



# Gamma Ray

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
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Steven Cano	2017-07-17	2017-07-19	Ty Jackson	2017-07-17	2017-07-19			
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Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2017-07-17 13:01	1	1940.00	Oil Based Mud	9.1	8	N/A	N/A	84.3/15.7	Active Pit	26000	0.00
2017-07-19 13:49	1	6000.00	Oil Based Mud	9.2	9	N/A	N/A	76.5/23.5	Active Pit	25000	0.00
2017-07-19 13:50	1	10300.00	Oil Based Mud	9.2	10	N/A	N/A	81.8/18.2	Active Pit	30000	0.00

Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
1	ATC_SU	14169980	Near Bit VSS	5.93	6.76	7.000	4.330
1	ATC_SU	14169980	Near Bit Inclination	5.93	6.76	7.000	4.330
1	ATC_MWD	1421599	Gamma (single)	2.75	12.93	7.000	3.250
1	ATC_MWD	1421599	Directional (mag)	12.27	22.45	7.000	3.250

Service and Tool Mnemonics

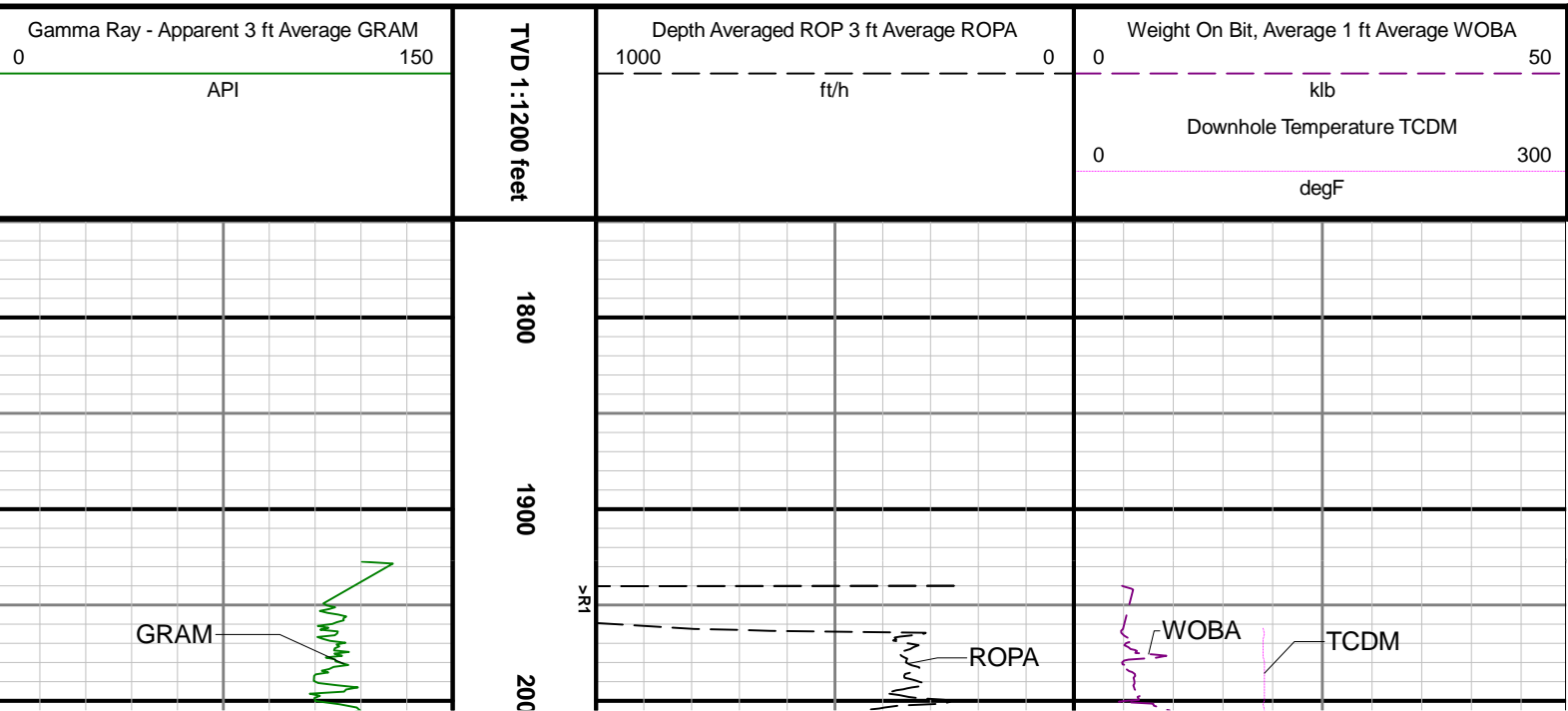
Mnemonic	Name	Description
ATC_SU	ATC_SU	Auto Trak Curve Steering Unit
ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

