



Phoenix Technology Services
Survey Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well Well #515888- Marcellus - Slot 515888
Company:	EQT PRODUCTION	TVD Reference:	KB 23' @ 1206 0usft
Project:	Ritchie County, WV	MD Reference:	KB 23' @ 1206 0usft
Site:	PUL06 Pad	North Reference:	Grid
Well:	Well #515888- Marcellus	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore	Well License	
Design:	515888 As Drilled Surveys		

Project	Ritchie County, WV		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site	PUL06 Pad				
Site Position:		Northing:	262,406.23 usft	Latitude:	39.21
From:	Map	Easting:	1,578,892.82 usft	Longitude:	-80.99
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.95 °

Well	Well #515888- Marcellus - Slot 515888					
Well Position	+N-S	0.0 usft	Northing:	262,498.49 usft	Latitude:	39° 12' 40.147 N
	+E-W	0.0 usft	Easting:	1,578,942.96 usft	Longitude:	80° 58' 9.679 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	1,183.0 usft	

Wellbore	Main Wellbore				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/11/2016	-7.88	66.53	51,964

Design	515888 As Drilled Surveys				
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/S (usft)	+E/W (usft)	Direction (°)	
	0.0	0.0	0.0	175.31	

Survey Program	Date	2/24/2016			
From (')	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	4,710.0	515888 VES Gyros (Main Wellbore)	VES Spec AVG 04-09-15	Triaxial Continuous Gyro Model	
0.00	12,407.0	515888 PHX MWD (Main Wellbore)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	-1,206.0	0.0	0.0	0.0	0.00	0.00	0.00
110.0	0.18	64.88	110.0	-1,096.0	0.1	0.2	-0.1	0.16	0.16	0.00
210.0	0.11	76.35	210.0	-996.0	0.2	0.4	-0.1	0.14	0.00	11.47
310.0	0.06	185.81	310.0	-896.0	0.1	0.5	-0.1	0.14	-0.00	109.46
410.0	0.15	150.55	410.0	-796.0	0.0	0.5	0.1	0.11	0.00	55.58
510.0	0.16	175.98	510.0	-696.0	-0.3	0.6	0.3	0.07	0.01	25.43
610.0	0.22	233.16	610.0	-596.0	-0.5	0.5	0.6	0.19	0.00	97.18
710.0	1.03	276.82	710.0	-496.0	-0.5	-0.6	0.5	0.88	0.81	43.86

