

Minimum Radius of Curvature

API: 42-329-46805 **Well: Casselman 16 1H** **Wellhead Location** **Lat: 32.038614**
Operator: Callon Petroleum **Area: Midland** **Long: -102.228740**
Rig: Nabors X02 **Type: U Lateral** **Magnetic Declination: 6.75**
TD: 20,156' **Plane of Proposal: 165.39**

Measured Depth Ft	Drift Angle Deg	Azimuth Direction Deg	Course Length Ft	TVD Ft	Vertical Section Ft	COORDINATES		CLOSURE		Dog Leg Severity Deg/100'	Build / Drop Deg/100'	Left / Right Deg/100'
						N-S Ft	E-W Ft	Distance FT	Direction Deg			
0.00	0.00	0.00		0.0	0.00	0.00	0.00	0.00	0.00			
191	0.48	304.42	191	191.0	-0.60	0.45	-0.66	0.80	304.42	0.25	0.25	159.38
311	0.59	299.25	120	311.0	-1.41	1.04	-1.61	1.92	302.76	0.10	0.09	-4.31
400	0.59	270.79	89	400.0	-1.85	1.27	-2.47	2.78	297.17	0.33	0.00	-31.98
498	1.43	287.61	98	498.0	-2.64	1.65	-4.14	4.46	291.67	0.90	0.86	17.16
592	2.53	283.80	94	591.9	-4.25	2.50	-7.27	7.69	288.93	1.18	1.17	-4.05
687	4.05	274.50	95	686.8	-6.35	3.26	-12.66	13.07	284.44	1.69	1.60	-9.79
781	5.52	280.07	94	780.4	-9.32	4.31	-20.42	20.87	281.92	1.64	1.56	5.93
876	5.70	280.93	95	875.0	-13.26	6.00	-29.55	30.15	281.48	0.21	0.19	0.91
971	5.72	280.21	95	969.5	-17.28	7.74	-38.84	39.60	281.27	0.08	0.02	-0.76
1065	5.74	279.54	94	1063.0	-21.17	9.35	-48.08	48.98	281.00	0.07	0.02	-0.71
1160	5.62	278.83	95	1157.6	-24.97	10.85	-57.37	58.38	280.71	0.15	-0.13	-0.75
1254	5.01	277.59	94	1251.2	-28.35	12.10	-65.98	67.08	280.39	0.66	-0.65	-1.32
1349	4.82	274.99	95	1345.8	-31.25	12.99	-74.07	75.20	279.95	0.31	-0.20	-2.74
1538	3.52	273.97	189	1534.3	-35.77	14.08	-87.77	88.89	279.12	0.69	-0.69	-0.54
1603	3.54	271.45	65	1599.2	-36.96	14.27	-91.77	92.87	278.84	0.24	0.03	-3.88
1728	2.76	270.48	125	1724.0	-38.81	14.40	-98.63	99.68	278.30	0.63	-0.62	-0.78
1823	3.12	278.48	95	1818.9	-40.42	14.80	-103.48	104.53	278.14	0.57	0.38	8.42
1917	4.72	292.56	94	1912.6	-43.76	16.66	-109.58	110.84	278.64	1.97	1.70	14.98
2012	6.24	294.93	95	2007.2	-49.41	20.33	-117.87	119.61	279.79	1.62	1.60	2.49
2107	8.00	291.44	95	2101.5	-56.59	24.93	-128.71	131.10	280.96	1.91	1.85	-3.67
2202	9.94	292.88	95	2195.3	-65.47	30.53	-142.42	145.65	282.10	2.06	2.04	1.52
2296	10.73	294.25	94	2287.8	-75.89	37.28	-157.87	162.21	283.29	0.88	0.84	1.46
2391	11.30	291.46	95	2381.0	-86.92	44.32	-174.60	180.13	284.24	0.82	0.60	-2.94
2486	11.65	289.62	95	2474.1	-97.80	50.94	-192.29	198.93	284.84	0.53	0.37	-1.94
2581	11.26	289.12	95	2567.2	-108.35	57.20	-210.09	217.74	285.23	0.42	-0.41	-0.53
2675	11.05	289.62	94	2659.5	-118.51	63.23	-227.25	235.88	285.55	0.25	-0.22	0.53
2770	10.85	289.93	95	2752.7	-128.70	69.34	-244.23	253.88	285.85	0.22	-0.21	0.33