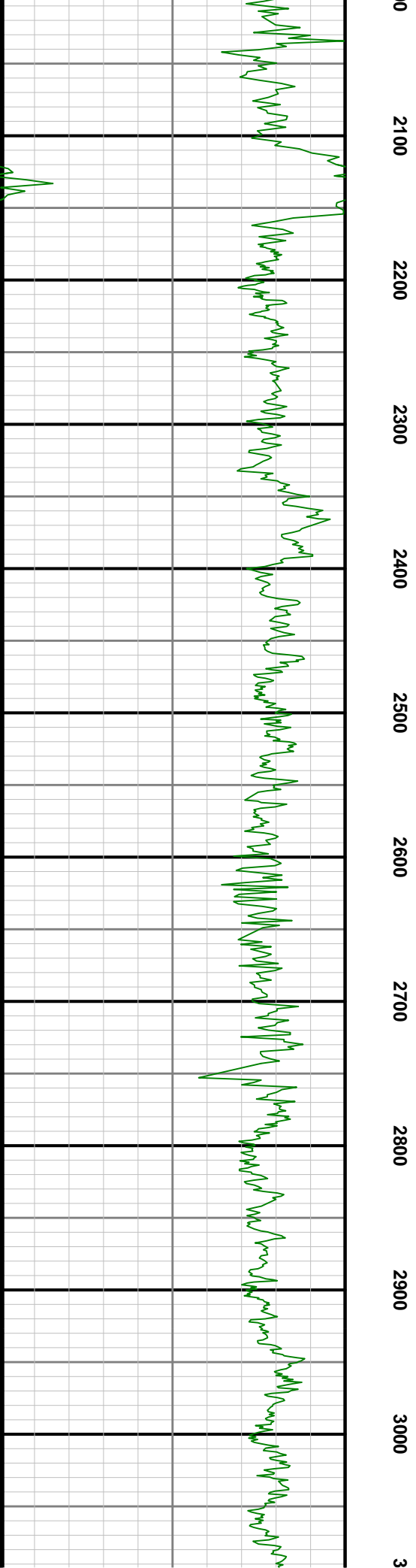
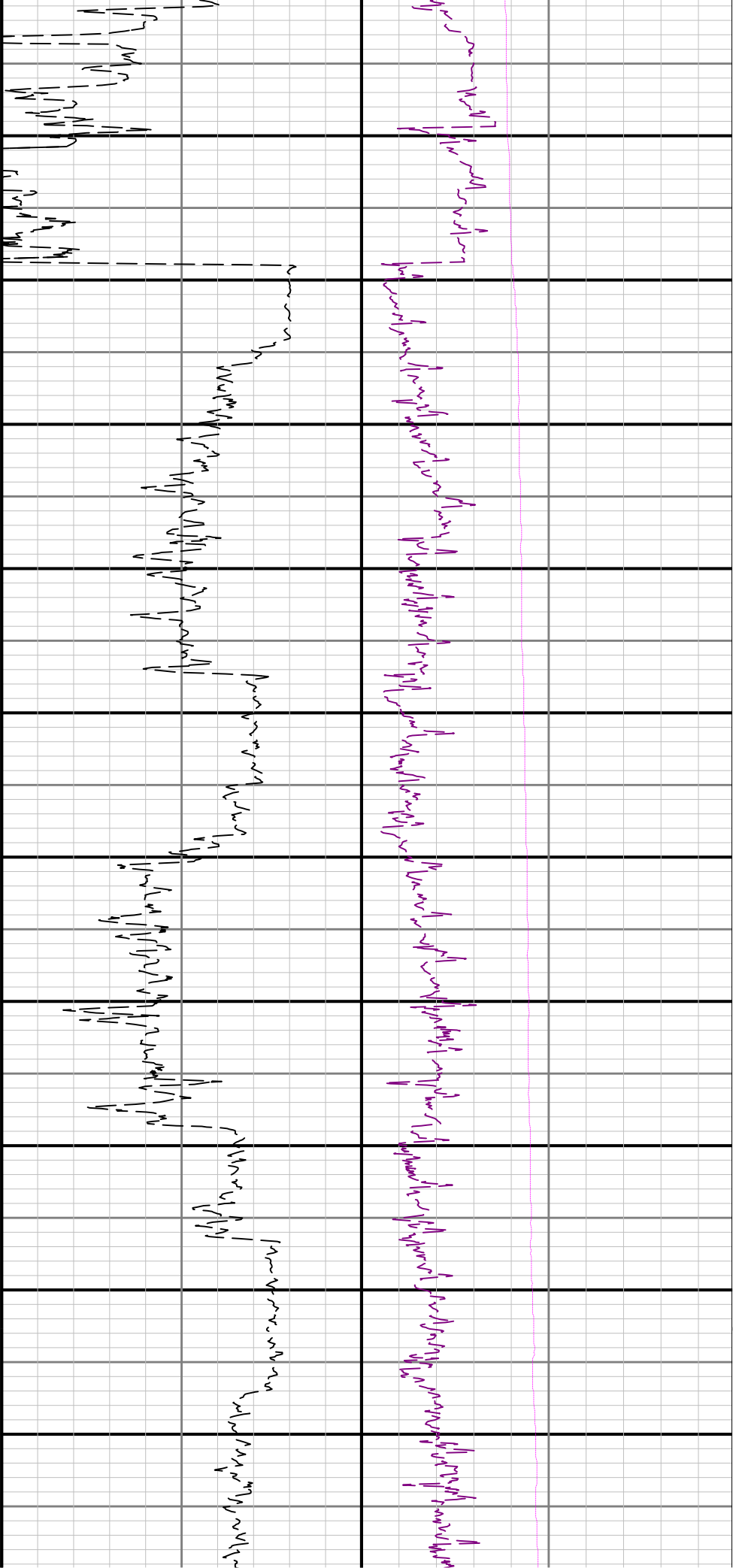
Comments