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Project:	Ritchie County, WV	MD Reference:	KB 23' @ 1206 0usft
Site:	PUL96 Pad	North Reference:	Gnd
Well:	Well #515888- Marcellus	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore	Well License:	
Design:	515888 As Drilled Surveys		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,762.0	2.00	101.60	4,761.7	3,555.7	-25.7	-19.2	24.0	7.40	4.84	-387.74
4,794.0	6.90	97.20	4,793.6	3,587.6	-26.0	-16.8	24.6	15.34	15.31	-13.75
4,825.0	6.70	87.90	4,824.4	3,618.4	-26.2	-13.1	25.0	3.61	-0.65	-30.00
4,857.0	4.30	56.50	4,856.2	3,650.2	-25.4	-10.2	24.5	11.77	-7.50	-98.13
4,888.0	5.50	3.40	4,887.1	3,681.1	-23.3	-9.2	22.5	14.54	3.87	-171.29
4,920.0	7.80	335.10	4,918.9	3,712.9	-19.8	-10.0	18.9	12.30	7.19	-86.44
4,951.0	12.50	321.20	4,949.4	3,743.4	-15.3	-13.0	14.2	16.99	15.16	-44.84
4,982.0	16.20	314.30	4,979.5	3,773.5	-9.7	-18.2	8.1	13.13	11.94	-22.26
5,014.0	17.50	308.80	5,010.1	3,804.1	-3.5	-25.1	1.5	6.57	4.06	-17.81
5,045.0	18.90	302.20	5,039.5	3,833.5	2.0	-33.0	-4.7	7.87	4.52	-20.65
5,077.0	21.70	296.50	5,069.6	3,863.6	7.4	-42.7	-10.9	10.70	8.75	-17.81
5,108.0	25.20	293.40	5,098.0	3,892.0	12.6	-53.9	-17.0	11.97	11.29	-10.00
5,139.0	28.30	291.70	5,125.7	3,919.7	18.0	-66.8	-23.4	10.30	10.00	-5.48
5,171.0	31.50	291.30	5,153.4	3,947.4	23.8	-81.6	-30.4	10.02	10.00	-1.25
5,202.0	34.10	290.80	5,179.5	3,973.5	29.8	-97.3	-37.7	8.43	8.39	-1.81
5,234.0	37.40	290.10	5,205.4	3,998.4	36.4	-114.8	-45.6	10.39	10.31	-2.19
5,265.0	41.60	290.40	5,229.4	4,023.4	43.2	-133.3	-54.0	13.56	13.55	0.97
5,297.0	45.50	291.40	5,252.5	4,046.5	51.1	-153.9	-63.5	12.38	12.19	3.13
5,360.0	46.40	291.10	5,296.3	4,090.3	67.5	-196.1	-83.3	1.47	1.43	-0.48
5,454.0	46.30	290.10	5,361.2	4,155.2	91.4	-259.8	-112.4	0.78	-0.11	-1.06
5,549.0	43.20	294.10	5,428.7	4,222.7	116.5	-321.7	-142.4	4.41	-3.26	4.21
5,643.0	43.50	293.70	5,497.1	4,291.1	142.6	-380.7	-173.3	0.43	0.32	-0.43
5,737.0	46.10	294.10	5,563.7	4,357.7	169.5	-441.3	-205.0	2.78	2.77	0.43
5,832.0	45.40	292.20	5,630.0	4,424.0	196.2	-503.8	-236.8	1.61	-0.74	-2.00
5,926.0	45.20	293.10	5,696.2	4,490.2	222.0	-565.5	-267.5	0.71	-0.21	0.96
6,020.0	44.20	290.70	5,763.0	4,557.0	246.6	-626.8	-297.1	2.09	-1.06	-2.55
6,052.0	43.50	288.90	5,786.1	4,580.1	254.1	-647.7	-306.3	4.47	-2.19	-5.63
6,083.0	43.40	285.50	5,808.6	4,602.6	260.4	-668.1	-314.2	7.55	-0.32	-10.97
6,114.0	42.30	280.00	5,831.3	4,625.3	265.1	-688.6	-320.6	12.57	-3.55	-17.74
6,146.0	41.50	273.90	5,855.1	4,649.1	267.7	-709.8	-324.9	12.97	-2.50	-19.06
6,177.0	41.00	269.10	5,878.4	4,672.4	268.2	-730.2	-327.1	10.33	-1.61	-15.48
6,209.0	39.10	264.30	5,902.9	4,696.9	267.1	-750.7	-327.6	11.33	-5.94	-15.00
6,240.0	38.00	257.40	5,927.2	4,721.2	264.0	-769.8	-326.1	14.31	-3.55	-22.26
6,271.0	37.50	250.90	5,951.7	4,745.7	258.8	-788.0	-322.4	12.93	-1.61	-20.97
6,303.0	37.30	244.40	5,977.1	4,771.1	251.5	-806.0	-316.6	12.35	-0.63	-20.31
6,334.0	36.00	239.10	6,001.7	4,795.7	242.5	-822.7	-309.0	10.68	2.26	-17.10
6,366.0	39.10	234.50	6,026.7	4,820.7	231.6	-839.3	-299.5	9.59	3.44	-14.38
6,397.0	39.90	229.60	6,050.7	4,844.7	219.5	-854.9	-286.7	10.38	2.58	-15.81
6,429.0	41.20	224.50	6,075.0	4,869.0	205.3	-870.1	-275.8	11.13	4.06	-15.94
6,460.0	42.90	220.40	6,098.0	4,892.0	190.0	-884.1	-261.7	10.42	5.48	-13.23
6,492.0	44.50	216.20	6,121.1	4,915.1	172.6	-897.8	-245.5	10.35	5.00	-13.13
6,523.0	45.90	212.50	6,143.0	4,937.0	154.5	-910.2	-228.4	9.60	4.52	-11.94