2864	10.56	287.88	94	2845.1	-138.34	75.00	-260.74	271.32	286.05	0.51	-0.31	-2.18
2959	10.63	283.88	95	2938.5	-147.20	79.77	-277.54	288.77	286.04	0.78	0.07	-4.21
3054	10.81	281.62	95	3031.8	-155.31	83.67	-294.77	306.41	285.85	0.48	0.19	-2.38
3149	11.13	280.45	95	3125.1	-163.14	87.13	-312.51	324.43	285.58	0.41	0.34	-1.23
3243	10.71	279.58	94	3217.4	-170.56	90.23	-330.05	342.16	285.29	0.48	-0.45	-0.93
3338	10.36	280.79	95	3310.8	-177.84	93.29	-347.14	359.46	285.04	0.44	-0.37	1.27
3433	10.90	278.62	95	3404.2	-185.05	96.24	-364.41	376.91	284.79	0.71	0.57	-2.28
3528	11.90	277.38	95	3497.3	-192.26	98.84	-383.01	395.56	284.47	1.08	1.05	-1.31
3625	11.43	277.20	97	3592.3	-199.57	101.33	-402.46	415.02	284.13	0.49	-0.48	-0.19
3721	10.95	277.85	96	3686.4	-206.59	103.77	-420.93	433.53	283.85	0.52	-0.50	0.68
3817	10.66	278.59	96	3780.7	-213.57	106.34	-438.74	451.45	283.62	0.33	-0.30	0.77
3913	11.22	279.90	96	3875.0	-220.94	109.27	-456.72	469.61	283.46	0.64	0.58	1.36
4008	11.87	283.01	95	3968.1	-229.31	113.06	-475.35	488.61	283.38	0.95	0.68	3.27
4103	12.03	283.67	94	4060.0	-238.43	117.55	-494.29	508.07	283.38	0.22	0.17	0.70
4197	12.32	284.50	95	4152.9	-248.05	122.43	-513.72	528.11	283.40	0.36	0.31	0.87
4291	11.90	285.00	94	4244.8	-257.72	127.45	-532.79	547.82	283.45	0.46	-0.45	0.53
4386	11.25	284.68	95	4337.9	-267.09	132.33	-551.21	566.88	283.50	0.69	-0.68	-0.34
4481	10.46	284.52	95	4431.2	-275.82	136.84	-568.53	584.76	283.53	0.83	-0.83	-0.17
4576	11.44	283.94	95	4524.5	-284.52	141.28	-586.02	602.81	283.55	1.04	1.03	-0.61
4670	12.27	284.46	94	4616.4	-293.83	146.02	-604.74	622.12	283.57	0.89	0.88	0.55
4765	11.70	284.49	95	4709.4	-303.42	150.95	-623.84	641.84	283.60	0.60	-0.60	0.03
4860	11.23	285.61	95	4802.5	-312.76	155.85	-642.08	660.72	283.64	0.55	-0.49	1.18
4954	10.88	285.29	94	4894.7	-321.79	160.65	-659.45	678.73	283.69	0.38	-0.37	-0.34
5144	12.38	284.70	190	5080.8	-340.70	170.55	-696.45	717.03	283.76	0.79	0.79	-0.31
5238	12.75	284.95	94	5172.6	-350.75	175.78	-716.22	737.47	283.79	0.40	0.39	0.27
5333	12.37	285.70	95	5265.3	-361.06	181.24	-736.14	758.12	283.83	0.44	-0.40	0.79
5427	12.24	286.20	94	5357.1	-371.24	186.74	-755.40	778.14	283.89	0.18	-0.14	0.53
5522	11.94	287.14	95	5450.0	-381.57	192.45	-774.46	798.02	283.95	0.38	-0.32	0.99
5617	11.42	287.67	95	5543.1	-391.77	198.20	-792.82	817.21	284.04	0.56	-0.55	0.56
5711	10.87	287.84	94	5635.3	-401.49	203.74	-810.12	835.35	284.12	0.59	-0.59	0.18

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TD: 20,156' **Plane of Proposal: 165.39**

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						N-S Ft	E-W Ft	Distance FT	Direction Deg			