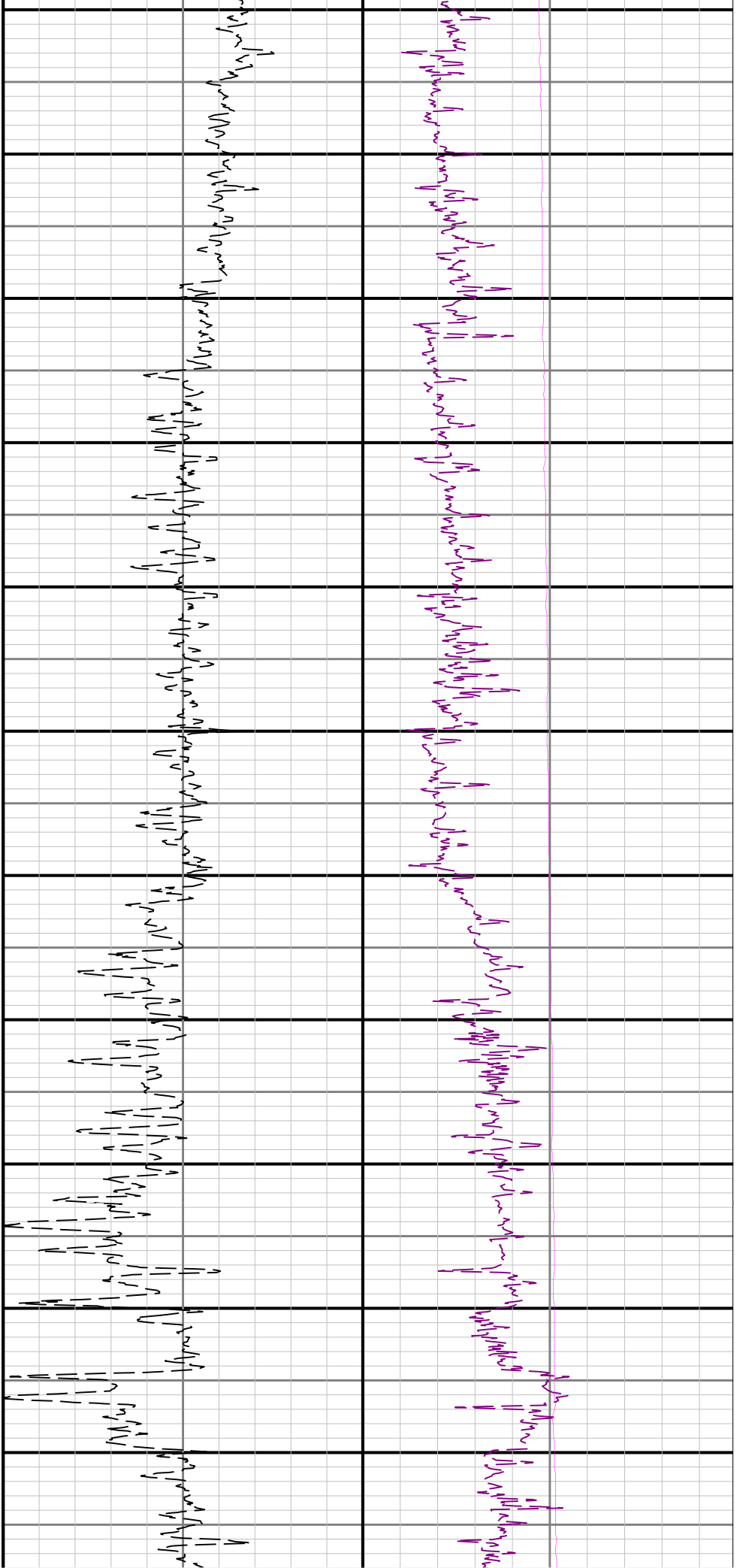
- 1
- Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 2
- Baker Hughes LWD run 1 utilized a 6 3/4 inch Navigamma service (Gamma Ray and Directional) behind a 8 1/2 inch and rotary steerable from 1940 to 11149 feet MD (1940 to 6109 feet TVD).