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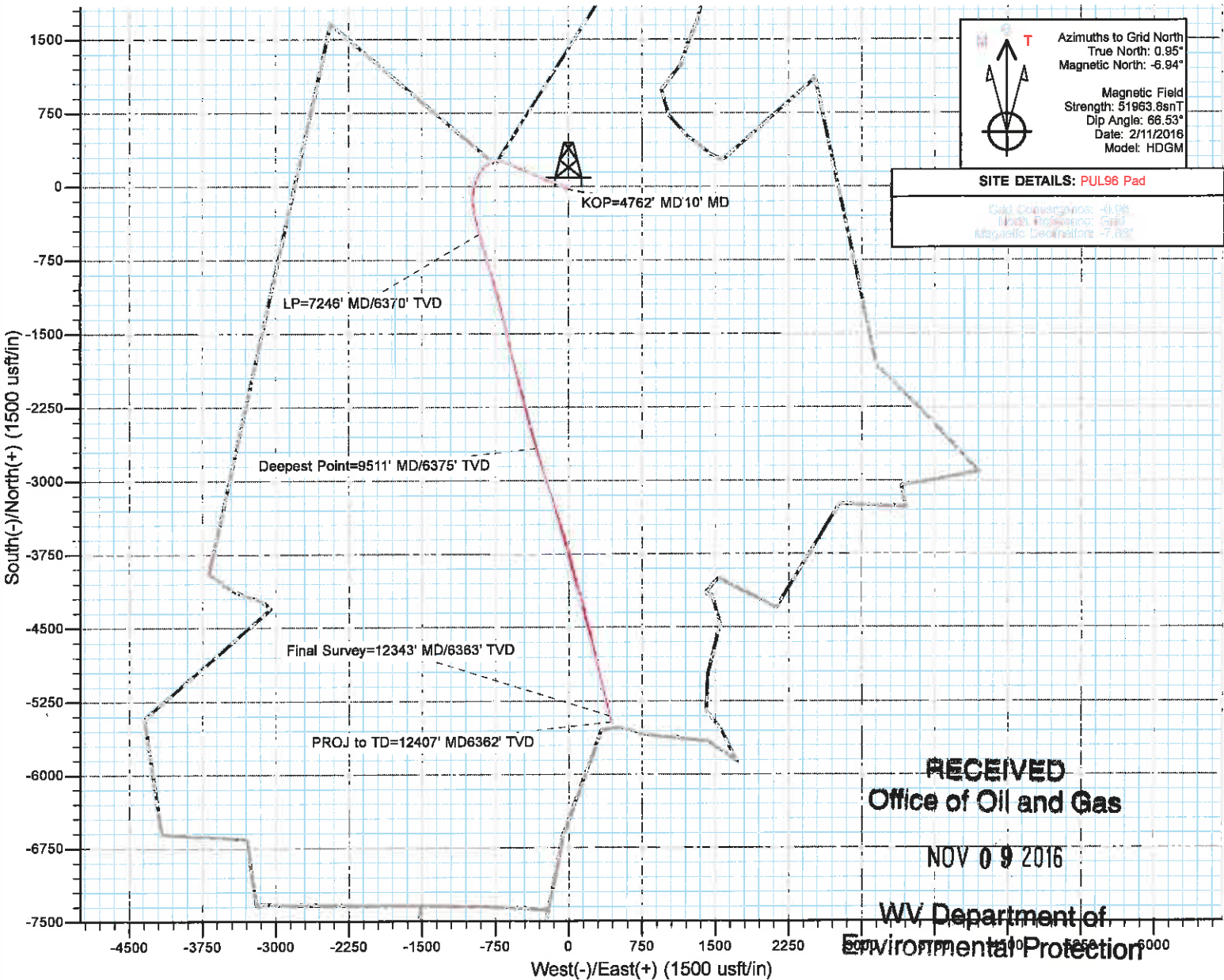
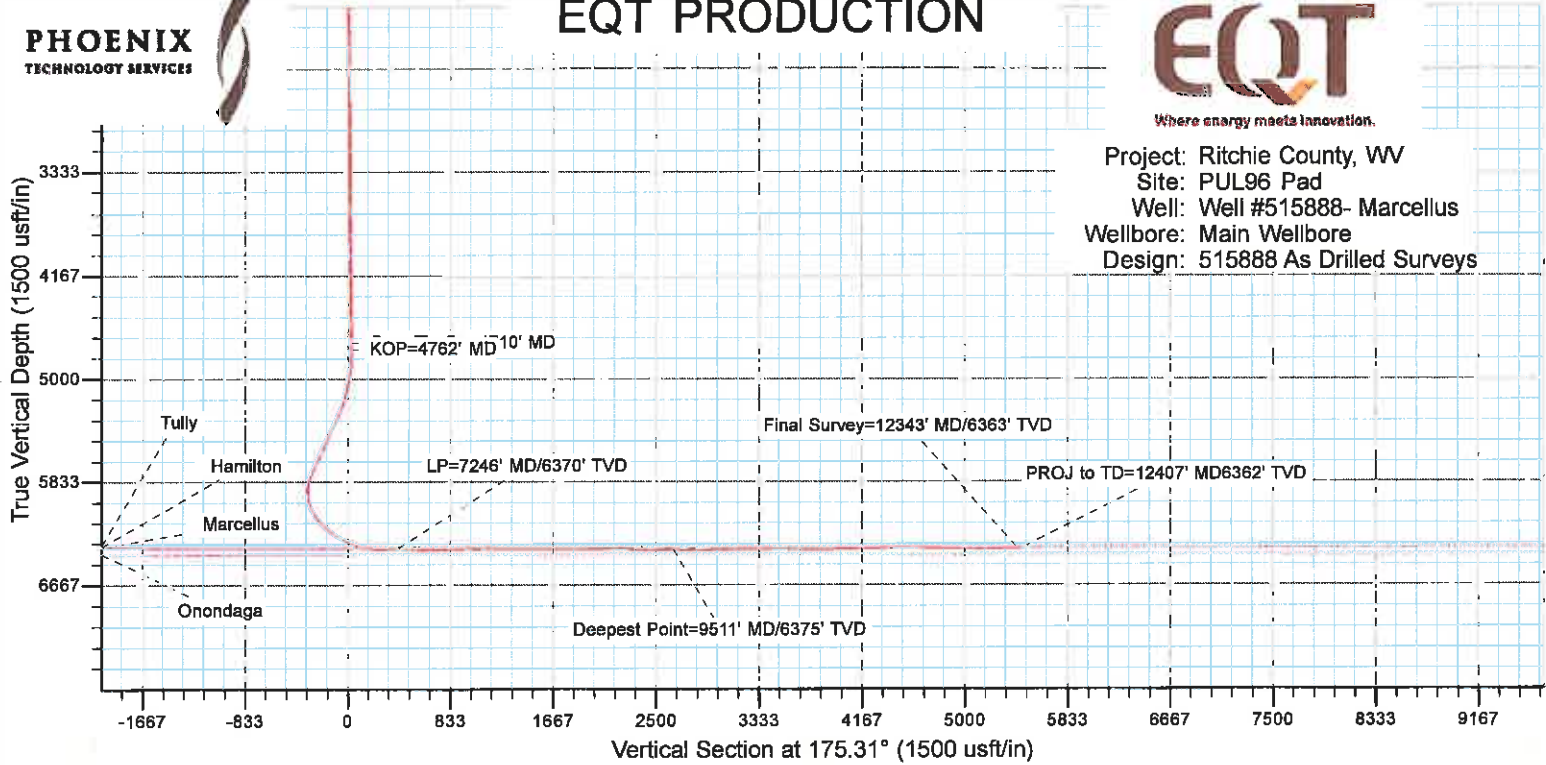
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8,190.0	89.70	166.40	6,363.7	5,157.7	-1,394.5	-656.8	1,336.1	0.38	0.32	-0.21
8,264.0	90.10	166.70	6,363.8	5,157.8	-1,485.9	-634.9	1,429.0	0.53	0.43	0.32
8,378.0	90.30	167.50	6,363.5	5,157.5	-1,577.6	-614.0	1,522.0	0.88	0.21	0.85
8,473.0	90.10	167.60	6,363.2	5,157.2	-1,670.3	-593.5	1,616.2	0.24	-0.21	0.11
8,567.0	89.40	165.00	6,363.6	5,157.6	-1,761.6	-571.2	1,709.0	2.86	-0.74	-2.77
8,662.0	89.50	165.20	6,364.5	5,158.5	-1,853.4	-546.8	1,802.5	0.24	0.11	0.21
8,756.0	89.90	165.90	6,365.0	5,159.0	-1,944.5	-523.3	1,895.1	0.86	0.43	0.74
8,850.0	89.90	166.90	6,365.1	5,159.1	-2,035.8	-501.2	1,988.0	1.06	0.00	1.06
8,945.0	89.30	166.20	6,365.8	5,159.8	-2,128.2	-479.1	2,081.9	0.97	-0.63	-0.74
9,039.0	88.60	166.60	6,367.5	5,161.5	-2,219.6	-457.0	2,174.7	0.86	-0.74	0.43
9,133.0	88.50	166.20	6,369.9	5,163.9	-2,310.9	-434.9	2,267.6	0.44	-0.11	-0.43
9,228.0	88.20	166.10	6,372.6	5,166.6	-2,403.1	-412.2	2,361.3	0.33	-0.32	-0.11
9,322.0	89.70	163.10	6,374.4	5,168.4	-2,493.7	-387.2	2,453.7	3.57	1.60	-3.19