5806	10.57	289.84	95	5728.6	-411.23	209.44	-826.84	852.96	284.21	0.50	-0.32	2.11
5900	9.24	286.99	94	5821.2	-420.06	214.57	-842.17	869.08	284.29	1.51	-1.41	-3.03
5995	7.78	284.25	95	5915.2	-427.16	218.38	-855.70	883.13	284.32	1.59	-1.54	-2.88
6090	6.35	284.44	95	6009.5	-432.82	221.28	-867.02	894.81	284.32	1.51	-1.51	0.20
6184	6.11	283.87	94	6102.9	-437.73	223.77	-876.91	905.01	284.32	0.26	-0.26	-0.61
6279	5.58	282.08	95	6197.4	-442.21	225.95	-886.33	914.68	284.30	0.59	-0.56	-1.88
6374	3.94	277.33	95	6292.1	-445.51	227.33	-894.09	922.54	284.27	1.77	-1.73	-5.00
6469	2.56	277.65	95	6386.9	-447.53	228.03	-899.43	927.88	284.23	1.45	-1.45	0.34
6563	0.84	248.06	94	6480.9	-448.24	228.05	-902.15	930.53	284.19	2.00	-1.83	-31.48
6658	0.48	180.68	95	6575.9	-447.76	227.40	-902.80	931.00	284.14	0.83	-0.38	-70.93
6848	0.31	163.26	190	6765.9	-446.48	226.11	-902.66	930.55	284.06	0.11	-0.09	-9.17
7037	0.58	150.01	189	6954.9	-445.05	224.79	-902.03	929.62	283.99	0.15	0.14	-7.01
7131	0.58	157.19	94	7048.9	-444.12	223.94	-901.61	929.01	283.95	0.08	0.00	7.64
7226	0.58	148.22	95	7143.9	-443.18	223.09	-901.17	928.38	283.90	0.10	0.00	-9.44
7320	0.44	147.92	94	7237.9	-442.39	222.38	-900.73	927.78	283.87	0.15	-0.15	-0.32
7415	0.41	153.26	95	7332.9	-441.71	221.76	-900.38	927.29	283.84	0.05	-0.03	5.62
7510	0.55	137.00	95	7427.9	-440.97	221.13	-899.92	926.69	283.81	0.20	0.15	-17.12
7604	0.73	134.09	94	7521.8	-440.06	220.38	-899.18	925.80	283.77	0.19	0.19	-3.10
7699	0.90	139.23	95	7616.8	-438.88	219.39	-898.26	924.67	283.73	0.19	0.18	5.41
7794	0.92	115.03	95	7711.8	-437.72	218.51	-897.08	923.31	283.69	0.40	0.02	-25.47
7889	1.02	76.41	95	7806.8	-437.22	218.38	-895.57	921.81	283.70	0.68	0.11	-40.65
7983	0.94	65.90	94	7900.8	-437.33	218.89	-894.05	920.46	283.76	0.21	-0.09	-11.18
8078	0.83	58.61	95	7995.8	-437.66	219.57	-892.75	919.36	283.82	0.17	-0.12	-7.67
8172	0.60	36.75	94	8089.8	-438.16	220.32	-891.88	918.69	283.88	0.38	-0.24	-23.26
8267	0.61	27.72	95	8184.8	-438.85	221.17	-891.34	918.37	283.94	0.10	0.01	-9.51
8361	1.00	54.17	94	8278.8	-439.51	222.09	-890.45	917.73	284.00	0.56	0.41	28.14
8456	1.46	53.10	95	8373.7	-440.27	223.30	-888.81	916.43	284.10	0.48	0.48	-1.13
8551	1.39	42.68	95	8468.7	-441.35	224.88	-887.06	915.12	284.23	0.28	-0.07	-10.97
8834	0.33	336.52	283	8751.7	-444.01	228.15	-885.06	913.99	284.45	0.46	-0.37	103.83
8929	0.28	312.39	95	8846.7	-444.48	228.55	-885.34	914.36	284.48	0.14	-0.05	-25.40
9024	0.36	0.80	95	8941.7	-444.96	229.01	-885.50	914.64	284.50	0.29	0.08	-327.99
9118	0.34	13.35	94	9035.7	-445.49	229.58	-885.44	914.71	284.54	0.08	-0.02	13.35
9161	0.56	25.51	43	9078.7	-445.77	229.89	-885.32	914.68	284.56	0.55	0.51	28.28