Remarks

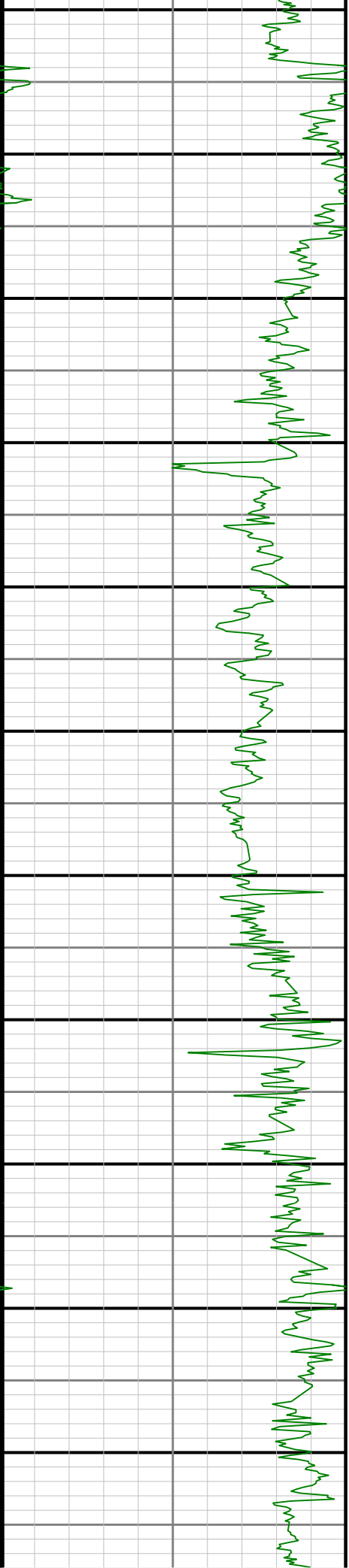
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
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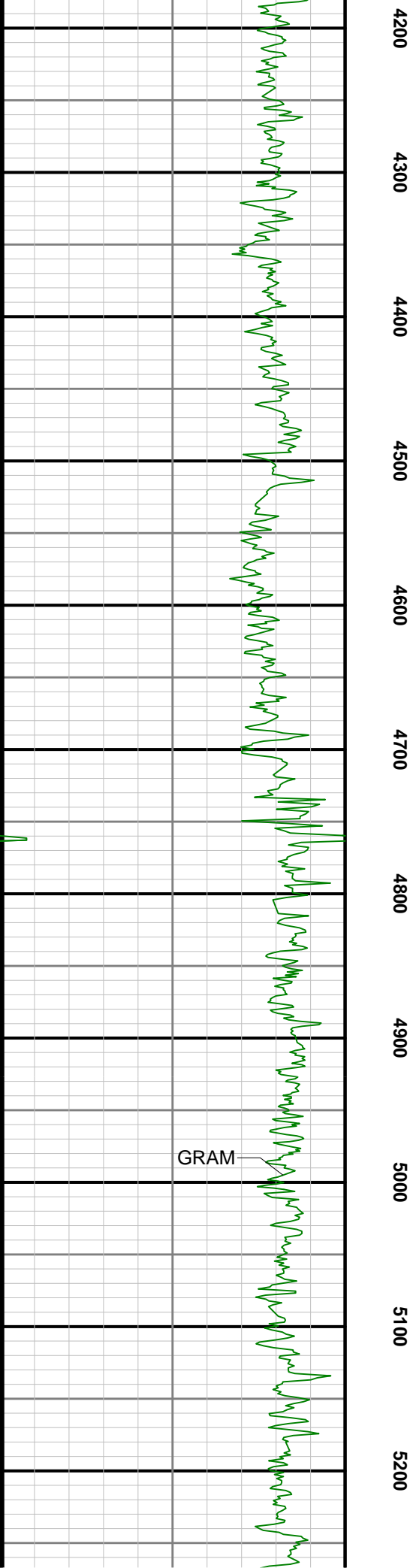
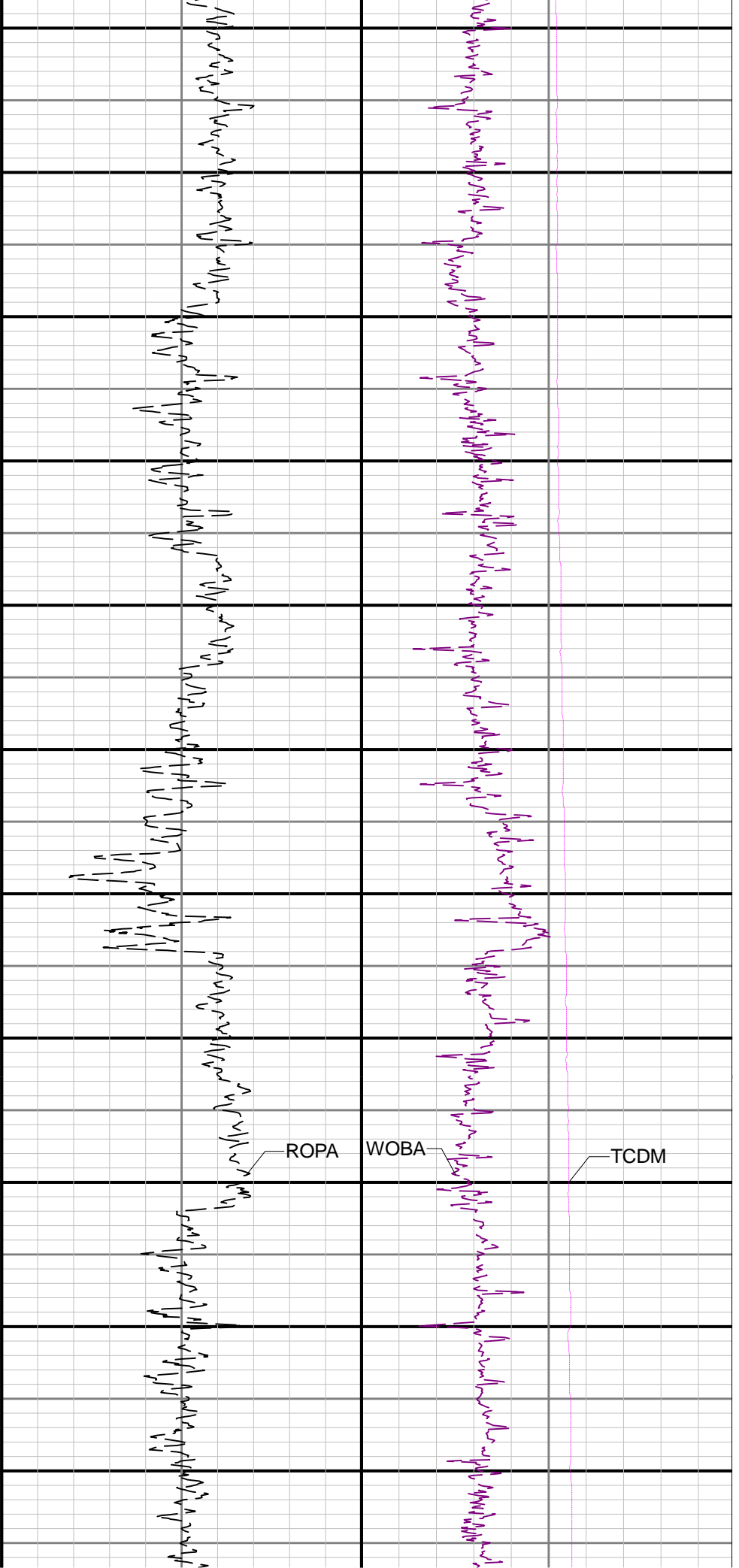