9,416.0	89.80	163.10	6,374.8	5,168.8	-2,583.6	-359.9	2,545.5	0.11	0.11	0.00
Deepest Point=9511' MD/6375' TVD										
9,511.0	89.90	162.90	6,375.0	5,169.0	-2,674.5	-332.1	2,638.3	0.24	0.11	-0.21
9,605.0	90.30	161.80	6,374.9	5,168.9	-2,764.0	-303.5	2,729.9	1.45	0.43	-1.38
9,700.0	90.40	160.90	6,374.3	5,168.3	-2,854.0	-273.0	2,822.1	0.74	0.11	-0.74
9,794.0	91.10	163.10	6,373.1	5,167.1	-2,943.4	-243.9	2,913.5	2.46	0.74	2.34
9,889.0	90.70	162.20	6,371.6	5,165.6	-3,034.0	-215.6	3,006.2	1.04	-0.42	-0.95
9,983.0	90.30	160.80	6,370.7	5,164.7	-3,123.2	-185.8	3,097.5	1.55	-0.43	-1.49
10,077.0	90.50	162.30	6,370.1	5,164.1	-3,212.3	-156.0	3,188.8	1.61	0.21	1.60
10,172.0	90.30	162.40	6,369.4	5,163.4	-3,302.8	-127.2	3,281.4	0.24	-0.21	0.11
10,266.0	89.90	161.70	6,369.3	5,163.3	-3,392.3	-98.2	3,372.9	0.86	-0.43	-0.74
10,361.0	89.60	163.10	6,369.7	5,163.7	-3,482.8	-69.5	3,465.5	1.51	-0.32	1.47
10,455.0	89.30	162.50	6,370.6	5,164.6	-3,572.6	-41.7	3,557.2	0.71	-0.32	-0.64
10,550.0	89.80	165.50	6,371.3	5,165.3	-3,663.9	-15.5	3,650.4	3.20	0.53	3.16
10,644.0	89.60	165.50	6,371.8	5,165.8	-3,754.9	8.0	3,743.0	0.21	-0.21	0.00