9266	1.05	6.33	105	9183.7	-447.06	231.31	-884.99	914.72	284.65	0.53	0.47	-18.27
9361	2.98	150.09	95	9278.6	-445.49	230.03	-883.66	913.11	284.59	4.08	2.03	151.33
9455	14.48	164.29	94	9371.4	-431.33	216.56	-879.24	905.52	283.84	12.35	12.23	15.11
9550	26.62	166.19	95	9460.2	-398.05	184.33	-870.92	890.21	281.95	12.80	12.78	2.00
9644	33.86	171.04	94	9541.3	-350.86	137.95	-861.80	872.77	279.09	8.12	7.70	5.16
9739	36.30	168.60	95	9619.1	-296.44	84.23	-852.12	856.27	275.65	2.96	2.57	-2.57
9833	46.27	164.76	94	9689.6	-234.53	24.02	-837.65	837.99	271.64	10.94	10.61	-4.09
9928	56.13	164.88	95	9749.1	-160.59	-47.35	-818.29	819.66	266.69	10.38	10.38	0.13
10022	65.02	166.76	94	9795.2	-78.81	-126.65	-798.31	808.30	260.99	9.62	9.46	2.00
10117	72.65	165.29	95	9829.5	9.71	-212.55	-776.91	805.46	254.70	8.16	8.03	-1.55
10211	81.51	163.92	94	9850.5	101.23	-300.79	-752.59	810.47	248.21	9.53	9.43	-1.46
10306	88.45	166.02	95	9858.8	195.80	-392.13	-728.08	826.96	241.69	7.63	7.31	2.21
10400	89.25	165.01	94	9860.7	289.78	-483.12	-704.57	854.30	235.56	1.37	0.85	-1.07
10495	91.07	166.27	95	9860.4	384.77	-575.14	-681.01	891.38	229.82	2.33	1.92	1.33
10590	92.16	165.50	95	9857.8	479.73	-667.24	-657.85	937.00	224.59	1.40	1.15	-0.81
10684	92.02	165.44	94	9854.3	573.66	-758.17	-634.28	988.50	219.92	0.16	-0.15	-0.06
10779	90.61	168.97	95	9852.2	668.57	-850.77	-613.25	1048.76	215.78	4.00	-1.48	3.72
10874	93.17	168.84	95	9849.0	763.34	-943.94	-594.98	1115.81	212.22	2.70	2.69	-0.14
10969	90.64	169.48	95	9845.9	858.07	-1037.18	-577.13	1186.94	209.09	2.75	-2.66	0.67
11063	90.73	168.29	94	9844.7	951.89	-1129.41	-559.01	1260.18	206.33	1.27	0.10	-1.27
11158	87.45	167.51	95	9846.2	1046.77	-1222.27	-539.10	1335.88	203.80	3.55	-3.45	-0.82
11253	88.40	167.35	95	9849.7	1141.65	-1314.94	-518.44	1413.45	201.52	1.01	1.00	-0.17
11347	89.43	166.56	94	9851.5	1235.59	-1406.49	-497.23	1491.80	199.47	1.38	1.10	-0.84
11442	90.12	165.63	95	9851.8	1330.58	-1498.71	-474.40	1572.00	197.56	1.22	0.73	-0.98
11536	91.88	165.72	94	9850.2	1424.56	-1589.76	-451.15	1652.54	195.84	1.87	1.87	0.10

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11631	89.72	165.40	95	9848.9	1519.55	-1681.75	-427.46	1735.22	194.26	2.30	-2.27	-0.34
11725	89.57	164.65	94	9849.5	1613.54	-1772.55	-403.17	1817.83	192.81	0.81	-0.16	-0.80
11820	90.81	165.32	95	9849.1	1708.54	-1864.31	-378.56	1902.35	191.48	1.48	1.31	0.71
11915	92.68	165.06	95	9846.2	1803.49	-1956.11	-354.29	1987.93	190.27	1.99	1.97	-0.27
12010	91.04	164.99	95	9843.2	1898.43	-2047.83	-329.75	2074.21	189.15	1.73	-1.73	-0.07
12104	89.92	165.14	94	9842.4	1992.43	-2138.65	-305.53	2160.36	188.13	1.20	-1.19	0.16
