'29.668"W	3.58	1.82	0.01
719.40	0.31	54.47	719.38	1.06	3.97	0.52	516427.2	4400473.4	39°45'14.454"N	80°48'29.663"W	4.00	7.53	0.09
819.40	0.11	49.75	819.38	0.87	4.19	0.82	516427.3	4400473.5	39°45'14.456"N	80°48'29.659"W	4.27	11.06	0.20
919.40	0.36	37.63	919.38	0.75	4.50	1.08	516427.4	4400473.6	39°45'14.459"N	80°48'29.656"W	4.63	13.54	0.25
1019.40	0.23	23.75	1019.38	0.67	4.93	1.36	516427.4	4400473.7	39°45'14.463"N	80°48'29.652"W	5.11	15.38	0.15
1119.40	0.44	55.15	1119.38	0.46	5.33	1.75	516427.6	4400473.9	39°45'14.467"N	80°48'29.647"W	5.61	18.19	0.27
1219.40	0.31	20.59	1219.38	0.26	5.81	2.16	516427.7	4400474.0	39°45'14.472"N	80°48'29.642"W	6.19	20.43	0.26
1319.40	0.43	27.42	1319.38	0.24	6.39	2.43	516427.8	4400474.2	39°45'14.478"N	80°48'29.639"W	6.84	20.82	0.13
1419.40	0.50	45.57	1419.37	0.05	7.03	2.91	516427.9	4400474.4	39°45'14.484"N	80°48'29.632"W	7.61	22.52	0.16
1519.40	0.58	47.58	1519.37	-0.33	7.68	3.60	516428.1	4400474.6	39°45'14.490"N	80°48'29.624"W	8.48	25.12	0.08
1619.40	0.60	65.85	1619.36	-0.90	8.23	4.45	516428.4	4400474.7	39°45'14.496"N	80°48'29.613"W	9.36	28.40	0.19
1719.40	0.55	77.34	1719.36	-1.65	8.55	5.40	516428.7	4400474.8	39°45'14.499"N	80°48'29.601"W	10.11	32.26	0.13
1819.40	0.46	75.82	1819.35	-2.36	8.76	6.25	516428.9	4400474.9	39°45'14.501"N	80°48'29.590"W	10.76	35.54	0.09
1919.40	0.67	93.47	1919.35	-3.23	8.82	7.23	516429.2	4400474.9	39°45'14.502"N	80°48'29.577"W	11.40	39.34	0.27
2019.40	0.69	79.58	2019.34	-4.29	8.89	8.40	516429.6	4400474.9	39°45'14.502"N	80°48'29.562"W	12.23	43.38	0.17
2119.40	0.66	65.01	2119.33	-5.18	9.24	9.52	516429.9	4400475.1	39°45'14.506"N	80°48'29.548"W	13.27	45.83	0.17
2219.40	0.44	55.76	2219.33	-5.77	9.70	10.36	516430.2	4400475.2	39°45'14.510"N	80°48'29.537"W	14.19	46.87	0.24
2319.40	0.36	76.58	2319.33	-6.24	9.99	10.98	516430.4	4400475.3	39°45'14.513"N	80°48'29.529"W	14.85	47.70	0.16

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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]
2419.40	0.02	60.74	2419.33	-6.50	10.07	11.30	516430.5	4400475.3	39°45'14.514"N	80°48'29.525"W	15.14	48.28	0.34
2519.40	0.22	66.54	2519.33	-6.64	10.16	11.49	516430.5	4400475.3	39°45'14.515"N	80°48'29.523"W	15.34	48.52	0.20
2619.40	0.29	22.20	2619.33	-6.77	10.47	11.76	516430.6	4400475.4	39°45'14.518"N	80°48'29.519"W	15.75	48.33	0.20
2719.40	0.12	339.74	2719.33	-6.70	10.80	11.82	516430.6	4400475.5	39°45'14.521"N	80°48'29.518"W	16.01	47.58	0.22
2815.40	0.23	310.07	2815.32	-6.45	11.02	11.64	516430.6	4400475.6	39°45'14.523"N	80°48'29.521"W	16.03	46.57	0.14