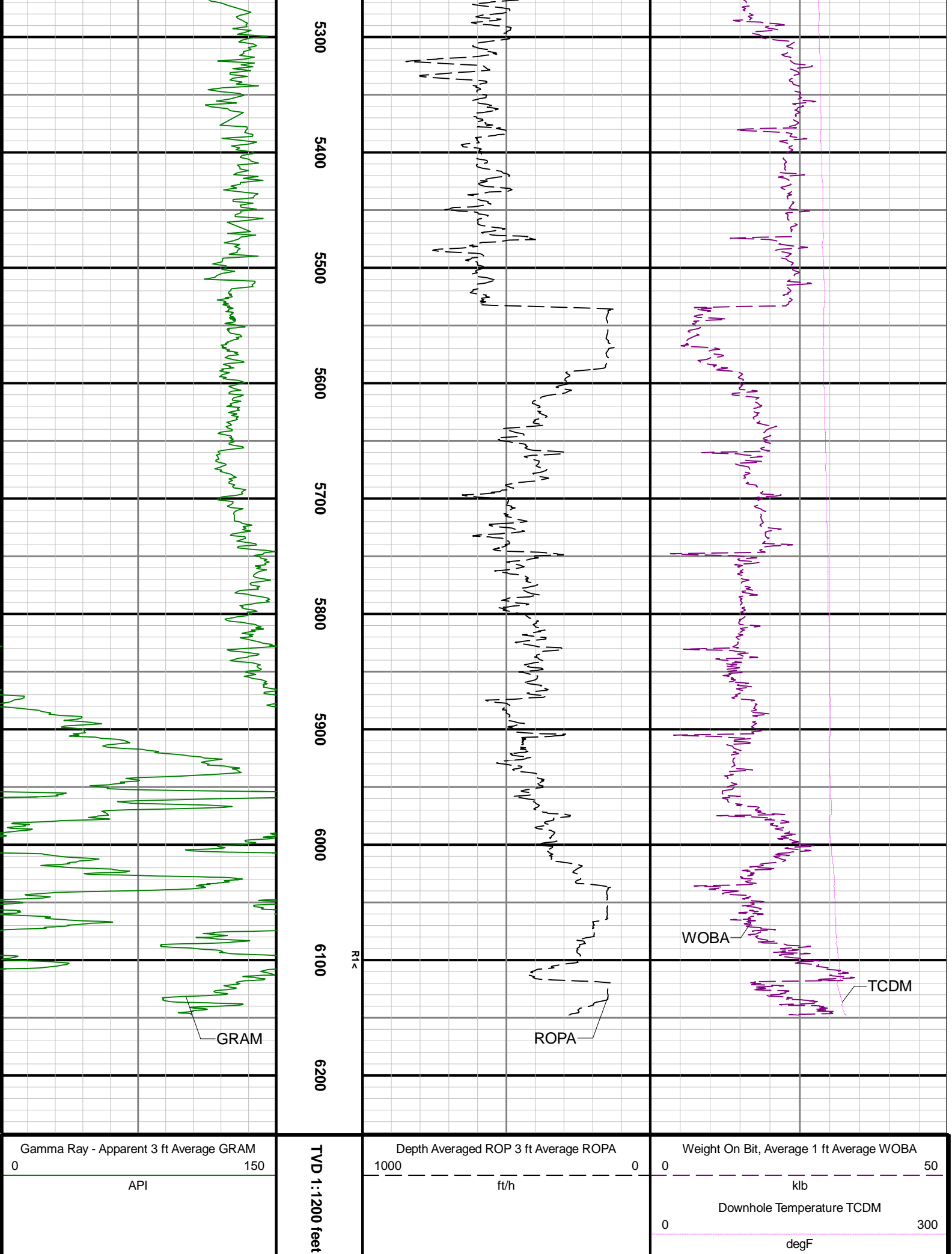




100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100







# Directional Survey Summary

Latitude:	34.1234 N	Longitude:	121.5678 E
North Reference:	Grid	Drill Depth Zero:	Rig Floor
Vertical Datum is:	Mean Sea Level	Vertical Datum to DDZ: (ft)	30.00
Vertical Section North: (m)	0.00	Vertical Section East: (m)	0.00
Vertical Section Azimuth: (deg)	273.12		
Grid Convergence: (deg)	-0.99	Magnetic Declination: (deg)	7.71
Total Correction: (deg)	6.72	TVD Calculation Method:	Minimum Curvature
Magnetic Correction:	Off	Local Magnetic Field: (nT)	52608
Local Magnetic Dip Angle: (deg)	67.08	Local Gravity Field: (m/s2)	9.801