12199	91.73	165.34	95	9841.0	2087.41	-2230.50	-281.33	2248.17	187.19	1.92	1.91	0.21
12293	89.23	164.63	94	9840.2	2181.40	-2321.28	-256.98	2335.46	186.32	2.76	-2.66	-0.76
12387	90.47	164.29	94	9840.5	2275.39	-2411.84	-231.80	2422.95	185.49	1.37	1.32	-0.36
12482	89.52	165.30	95	9840.5	2370.38	-2503.51	-206.88	2512.05	184.72	1.46	-1.00	1.06
12576	91.71	164.44	94	9839.5	2464.36	-2594.24	-182.35	2600.64	184.02	2.50	2.33	-0.91
12670	89.87	165.13	94	9838.2	2558.34	-2684.93	-157.68	2689.56	183.36	2.09	-1.96	0.73
12764	90.18	164.88	94	9838.1	2652.34	-2775.73	-133.36	2778.94	182.75	0.42	0.33	-0.27
12858	91.50	164.16	94	9836.8	2746.32	-2866.31	-108.28	2868.36	182.16	1.60	1.40	-0.77
12953	93.81	163.81	95	9832.4	2841.18	-2957.52	-82.10	2958.66	181.59	2.46	2.43	-0.37
13047	89.58	167.86	94	9829.6	2935.10	-3048.58	-59.12	3049.16	181.11	6.23	-4.50	4.31
13141	88.77	169.05	94	9830.9	3028.95	-3140.67	-40.31	3140.93	180.74	1.53	-0.86	1.27
13235	90.90	169.17	94	9831.2	3122.75	-3232.97	-22.55	3233.05	180.40	2.27	2.27	0.13
13329	89.06	166.35	94	9831.2	3216.65	-3324.82	-2.63	3324.82	180.05	3.58	-1.96	-3.00
13423	89.17	165.56	94	9832.7	3310.63	-3416.00	20.18	3416.06	179.66	0.85	0.12	-0.84
13479	89.51	165.76	56	9833.3	3366.63	-3470.25	34.05	3470.42	179.44	0.70	0.61	0.36
13574	90.07	165.31	95	9833.7	3461.63	-3562.24	57.78	3562.71	179.07	0.76	0.59	-0.47
13668	90.13	165.88	94	9833.5	3555.63	-3653.28	81.17	3654.18	178.73	0.61	0.06	0.61
13762	92.20	170.15	94	9831.6	3649.48	-3745.19	100.68	3746.54	178.46	5.05	2.20	4.54
13856	92.89	172.17	94	9827.4	3742.91	-3837.97	115.11	3839.70	178.28	2.27	0.73	2.15
13950	92.32	183.33	94	9823.1	3834.49	-3931.66	118.79	3933.45	178.27	11.88	-0.61	11.87
14045	90.79	195.85	95	9820.5	3920.93	-4025.10	103.00	4026.42	178.53	13.27	-1.61	13.18
14140	94.99	207.22	95	9815.7	3997.42	-4113.20	68.25	4113.77	179.05	12.74	4.42	11.97
14234	93.79	214.69	94	9808.5	4062.98	-4193.51	20.07	4193.56	179.73	8.03	-1.28	7.95
14329	92.93	218.10	95	9803.0	4122.65	-4269.84	-36.19	4269.99	180.49	3.70	-0.91	3.59
14424	92.24	224.84	95	9798.7	4175.57	-4340.91	-99.00	4342.04	181.31	7.12	-0.73	7.09
14518	89.42	230.79	94	9797.3	4219.06	-4403.99	-168.61	4407.22	182.19	7.00	-3.00	6.33
14612	94.15	236.87	94	9794.4	4253.56	-4459.40	-244.40	4466.10	183.14	8.19	5.03	6.47
14707	89.39	243.64	95	9791.5	4278.33	-4506.47	-326.77	4518.30	184.15	8.71	-5.01	7.13
14802	85.28	249.27	95	9795.9	4293.06	-4544.36	-413.71	4563.15	185.20	7.33	-4.33	5.93
14896	88.84	251.49	94	9800.7	4301.26	-4575.87	-502.12	4603.34	186.26	4.46	3.79	2.36
14991	91.32	257.78	95	9800.6	4302.51	-4601.03	-593.67	4639.17	187.35	7.12	2.61	6.62