2856.40	1.02	10.07	2856.32	-6.29	11.43	11.64	516430.6	4400475.7	39°45'14.527"N	80°48'29.521"W	16.32	45.52	2.26
2887.40	2.35	5.59	2887.31	-6.04	12.34	11.75	516430.6	4400476.0	39°45'14.536"N	80°48'29.519"W	17.04	43.61	4.31
2919.40	3.60	8.65	2919.26	-5.59	13.98	11.97	516430.7	4400476.5	39°45'14.553"N	80°48'29.516"W	18.40	40.56	3.94
2950.40	4.77	7.87	2950.18	-5.02	16.22	12.29	516430.8	4400477.2	39°45'14.575"N	80°48'29.512"W	20.35	37.15	3.78
2982.40	5.50	6.11	2982.05	-4.24	19.07	12.63	516430.9	4400478.0	39°45'14.603"N	80°48'29.508"W	22.87	33.53	2.33
3013.40	6.34	1.63	3012.89	-3.19	22.25	12.84	516430.9	4400479.0	39°45'14.634"N	80°48'29.505"W	25.69	29.99	3.09
3045.40	6.62	0.78	3044.68	-1.86	25.86	12.92	516431.0	4400480.1	39°45'14.670"N	80°48'29.504"W	28.91	26.54	0.92
3076.40	7.31	359.75	3075.45	-0.41	29.62	12.93	516431.0	4400481.3	39°45'14.707"N	80°48'29.504"W	32.32	23.59	2.26
3108.40	7.44	359.55	3107.19	1.21	33.73	12.91	516431.0	4400482.5	39°45'14.748"N	80°48'29.504"W	36.12	20.94	0.41
3139.40	7.44	0.29	3137.93	2.77	37.74	12.90	516431.0	4400483.7	39°45'14.787"N	80°48'29.504"W	39.89	18.87	0.31
3170.40	8.06	2.78	3168.64	4.29	41.92	13.02	516431.0	4400485.0	39°45'14.829"N	80°48'29.502"W	43.90	17.25	2.27
3202.40	8.66	5.37	3200.30	5.78	46.56	13.35	516431.1	4400486.4	39°45'14.875"N	80°48'29.498"W	48.44	16.00	2.21
3234.40	9.47	5.60	3231.90	7.29	51.58	13.83	516431.2	4400488.0	39°45'14.924"N	80°48'29.491"W	53.40	15.01	2.53
3266.40	10.96	5.78	3263.40	8.96	57.23	14.40	516431.4	4400489.7	39°45'14.980"N	80°48'29.484"W	59.01	14.12	4.66
3298.40	11.91	6.18	3294.76	10.81	63.54	15.06	516431.6	4400491.6	39°45'15.042"N	80°48'29.475"W	65.30	13.33	2.98
3330.40	13.07	5.79	3326.00	12.82	70.42	15.78	516431.8	4400493.7	39°45'15.110"N	80°48'29.466"W	72.17	12.63	3.63
3362.40	13.91	4.93	3357.12	15.06	77.85	16.48	516432.0	4400496.0	39°45'15.184"N	80°48'29.457"W	79.58	11.95	2.70
3394.40	14.89	4.86	3388.11	17.52	85.78	17.15	516432.3	4400498.4	39°45'15.262"N	80°48'29.448"W	87.48	11.31	3.06
3426.40	15.63	3.69	3418.99	20.20	94.18	17.78	516432.4	4400500.9	39°45'15.345"N	80°48'29.440"W	95.84	10.69	2.50
3458.40	15.98	2.23	3449.78	23.17	102.88	18.23	516432.6	4400503.6	39°45'15.431"N	80°48'29.434"W	104.48	10.05	1.66
3489.40	16.99	2.55	3479.50	26.25	111.67	18.60	516432.7	4400506.3	39°45'15.518"N	80°48'29.429"W	113.21	9.46	3.27
3521.40	17.96	3.74	3510.02	29.48	121.27	19.13	516432.9	4400509.2	39°45'15.613"N	80°48'29.422"W	122.76	8.96	3.23