Tie-In / Projection	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	Temperature (degF)	North (ft)	East (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Course Length (ft)	Dog Leg Severity (deg/100ft)	Build Rate (deg/100ft)	Turn Rate (deg/100ft)
Tie-In	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	78.00	0.09	115.73	N/A	-0.03	0.06	78.00	-0.06	78.00	0.12	0.12	148.37
	175.00	0.21	322.10	N/A	0.08	0.01	175.00	-0.01	97.00	0.30	0.12	-158.38
	267.00	0.21	274.24	N/A	0.23	-0.26	267.00	0.27	92.00	0.19	0.00	-52.02
	362.00	0.71	233.13	N/A	-0.11	-0.90	362.00	0.89	95.00	0.60	0.53	-43.27
	456.00	0.41	235.23	N/A	-0.66	-1.64	455.99	1.61	94.00	0.32	-0.32	2.23
	551.00	0.29	213.21	N/A	-1.05	-2.05	550.99	1.99	95.00	0.19	-0.13	-23.18
	645.00	0.71	212.44	N/A	-1.74	-2.50	644.99	2.40	94.00	0.45	0.45	-0.82
	740.00	0.35	204.05	N/A	-2.50	-2.93	739.98	2.79	95.00	0.39	-0.38	-8.83
	834.00	0.28	125.89	N/A	-2.90	-2.86	833.98	2.70	94.00	0.43	-0.07	-83.15
	929.00	0.23	122.44	N/A	-3.14	-2.51	928.98	2.34	95.00	0.06	-0.05	-3.63
	1023.00	0.14	274.00	N/A	-3.23	-2.47	1022.98	2.29	94.00	0.38	-0.10	161.23
	1118.00	0.26	113.00	N/A	-3.31	-2.39	1117.98	2.20	95.00	0.42	0.13	-169.47
	1213.00	0.53	216.59	N/A	-3.74	-2.45	1212.98	2.24	95.00	0.68	0.28	109.04
	1307.00	0.11	173.48	N/A	-4.18	-2.70	1306.98	2.47	94.00	0.49	-0.45	-45.86
	1402.00	0.46	188.11	N/A	-4.65	-2.74	1401.97	2.48	95.00	0.37	0.37	15.40
	1497.00	0.43	197.92	N/A	-5.37	-2.91	1496.97	2.61	95.00	0.09	-0.03	10.33
	1591.00	0.19	214.32	N/A	-5.83	-3.10	1590.97	2.78	94.00	0.27	-0.26	17.45
	1685.00	0.18	145.72	N/A	-6.08	-3.11	1684.97	2.77	94.00	0.22	-0.01	-72.98
	1780.00	0.34	229.81	N/A	-6.39	-3.24	1779.97	2.89	95.00	0.39	0.17	88.52
	1875.00	0.19	142.74	N/A	-6.70	-3.36	1874.97	2.99	95.00	0.40	-0.16	-91.65
	1923.00	0.44	140.68	N/A	-6.90	-3.19	1922.97	2.81	48.00	0.52	0.52	-4.29
	1979.00	0.79	170.46	N/A	-7.45	-2.99	1978.96	2.58	56.00	0.83	0.62	53.18
	2073.00	0.85	178.24	N/A	-8.78	-2.86	2072.96	2.38	94.00	0.13	0.06	8.28
	2168.00	0.90	196.79	N/A	-10.20	-3.06	2167.94	2.50	95.00	0.30	0.05	19.53
	2262.00	1.52	347.41	N/A	-9.69	-3.54	2261.94	3.01	94.00	2.50	0.66	160.23
	2357.00	3.52	1.19	N/A	-5.55	-3.76	2356.84	3.45	95.00	2.18	2.11	14.51
	2451.00	5.30	7.91	N/A	1.64	-3.10	2450.56	3.18	94.00	1.97	1.89	7.15
	2546.00	7.14	358.66	N/A	11.89	-2.63	2545.00	3.28	95.00	2.20	1.94	-9.74
	2640.00	7.83	336.40	N/A	23.60	-5.33	2638.21	6.61	94.00	3.15	0.73	-23.68
	2735.00	8.69	319.52	N/A	34.99	-12.59	2732.24	14.47	95.00	2.70	0.91	-17.77
	2829.00	7.84	299.82	N/A	43.58	-22.76	2825.28	25.10	94.00	3.13	-0.90	-20.96
	2924.00	6.36	293.74	N/A	48.92	-33.20	2919.55	35.81	95.00	1.75	-1.56	-6.40
	3018.00	7.26	328.67	N/A	56.09	-41.06	3012.93	44.05	94.00	4.43	0.96	37.16
	3113.00	7.83	341.48	N/A	67.36	-46.23	3107.11	49.83	95.00	1.86	0.60	13.48
	3207.00	7.69	351.16	N/A	79.64	-49.23	3200.26	53.50	94.00	1.40	-0.15	10.30
	3302.00	8.14	359.99	N/A	92.65	-50.21	3294.35	55.18	95.00	1.36	0.47	9.29
	3396.00	8.31	1.04	N/A	106.10	-50.09	3387.39	55.79	94.00	0.24	0.18	1.12
	3491.00	8.25	4.49	N/A	119.76	-49.43	3481.40	55.88	95.00	0.53	-0.06	3.63
	3586.00	8.39	5.60	N/A	133.45	-48.22	3575.40	55.41	95.00	0.22	0.15	1.17
	3680.00	8.30	2.44	N/A	147.05	-47.26	3668.40	55.20	94.00	0.50	-0.10	-3.36
	3775.00	8.35	356.70	N/A	160.79	-47.37	3762.40	56.05	95.00	0.88	0.05	-6.04
	3870.00	8.30	351.14	N/A	174.45	-48.82	3856.40	58.24	95.00	0.85	-0.05	-5.85
	3964.00	8.18	354.74	N/A	187.82	-50.48	3949.43	60.63	94.00	0.56	-0.13	3.83
	4059.00	8.17	5.60	N/A	201.26	-50.44	4043.47	61.32	95.00	1.62	-0.01	11.43
	4153.00	8.18	6.16	N/A	214.56	-49.07	4136.52	60.68	94.00	0.09	0.01	0.60
	4248.00	8.17	1.25	N/A	228.03	-48.20	4230.56	60.54	95.00	0.73	-0.01	-5.17
	4342.00	8.22	358.37	N/A	241.42	-48.24	4323.60	61.31	94.00	0.44	0.05	-3.06
	4437.00	8.15	353.44	N/A	254.90	-49.21	4417.63	63.01	95.00	0.74	-0.07	-5.19
	4531.00	7.32	350.48	N/A	267.43	-50.96	4510.77	65.44	94.00	0.98	-0.88	-3.15
	4626.00	7.15	344.82	N/A	279.10	-53.51	4605.02	68.62	95.00	0.77	-0.18	-5.96
	4720.00	7.05	339.74	N/A	290.16	-57.04	4698.30	72.74	94.00	0.68	-0.11	-5.40
	4815.00	7.10	341.54	N/A	301.20	-60.91	4792.58	77.22	95.00	0.24	0.05	1.89
	4910.00	7.35	345.63	N/A	312.65	-64.28	4886.82	81.20	95.00	0.60	0.26	4.31
	5004.00	7.26	338.23	N/A	323.99	-67.98	4980.06	85.51	94.00	1.00	-0.10	-7.87
	5099.00	7.41	335.22	N/A	335.13	-72.77	5074.28	90.90	95.00	0.43	0.16	-3.17
	5193.00	7.57	332.87	N/A	346.14	-78.13	5167.48	96.86	94.00	0.37	0.17	-2.50