15086	86.79	269.18	95	9802.1	4289.17	-4611.80	-687.86	4662.82	188.48	12.91	-4.77	12.00
15180	91.66	277.69	94	9803.4	4260.09	-4606.17	-781.57	4672.01	189.63	10.43	5.18	9.05
15274	85.68	284.10	94	9805.6	4219.67	-4588.43	-873.76	4670.89	190.78	9.32	-6.36	6.82
15369	87.17	286.98	95	9811.5	4172.05	-4563.03	-965.10	4663.98	191.94	3.41	1.57	3.03
15464	90.74	296.47	95	9813.2	4115.84	-4527.92	-1053.22	4648.79	193.09	10.67	3.76	9.99
15558	88.35	307.98	94	9814.0	4047.40	-4477.88	-1132.60	4618.90	194.19	12.50	-2.54	12.24
15653	88.08	315.43	95	9817.0	3968.45	-4414.75	-1203.44	4575.84	195.25	7.84	-0.28	7.84
15748	90.15	318.30	95	9818.4	3885.00	-4345.45	-1268.37	4526.77	196.27	3.72	2.18	3.02
15842	88.56	328.63	94	9819.5	3797.93	-4270.03	-1324.25	4470.66	197.23	11.12	-1.69	10.99
15937	88.86	339.56	95	9821.6	3704.94	-4184.73	-1365.68	4401.93	198.07	11.51	0.32	11.51
16031	89.20	339.81	94	9823.2	3611.41	-4096.58	-1398.31	4328.66	198.85	0.45	0.36	0.27
16126	89.18	337.21	95	9824.6	3517.12	-4008.21	-1433.11	4256.70	199.67	2.74	-0.02	-2.74
16221	89.61	337.45	95	9825.6	3423.06	-3920.55	-1469.72	4186.98	200.55	0.52	0.45	0.25
16316	88.61	342.28	95	9827.0	3328.54	-3831.39	-1502.41	4115.44	201.41	5.19	-1.05	5.08
16410	87.22	338.95	94	9830.5	3234.95	-3742.80	-1533.58	4044.80	202.28	3.84	-1.48	-3.54
16505	90.84	344.81	95	9832.1	3140.19	-3652.57	-1563.10	3972.98	203.17	7.25	3.81	6.17
16600	90.43	347.38	95	9831.0	3045.22	-3560.37	-1585.93	3897.62	204.01	2.74	-0.43	2.71
16695	88.59	347.98	95	9831.8	2950.30	-3467.57	-1606.20	3821.51	204.85	2.04	-1.94	0.63
16789	88.95	348.79	94	9833.9	2856.45	-3375.51	-1625.12	3746.35	205.71	0.94	0.38	0.86
16883	87.88	347.72	94	9836.5	2762.61	-3283.52	-1644.25	3672.20	206.60	1.61	-1.14	-1.14
16978	90.77	349.28	95	9837.6	2667.77	-3190.45	-1663.18	3597.93	207.53	3.46	3.04	1.64

Minimum Radius of Curvature

API: 42-329-46805 **Well: Casselman 16 1H** **Wellhead Location** **Lat: 32.038614**
Operator: Callon Petroleum **Area: Midland** **Long: -102.228740**
Rig: Nabors X02 **Type: U Lateral** **Magnetic Declination: 6.75**
TD: 20,156' **Plane of Proposal: 165.39**

Measured Depth Ft	Drift Angle Deg	Azimuth Direction Deg	Course Length Ft	TVD Ft	Vertical Section Ft	COORDINATES		CLOSURE		Dog Leg Severity Deg/100'	Build / Drop Deg/100'	Left / Right Deg/100'
						N-S Ft	E-W Ft	Distance FT	Direction Deg			
17072	87.92	347.57	94	9838.6	2573.92	-3098.38	-1682.04	3525.51	208.50	3.54	-3.03	-1.82
17167	88.77	347.70	95	9841.4	2479.03	-3005.62	-1702.37	3454.25	209.53	0.91	0.89	0.14
17262	89.11	350.70	95	9843.2	2384.27	-2912.33	-1720.17	3382.40	210.57	3.18	0.36	3.16
17356	91.06	349.57	94	9843.0	2290.60	-2819.73	-1736.27	3311.42	211.62	2.40	2.07	-1.20