3551.40	19.11	4.19	3538.47	32.57	130.78	19.79	516433.1	4400512.1	39°45'15.707"N	80°48'29.413"W	132.27	8.60	3.86
3614.40	20.76	3.52	3597.69	39.57	152.21	21.23	516433.5	4400518.6	39°45'15.918"N	80°48'29.394"W	153.68	7.94	2.64
3677.40	20.17	0.98	3656.72	47.32	174.21	22.10	516433.8	4400525.3	39°45'16.136"N	80°48'29.382"W	175.61	7.23	1.69
3740.40	20.49	359.56	3715.79	55.73	196.10	22.20	516433.8	4400532.0	39°45'16.352"N	80°48'29.380"W	197.35	6.46	0.93

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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]
3804.40	22.08	358.66	3775.42	65.09	219.33	21.83	516433.7	4400539.1	39°45'16.582"N	80°48'29.384"W	220.41	5.68	2.54
3867.40	22.50	1.77	3833.72	74.28	243.22	21.93	516433.7	4400546.3	39°45'16.818"N	80°48'29.383"W	244.20	5.15	1.99
3930.40	21.91	0.57	3892.05	83.08	267.02	22.42	516433.9	4400553.6	39°45'17.053"N	80°48'29.376"W	267.96	4.80	1.18
3993.40	21.19	359.64	3950.64	92.02	290.16	22.46	516433.9	4400560.6	39°45'17.282"N	80°48'29.374"W	291.03	4.43	1.26
4054.40	22.01	0.92	4007.36	100.64	312.61	22.58	516433.9	4400567.5	39°45'17.504"N	80°48'29.372"W	313.43	4.13	1.55
4116.40	21.36	358.88	4064.97	109.57	335.52	22.54	516433.9	4400574.5	39°45'17.730"N	80°48'29.372"W	336.27	3.84	1.61
4179.40	21.92	1.34	4123.53	118.55	358.75	22.59	516433.9	4400581.5	39°45'17.960"N	80°48'29.371"W	359.46	3.60	1.69
4241.40	21.71	5.73	4181.10	126.17	381.73	24.01	516434.3	4400588.5	39°45'18.187"N	80°48'29.352"W	382.48	3.60	2.65
4305.40	21.08	8.88	4240.69	132.44	404.88	26.97	516435.2	4400595.6	39°45'18.415"N	80°48'29.314"W	405.77	3.81	2.05
4367.40	21.56	9.70	4298.44	137.73	427.12	30.61	516436.4	4400602.4	39°45'18.635"N	80°48'29.266"W	428.22	4.10	0.91
4429.40	23.77	7.17	4355.65	143.70	450.75	34.09	516437.4	4400609.6	39°45'18.869"N	80°48'29.221"W	452.04	4.33	3.90
4492.40	23.37	4.54	4413.40	151.06	475.81	36.66	516438.2	4400617.2	39°45'19.116"N	80°48'29.188"W	477.22	4.41	1.79
4555.40	22.87	2.52	4471.34	159.24	500.49	38.19	516438.7	4400624.7	39°45'19.360"N	80°48'29.167"W	501.95	4.36	1.49
4618.40	22.19	1.09	4529.53	167.91	524.62	38.95	516438.9	4400632.1	39°45'19.599"N	80°48'29.157"W	526.06	4.25	1.39
4682.40	22.17	359.53	4588.80	177.18	548.78	39.08	516438.9	4400639.4	39°45'19.837"N	80°48'29.154"W	550.17	4.07	0.92
4745.40	22.30	358.05	4647.11	186.90	572.61	38.58	516438.8	4400646.7	39°45'20.073"N	80°48'29.160"W	573.91	3.85	0.91
4808.40	20.27	356.55	4705.81	196.75	595.45	37.52	516438.5	4400653.7	39°45'20.299"N	80°48'29.173"W	596.63	3.61	3.34