	5288.00	7.29	328.49	N/A	356.85	-84.14	5261.68	103.44	95.00	0.66	-0.29	-4.61
	5383.00	7.20	329.28	N/A	367.11	-90.33	5355.93	110.18	95.00	0.14	-0.09	0.83
	5477.00	7.12	331.79	N/A	377.31	-96.09	5449.19	116.49	94.00	0.34	-0.09	2.67
	5572.00	7.50	325.36	N/A	387.60	-102.40	5543.42	123.34	95.00	0.95	0.40	-6.77
	5667.00	16.26	295.55	N/A	398.46	-117.97	5636.37	139.48	95.00	10.97	9.22	-31.38
	5761.00	23.80	288.00	N/A	410.02	-147.93	5724.64	170.02	94.00	8.46	8.02	-8.03
	5855.00	30.25	279.59	N/A	419.84	-189.37	5808.36	211.94	94.00	7.96	6.86	-8.95
	5950.00	37.90	273.27	N/A	425.50	-242.19	5887.02	264.99	95.00	8.86	8.05	-6.65
	6044.00	44.53	277.21	N/A	431.29	-303.79	5957.70	326.82	94.00	7.57	7.05	4.19
	6139.00	51.57	273.00	N/A	437.43	-374.11	6021.18	397.36	95.00	8.11	7.41	-4.43
	6233.00	61.04	265.37	N/A	436.03	-452.12	6073.32	475.18	94.00	12.12	10.07	-8.12
	6328.00	71.88	262.99	N/A	427.14	-538.62	6111.21	561.07	95.00	11.64	11.41	-2.51
	6422.00	79.41	266.88	N/A	419.16	-629.25	6134.51	651.13	94.00	8.96	8.01	4.14
	6517.00	86.92	270.20	N/A	416.78	-723.46	6145.81	745.08	95.00	8.63	7.91	3.49
	6612.00	90.46	272.84	N/A	419.30	-818.38	6147.98	839.99	95.00	4.65	3.73	2.78
	6706.00	90.52	273.39	N/A	424.41	-912.24	6147.18	933.99	94.00	0.59	0.06	0.59
	6801.00	90.74	272.88	N/A	429.60	-1007.09	6146.13	1028.98	95.00	0.58	0.23	-0.54
	6895.00	90.52	271.01	N/A	432.79	-1101.03	6145.10	1122.95	94.00	2.00	-0.23	-1.99
	6990.00	90.65	269.31	N/A	433.06	-1196.02	6144.13	1217.82	95.00	1.79	0.14	-1.79
	7084.00	90.55	267.40	N/A	430.36	-1289.97	6143.15	1311.48	94.00	2.03	-0.11	-2.03
	7179.00	90.43	266.22	N/A	425.07	-1384.82	6142.33	1405.90	95.00	1.25	-0.13	-1.24
	7273.00	90.34	265.20	N/A	418.04	-1478.55	6141.70	1499.11	94.00	1.09	-0.10	-1.09
	7368.00	90.34	265.11	N/A	410.02	-1573.21	6141.14	1593.19	95.00	0.09	0.00	-0.09
	7462.00	90.59	266.52	N/A	403.16	-1666.95	6140.38	1686.43	94.00	1.52	0.27	1.50
	7557.00	90.34	266.81	N/A	397.63	-1761.79	6139.60	1780.82	95.00	0.40	-0.26	0.31
	7651.00	90.71	267.87	N/A	393.27	-1855.68	6138.74	1874.34	94.00	1.19	0.39	1.13
	7746.00	90.43	267.69	N/A	389.59	-1950.61	6137.80	1968.92	95.00	0.35	-0.29	-0.19
	7841.00	90.55	267.53	N/A	385.63	-2045.52	6136.99	2063.48	95.00	0.21	0.13	-0.17
	7935.00	90.62	267.26	N/A	381.36	-2139.42	6136.03	2157.00	94.00	0.30	0.07	-0.29
	8030.00	90.49	267.45	N/A	376.97	-2234.31	6135.11	2251.52	95.00	0.24	-0.14	0.20
	8124.00	90.55	266.87	N/A	372.32	-2328.19	6134.25	2345.01	94.00	0.62	0.06	-0.62
	8219.00	90.49	267.86	N/A	367.95	-2423.09	6133.39	2439.52	95.00	1.04	-0.06	1.04