10,738.0	90.70	165.20	6,371.6	5,165.6	-3,845.9	31.8	3,835.6	1.21	1.17	-0.32
10,833.0	91.50	165.80	6,369.7	5,163.7	-3,937.8	55.6	3,929.2	1.05	0.84	0.63
10,927.0	90.90	163.40	6,367.8	5,161.8	-4,028.4	80.5	4,021.5	2.63	-0.64	-2.55
11,021.0	91.40	163.90	6,365.9	5,159.9	-4,118.6	107.0	4,113.5	0.75	0.53	0.53
11,116.0	91.50	164.50	6,363.5	5,157.5	-4,210.0	132.8	4,206.7	0.64	0.11	0.63
11,210.0	91.60	163.80	6,360.9	5,154.9	-4,300.4	158.5	4,298.9	0.75	0.11	-0.74
11,304.0	90.90	166.70	6,358.9	5,152.9	-4,391.2	182.4	4,391.4	3.17	-0.74	3.09
11,399.0	89.80	167.60	6,358.3	5,152.3	-4,483.9	203.5	4,485.5	1.50	-1.16	0.95
11,493.0	88.70	166.80	6,359.5	5,153.5	-4,575.5	224.4	4,578.5	1.45	-1.17	-0.85
11,588.0	89.40	167.40	6,361.1	5,155.1	-4,668.1	245.6	4,672.5	0.97	0.74	0.63
11,682.0	89.90	166.80	6,361.7	5,155.7	-4,759.7	266.6	4,765.6	0.86	0.53	0.84
11,776.0	89.10	166.80	6,362.5	5,156.5	-4,851.2	288.0	4,858.5	0.85	-0.65	0.00
11,870.0	89.60	166.80	6,363.6	5,157.6	-4,942.7	309.5	4,951.5	0.53	0.53	0.00
11,965.0	89.60	166.20	6,364.2	5,158.2	-5,035.1	331.7	5,045.4	0.64	0.53	0.00
12,059.0	89.30	165.70	6,365.1	5,159.1	-5,126.3	354.5	5,138.1	0.62	-0.32	-0.53

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