4871.40	19.15	356.01	4765.12	206.26	616.65	36.14	516438.0	4400660.1	39°45'20.508"N	80°48'29.190"W	617.71	3.35	1.80
4934.40	19.92	2.10	4824.50	214.73	637.69	35.81	516437.9	4400666.5	39°45'20.716"N	80°48'29.194"W	638.69	3.21	3.45
4998.40	20.25	1.75	4884.61	222.58	659.66	36.55	516438.2	4400673.2	39°45'20.933"N	80°48'29.184"W	660.67	3.17	0.55
5061.40	20.09	0.11	4943.74	230.69	681.37	36.91	516438.3	4400679.8	39°45'21.148"N	80°48'29.179"W	682.37	3.10	0.93
5124.40	18.72	2.97	5003.17	238.32	702.29	37.45	516438.4	4400686.2	39°45'21.354"N	80°48'29.171"W	703.29	3.05	2.65
5188.40	19.89	4.52	5063.57	245.24	723.40	38.84	516438.9	4400692.6	39°45'21.563"N	80°48'29.153"W	724.44	3.07	2.00
5251.40	22.10	6.54	5122.38	251.94	745.86	41.03	516439.5	4400699.5	39°45'21.785"N	80°48'29.124"W	746.99	3.15	3.69
5314.40	22.67	4.00	5180.63	259.20	769.75	43.23	516440.2	4400706.8	39°45'22.021"N	80°48'29.095"W	770.96	3.22	1.78
5377.40	22.97	2.00	5238.70	267.50	794.14	44.51	516440.6	4400714.2	39°45'22.262"N	80°48'29.078"W	795.39	3.21	1.32
5440.40	20.68	3.27	5297.19	275.61	817.54	45.57	516440.9	4400721.3	39°45'22.493"N	80°48'29.064"W	818.81	3.19	3.71
5503.40	18.93	6.61	5356.46	282.20	838.80	47.38	516441.5	4400727.8	39°45'22.703"N	80°48'29.040"W	840.14	3.23	3.31
5566.40	18.87	6.46	5416.06	287.93	859.07	49.70	516442.2	4400734.0	39°45'22.904"N	80°48'29.010"W	860.51	3.31	0.12
5629.40	19.01	5.23	5475.65	293.92	879.41	51.79	516442.8	4400740.2	39°45'23.105"N	80°48'28.983"W	880.94	3.37	0.67
5692.40	19.57	5.97	5535.11	300.09	900.13	53.82	516443.4	4400746.5	39°45'23.309"N	80°48'28.956"W	901.73	3.42	0.97

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5754.40	20.67	5.49	5593.33	306.37	921.35	55.95	516444.1	4400753.0	39°45'23.519"N	80°48'28.928"W	923.04	3.48	1.79
5818.40	22.06	5.29	5652.93	313.37	944.56	58.13	516444.7	4400760.0	39°45'23.748"N	80°48'28.900"W	946.35	3.52	2.17
5881.40	22.80	6.60	5711.16	320.36	968.47	60.63	516445.5	4400767.3	39°45'23.984"N	80°48'28.867"W	970.36	3.58	1.42
5944.40	21.34	4.15	5769.55	327.46	992.03	62.86	516446.2	4400774.5	39°45'24.217"N	80°48'28.838"W	994.02	3.63	2.74
5975.40	21.60	3.85	5798.40	331.13	1003.34	63.65	516446.4	4400777.9	39°45'24.329"N	80°48'28.827"W	1005.36	3.63	0.91
6022.00	22.00	2.43	5841.66	336.97	1020.62	64.60	516446.7	4400783.2	39°45'24.500"N	80°48'28.815"W	1022.67	3.62	1.42
6097.00	24.27	0.24	5910.63	347.80	1050.08	65.26	516446.9	4400792.2	39°45'24.791"N	80°48'28.806"W	1052.10	3.56	3.24