17451	91.14	349.62	95	9841.2	2195.87	-2726.31	-1753.43	3241.49	212.75	0.10	0.08	0.05
17537	86.42	347.18	86	9843.0	2110.04	-2642.11	-1770.71	3180.59	213.83	6.18	-5.49	-2.84
17631	87.10	345.53	94	9848.3	2016.21	-2550.91	-1792.85	3117.93	215.10	1.90	0.72	-1.76
17726	87.44	345.84	95	9852.9	1921.32	-2458.97	-1816.31	3057.04	216.45	0.48	0.36	0.33
17820	87.79	345.48	94	9856.8	1827.40	-2367.98	-1839.57	2998.56	217.84	0.53	0.37	-0.38
17915	88.24	345.52	95	9860.1	1732.46	-2276.06	-1863.34	2941.51	219.31	0.48	0.47	0.04
18010	90.52	345.69	95	9861.1	1637.47	-2184.05	-1886.96	2886.29	220.83	2.41	2.40	0.18
18104	90.52	345.68	94	9860.2	1543.47	-2092.97	-1910.20	2833.62	222.39	0.01	0.00	-0.01
18201	91.49	346.21	97	9858.5	1446.49	-1998.89	-1933.75	2781.18	224.05	1.14	1.00	0.55
18296	92.44	346.56	95	9855.3	1351.57	-1906.62	-1956.10	2731.58	225.73	1.07	1.00	0.37
18390	91.66	345.83	94	9851.9	1257.64	-1815.39	-1978.52	2685.18	227.46	1.14	-0.83	-0.78
18484	90.11	344.66	94	9850.5	1163.65	-1724.51	-2002.45	2642.68	229.27	2.07	-1.65	-1.24
18579	90.63	345.59	95	9849.8	1068.66	-1632.70	-2026.84	2602.65	231.15	1.12	0.55	0.98
18674	89.63	345.46	95	9849.6	973.66	-1540.71	-2050.58	2564.90	233.08	1.06	-1.05	-0.14
18768	88.22	345.15	94	9851.4	879.68	-1449.81	-2074.43	2530.85	235.05	1.54	-1.50	-0.33
18863	89.91	346.82	95	9852.9	784.70	-1357.65	-2097.43	2498.48	237.09	2.50	1.78	1.76
18958	90.46	346.57	95	9852.6	689.73	-1265.20	-2119.29	2468.22	239.16	0.64	0.58	-0.26
19052	90.39	346.59	94	9851.9	595.75	-1173.77	-2141.11	2441.74	241.27	0.08	-0.07	0.02
19147	88.65	343.89	95	9852.7	500.77	-1081.92	-2165.30	2420.56	243.45	3.38	-1.83	-2.84
19242	87.85	344.47	95	9855.6	405.83	-990.56	-2191.19	2404.69	245.67	1.04	-0.84	0.61
19335	87.07	344.13	93	9859.8	312.94	-901.12	-2216.33	2392.52	247.87	0.91	-0.84	-0.37
19430	86.83	344.70	95	9864.8	218.09	-809.75	-2241.82	2383.58	250.14	0.65	-0.25	0.60
19524	87.87	344.95	94	9869.2	124.20	-719.12	-2266.40	2377.75	252.40	1.14	1.11	0.27
19619	89.72	346.02	95	9871.2	29.22	-627.18	-2290.20	2374.53	254.68	2.25	1.95	1.13
19714	88.26	346.07	95	9872.8	-65.75	-535.00	-2313.11	2374.17	256.98	1.54	-1.54	0.05
19808	88.29	346.18	94	9875.7	-159.70	-443.79	-2335.64	2377.43	259.24	0.12	0.03	0.12
19903	91.36	347.08	95	9876.0	-254.67	-351.37	-2357.60	2383.64	261.52	3.37	3.23	0.95
19998	91.26	346.86	95	9873.8	-349.61	-258.84	-2379.02	2393.06	263.79	0.25	-0.11	-0.23
20093	90.01	346.59	95	9872.7	-444.57	-166.39	-2400.83	2406.59	266.04	1.35	-1.32	-0.28
20135	90.04	346.63	42	9872.7	-486.56	-125.53	-2410.56	2413.82	267.02	0.12	0.07	0.10
20156	90.04	346.63	21	9872.7	-507.56	-105.10	-2415.41	2417.70	267.51	0.00	0.00	0.00