	8313.00	90.46	267.87	N/A	364.45	-2517.02	6132.61	2533.12	94.00	0.03	-0.03	0.01
	8408.00	90.46	268.75	N/A	361.64	-2611.97	6131.85	2627.79	95.00	0.93	0.00	0.93
	8503.00	90.59	270.65	N/A	361.15	-2706.96	6130.98	2722.61	95.00	2.00	0.14	2.00
	8597.00	90.49	271.21	N/A	362.67	-2800.95	6130.09	2816.53	94.00	0.61	-0.11	0.60
	8692.00	90.62	271.75	N/A	365.13	-2895.91	6129.17	2911.49	95.00	0.58	0.14	0.57
	8786.00	90.49	272.09	N/A	368.28	-2989.85	6128.26	3005.47	94.00	0.39	-0.14	0.36
	8881.00	90.68	271.11	N/A	370.93	-3084.81	6127.29	3100.43	95.00	1.05	0.20	-1.03
	8976.00	90.62	268.39	N/A	370.51	-3179.79	6126.21	3195.25	95.00	2.86	-0.06	-2.86
	9070.00	90.52	266.41	N/A	366.25	-3273.69	6125.28	3288.77	94.00	2.11	-0.11	-2.11
	9164.00	90.68	266.37	N/A	360.33	-3367.50	6124.29	3382.12	94.00	0.18	0.17	-0.04
	9259.00	90.52	265.36	N/A	353.48	-3462.24	6123.30	3476.35	95.00	1.08	-0.17	-1.06
	9353.00	89.94	264.22	N/A	344.95	-3555.85	6122.92	3569.36	94.00	1.36	-0.62	-1.21
	9448.00	90.40	261.60	N/A	333.22	-3650.12	6122.64	3662.84	95.00	2.80	0.48	-2.76
	9542.00	90.34	263.41	N/A	320.96	-3743.31	6122.03	3755.23	94.00	1.93	-0.06	1.93
	9637.00	90.34	264.69	N/A	311.11	-3837.79	6121.47	3849.04	95.00	1.35	0.00	1.35
	9731.00	90.37	266.71	N/A	304.07	-3931.52	6120.89	3942.24	94.00	2.15	0.03	2.15
	9826.00	90.15	268.37	N/A	299.99	-4026.43	6120.46	4036.79	95.00	1.76	-0.23	1.75
	9921.00	90.12	270.85	N/A	299.34	-4121.42	6120.23	4131.60	95.00	2.61	-0.03	2.61
	10015.00	90.40	271.67	N/A	301.41	-4215.39	6119.81	4225.55	94.00	0.92	0.30	0.87
	10110.00	90.46	272.22	N/A	304.63	-4310.34	6119.09	4320.53	95.00	0.58	0.06	0.58
	10204.00	90.46	271.90	N/A	308.01	-4404.27	6118.34	4414.51	94.00	0.34	0.00	-0.34
	10299.00	90.52	271.01	N/A	310.42	-4499.24	6117.52	4509.46	95.00	0.94	0.06	-0.94
	10393.00	90.46	270.70	N/A	311.83	-4593.22	6116.72	4603.39	94.00	0.34	-0.06	-0.33
	10488.00	90.37	270.33	N/A	312.68	-4688.22	6116.03	4698.29	95.00	0.40	-0.09	-0.39
	10582.00	90.62	269.70	N/A	312.71	-4782.21	6115.22	4792.14	94.00	0.72	0.27	-0.67
	10677.00	90.71	268.66	N/A	311.35	-4877.20	6114.12	4886.91	95.00	1.10	0.09	-1.09
	10771.00	90.58	268.69	N/A	309.17	-4971.16	6113.06	4980.62	94.00	0.14	-0.14	0.03
	10866.00	90.43	267.35	N/A	305.89	-5066.10	6112.22	5075.24	95.00	1.42	-0.16	-1.41
	10961.00	90.58	267.01	N/A	301.22	-5160.98	6111.39	5169.73	95.00	0.39	0.16	-0.36
	11125.00	90.71	264.55	N/A	289.15	-5324.52	6109.54	5332.36	164.00	1.50	0.08	-1.50
Projection	11149.00	90.71	264.55	N/A	286.87	-5348.40	6109.24	5356.09	24.00	0.00	0.00	0.00