6145.00	27.44	3.73	5953.82	355.22	1070.98	66.02	516447.1	4400798.5	39°45'24.998"N	80°48'28.795"W	1073.02	3.53	7.32
6192.00	31.22	10.37	5994.80	361.41	1093.79	68.92	516448.0	4400805.5	39°45'25.223"N	80°48'28.758"W	1095.96	3.61	10.60
6240.00	36.13	13.32	6034.74	366.45	1119.81	74.42	516449.7	4400813.4	39°45'25.480"N	80°48'28.686"W	1122.28	3.80	10.78
6287.00	40.80	10.27	6071.53	372.10	1148.42	80.36	516451.5	4400822.1	39°45'25.763"N	80°48'28.610"W	1151.23	4.00	10.72
6335.00	40.07	359.45	6108.11	381.66	1179.34	83.01	516452.3	4400831.6	39°45'26.068"N	80°48'28.575"W	1182.26	4.03	14.69
6386.00	38.34	346.70	6147.69	397.55	1211.20	79.20	516451.2	4400841.3	39°45'26.383"N	80°48'28.623"W	1213.79	3.74	16.14
6430.00	39.50	335.65	6181.97	415.89	1237.27	70.28	516448.4	4400849.2	39°45'26.641"N	80°48'28.736"W	1239.26	3.25	15.98
6478.00	41.96	325.75	6218.38	440.60	1264.47	54.94	516443.8	4400857.5	39°45'26.910"N	80°48'28.932"W	1265.66	2.49	14.39
6527.00	42.52	315.93	6254.69	469.62	1289.94	34.18	516437.4	4400865.3	39°45'27.162"N	80°48'29.197"W	1290.39	1.52	13.51
6573.00	44.15	308.11	6288.18	499.40	1311.01	10.74	516430.3	4400871.7	39°45'27.371"N	80°48'29.496"W	1311.05	0.47	12.19
6620.00	47.27	302.43	6321.00	532.24	1330.38	-16.72	516421.9	4400877.6	39°45'27.563"N	80°48'29.848"W	1330.49	359.28	10.90
6668.00	50.75	299.65	6352.49	568.09	1349.04	-47.77	516412.5	4400883.3	39°45'27.748"N	80°48'30.245"W	1349.88	357.97	8.46
6715.00	54.89	297.61	6380.89	605.34	1366.96	-80.64	516402.5	4400888.7	39°45'27.926"N	80°48'30.665"W	1369.34	356.62	9.46
6762.00	59.52	295.25	6406.34	644.76	1384.52	-116.01	516391.7	4400894.1	39°45'28.100"N	80°48'31.117"W	1389.37	355.21	10.72
6810.00	63.86	293.60	6429.10	686.99	1401.98	-154.48	516380.0	4400899.4	39°45'28.273"N	80°48'31.610"W	1410.46	353.71	9.53
6857.00	67.28	289.71	6448.54	729.75	1417.74	-194.24	516367.8	4400904.2	39°45'28.430"N	80°48'32.118"W	1430.99	352.20	10.47
6904.00	72.46	286.31	6464.71	773.70	1431.36	-236.20	516355.1	4400908.3	39°45'28.565"N	80°48'32.655"W	1450.72	350.63	12.94
6952.00	77.12	286.22	6477.30	819.70	1444.33	-280.65	516341.5	4400912.3	39°45'28.694"N	80°48'33.224"W	1471.34	349.00	9.71
6999.00	79.10	287.65	6486.99	865.44	1457.73	-324.64	516328.1	4400916.4	39°45'28.828"N	80°48'33.787"W	1493.44	347.45	5.16
7047.00	81.44	289.02	6495.10	912.60	1472.61	-369.55	516314.4	4400920.9	39°45'28.976"N	80°48'34.361"W	1518.27	345.91	5.63
7094.00	82.31	290.90	6501.74	959.07	1488.49	-413.28	516301.1	4400925.8	39°45'29.134"N	80°48'34.921"W	1544.80	344.48	4.37
7142.00	84.98	291.41	6507.05	1006.75	1505.71	-457.76	516287.6	4400931.0	39°45'29.305"N	80°48'35.490"W	1573.75	343.09	5.66
7189.00	89.97	292.01	6509.12	1053.68	1523.07	-501.37	516274.3	4400936.3	39°45'29.477"N	80°48'36.048"W	1603.47	341.78	10.69
7237.00	89.97	291.02	6509.15	1101.66	1540.67	-546.03	516260.7	4400941.6	39°45'29.652"N	80°48'36.619"W	1634.57	340.49	2.06

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7332.00	89.69	291.79	6509.43	1196.63	1575.34	-634.47	516233.7	4400952.2	39°45'29.997"N	80°48'37.751"W	1698.31	338.06	0.86
7427.00	89.72	291.44	6509.92	1291.61	1610.34	-722.79	516206.8	4400962.9	39°45'30.344"N	80°48'38.881"W	1765.11	335.83	0.37
7521.00	89.72	291.31	6510.38	1385.57	1644.60	-810.32	516180.1	4400973.3	39°45'30.685"N	80°48'40.001"W	1833.39	333.77	0.14
7615.00	89.63	290.84	6510.91	1479.53	1678.40	-898.03	516153.4	4400983.6	39°45'31.021"N	80°48'41.123"W	1903.55	331.85	0.51
7710.00	90.31	291.45	6510.96	1574.48	1712.67	-986.64	516126.4	4400994.1	39°45'31.361"N	80°48'42.257"W	1976.53	330.06	0.96
7805.00	90.25	293.03	6510.50	1669.47	1748.62	-1074.57	516099.6	4401005.0	39°45'31.718"N	80°48'43.381"W	2052.41	328.43	1.66
7900.00	90.22	293.77	6510.11	1764.47	1786.35	-1161.75	516073.1	4401016.5	39°45'32.093"N	80°48'44.497"W	2130.90	326.96	0.78
7994.00	90.55	293.67	6509.48	1858.45	1824.16	-1247.81	516046.8	4401028.0	39°45'32.468"N	80°48'45.598"W	2210.11	325.63	0.37
8089.00	90.55	292.99	6508.57	1953.45	1861.78	-1335.04	516020.3	4401039.5	39°45'32.842"N	80°48'46.714"W	2290.97	324.36	0.72
8184.00	90.58	293.45	6507.63	2048.44	1899.24	-1422.34	515993.7	4401050.9	39°45'33.214"N	80°48'47.831"W	2372.79	323.17	0.49
8279.00	90.65	294.02	6506.61	2143.42	1937.47	-1509.30	515967.2	4401062.5	39°45'33.594"N	80°48'48.943"W	2455.97	322.08	0.60
8374.00	90.68	293.81	6505.51	2238.40	1975.98	-1596.13	515940.7	4401074.3	39°45'33.976"N	80°48'50.054"W	2540.11	321.07	0.22
8469.00	90.58	293.91	6504.46	2333.38	2014.41	-1683.01	515914.2	4401086.0	39°45'34.358"N	80°48'51.165"W	2624.95	320.12	0.15
8566.00	90.52	291.27	6503.53	2430.36	2051.66	-1772.56	515887.0	4401097.3	39°45'34.728"N	80°48'52.311"W	2711.32	319.17	2.72
8658.00	90.62	290.52	6502.62	2522.31	2084.47	-1858.50	515860.8	4401107.3	39°45'35.054"N	80°48'53.411"W	2792.68	318.28	0.82
8753.00	90.58	290.15	6501.62	2617.21	2117.49	-1947.57	515833.6	4401117.4	39°45'35.382"N	80°48'54.550"W	2876.94	317.39	0.39
8851.00	90.62	288.54	6500.59	2715.02	2149.95	-2040.03	515805.5	4401127.3	39°45'35.704"N	80°48'55.733"W	2963.78	316.50	1.64
8946.00	90.55	290.44	6499.62	2809.84	2181.64	-2129.58	515778.2	4401136.9	39°45'36.019"N	80°48'56.879"W	3048.71	315.69	2.00
9042.00	90.65	294.66	6498.62	2905.81	2218.44	-2218.22	515751.2	4401148.2	39°45'36.385"N	80°48'58.013"W	3137.19	315.00	4.40
9136.00	91.11	298.10	6497.17	2999.61	2260.20	-2302.41	515725.5	4401160.9	39°45'36.799"N	80°48'59.090"W	3226.39	314.47	3.69
9231.00	90.89	299.69	6495.52	3094.07	2306.09	-2385.56	515700.2	4401174.9	39°45'37.255"N	80°49'00.154"W	3317.98	314.03	1.69
9326.00	90.62	299.09	6494.26	3188.44	2352.71	-2468.33	515675.0	4401189.1	39°45'37.717"N	80°49'01.212"W	3409.97	313.63	0.69
9421.00	90.92	296.56	6492.99	3283.07	2397.05	-2552.33	515649.4	4401202.6	39°45'38.157"N	80°49'02.287"W	3501.46	313.20	2.68
9513.00	90.68	294.73	6491.70	3374.95	2436.86	-2635.26	515624.1	4401214.7	39°45'38.552"N	80°49'03.348"W	3589.27	312.76	2.01
9608.00	90.89	292.30	6490.40	3469.92	2474.76	-2722.35	515597.6	4401226.2	39°45'38.928"N	80°49'04.462"W	3679.08	312.27	2.57
9703.00	90.65	291.19	6489.12	3564.90	2509.95	-2810.58	515570.7	4401237.0	39°45'39.278"N	80°49'05.591"W	3768.18	311.77	1.20
9798.00	90.68	293.33	6488.02	3659.88	2545.93	-2898.49	515543.9	4401247.9	39°45'39.635"N	80°49'06.716"W	3857.85	311.30	2.25
9893.00	90.68	293.72	6486.89	3754.87	2583.85	-2985.59	515517.4	4401259.5	39°45'40.012"N	80°49'07.830"W	3948.42	310.87	0.41
9988.00	90.74	289.34	6485.72	3849.81	2618.70	-3073.93	515490.5	4401270.1	39°45'40.358"N	80°49'08.960"W	4038.15	310.43	4.61
10084.00	91.26	286.43	6484.04	3945.42	2648.17	-3165.27	515462.6	4401279.1	39°45'40.651"N	80°49'10.129"W	4126.95	309.92	3.08
10179.00	91.23	287.47	6481.98	4039.89	2675.86	-3256.12	515435.0	4401287.5	39°45'40.926"N	80°49'11.292"W	4214.56	309.41	1.09

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10274.00	91.11	290.03	6480.04	4134.62	2706.39	-3346.05	515407.6	4401296.8	39°45'41.230"N	80°49'12.443"W	4303.56	308.97	2.70
10368.00	90.77	291.62	6478.49	4228.55	2739.80	-3433.90	515380.8	4401307.0	39°45'41.562"N	80°49'13.567"W	4392.97	308.59	1.73
10462.00	90.65	294.20	6477.33	4322.53	2776.39	-3520.47	515354.4	4401318.1	39°45'41.925"N	80°49'14.674"W	4483.53	308.26	2.75
10557.00	90.65	297.78	6476.25	4417.37	2818.01	-3605.84	515328.4	4401330.8	39°45'42.338"N	80°49'15.766"W	4576.38	308.01	3.77
10652.00	90.74	299.81	6475.10	4511.85	2863.76	-3689.08	515303.0	4401344.8	39°45'42.792"N	80°49'16.831"W	4670.17	307.82	2.14
10747.00	90.52	297.29	6474.05	4606.37	2909.16	-3772.52	515277.6	4401358.6	39°45'43.242"N	80°49'17.898"W	4763.94	307.64	2.66
10842.00	90.46	293.13	6473.24	4701.26	2949.61	-3858.45	515251.4	4401370.9	39°45'43.644"N	80°49'18.998"W	4856.73	307.40	4.38
10937.00	90.55	291.21	6472.40	4796.25	2985.46	-3946.42	515224.6	4401381.8	39°45'44.000"N	80°49'20.123"W	4948.45	307.11	2.02
11032.00	90.46	291.49	6471.57	4891.21	3020.05	-4034.89	515197.7	4401392.4	39°45'44.343"N	80°49'21.255"W	5039.95	306.81	0.31
11128.00	90.58	290.67	6470.70	4987.16	3054.57	-4124.47	515170.4	4401402.9	39°45'44.686"N	80°49'22.401"W	5132.41	306.52	0.86
11223.00	90.74	292.59	6469.60	5082.13	3089.59	-4212.77	515143.5	4401413.6	39°45'45.034"N	80°49'23.531"W	5224.26	306.26	2.03
11318.00	90.52	296.35	6468.56	5177.07	3128.93	-4299.21	515117.1	4401425.6	39°45'45.424"N	80°49'24.637"W	5317.27	306.05	3.96
11412.00	90.37	296.96	6467.83	5270.86	3171.10	-4383.22	515091.6	4401438.4	39°45'45.843"N	80°49'25.712"W	5410.03	305.88	0.67
11507.00	90.49	297.49	6467.11	5365.58	3214.56	-4467.69	515065.8	4401451.6	39°45'46.274"N	80°49'26.793"W	5503.97	305.74	0.57
11602.00	90.46	294.49	6466.33	5460.42	3256.18	-4553.07	515039.8	4401464.3	39°45'46.687"N	80°49'27.885"W	5597.60	305.57	3.16
11696.00	90.43	295.00	6465.60	5554.37	3295.53	-4638.44	515013.8	4401476.3	39°45'47.077"N	80°49'28.977"W	5689.96	305.39	0.54
11792.00	90.49	291.94	6464.82	5650.35	3333.75	-4726.48	514987.0	4401488.0	39°45'47.457"N	80°49'30.103"W	5783.90	305.20	3.19
11887.00	90.77	289.89	6463.78	5745.28	3367.66	-4815.21	514959.9	4401498.3	39°45'47.794"N	80°49'31.239"W	5876.00	304.97	2.18
11981.00	90.40	287.05	6462.82	5838.99	3397.44	-4904.36	514932.8	4401507.4	39°45'48.090"N	80°49'32.380"W	5966.18	304.71	3.05
12074.00	90.31	289.63	6462.24	5931.69	3426.70	-4992.62	514905.9	4401516.3	39°45'48.381"N	80°49'33.509"W	6055.46	304.46	2.78
12169.00	90.37	291.85	6461.68	6026.62	3460.34	-5081.46	514878.8	4401526.5	39°45'48.715"N	80°49'34.646"W	6147.78	304.25	2.34
12264.00	90.18	294.52	6461.22	6121.61	3497.73	-5168.78	514852.2	4401537.9	39°45'49.086"N	80°49'35.763"W	6241.03	304.09	2.82
12359.00	90.37	295.22	6460.77	6216.55	3537.69	-5254.97	514825.9	4401550.1	39°45'49.482"N	80°49'36.866"W	6334.82	303.95	0.76
12395.00	90.18	294.90	6460.59	6252.52	3552.94	-5287.58	514816.0	4401554.7	39°45'49.634"N	80°49'37.283"W	6370.39	303.90	1.03
12420.00	90.18	294.90	6460.52	6277.51	3563.46	-5310.25	514809.1	4401558.0	39°45'49.738"N	80°49'37.573"W	6395.08	303.86	0.00

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