

30-015-39932

Chesapeake Operating Inc.

Eddy County, New Mexico (NAD 1983)

PLU Phantom Banks 3-26-30 USA 1H

Job # 1210245

Rig: Patterson 62

Survey: Phoenix MWD ST Surveys

CONFIDENTIAL

Chesapeake Energy, Survey Report

16 April, 2012

Chesapeake Energy, Survey Report

Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well Job # 1210245
Project:	Eddy County, New Mexico (NAD 1983)	TVD Reference:	WELL @ 3188.00usft (Patterson 62)
Site:	PLU Phantom Banks 3-26-30 USA 1H	MD Reference:	WELL @ 3188.00usft (Patterson 62)
Well:	Job # 1210245	North Reference:	Grid
Wellbore:	Rig: Patterson 62	Survey Calculation Method:	Minimum Curvature
Design:	Rig: Patterson 62	Database:	Compass5000

Project	Eddy County, New Mexico (NAD 1983)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	PLU Phantom Banks 3-26-30 USA 1H		
Site Position:		Northing:	387,835.00 usft
From:	Map	Easting:	685,832.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 3' 55.3673 N
		Longitude:	103° 52' 0.7502 W
		Grid Convergence:	0.25 °

Well	Job # 1210245		
Well Position	+N/-S	0.00 usft	Northing: 387,835.00 usft
	+E/-W	0.00 usft	Easting: 685,832.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	25.00 usft
		Latitude:	32° 3' 55.3673 N
		Longitude:	103° 52' 0.7502 W
		Ground Level:	3,163.00 usft

Wellbore	Rig: Patterson 62		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010_14	03/20/12	7.62
			(°)
			59.97
			48,413
			(nT)

Design	Rig: Patterson 62		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
		Direction	(°)
		359.59	

Survey Program	Date 04/16/12		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
132.00	9,183.00	Phoenix MWD Surveys (Rig: Patterson 62)	MWD
			Description
			MWD - Standard

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Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V.Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
0.00	0.00	0.00	3,188.00	0.00	0.00	0.00	0.00	0.00	387,835.00	685,832.00	
132.00	0.50	209.10	3,056.00	132.00	-0.50	-0.28	-0.50	0.38	387,834.50	685,831.72	
First Phoenix MWD Surveys @ 132' MD											
311.00	0.20	194.70	2,877.01	310.99	-1.49	-0.74	-1.48	0.17	387,833.51	685,831.26	
497.00	0.90	267.20	2,691.01	496.99	-1.87	-2.28	-1.86	0.46	387,833.13	685,829.72	
687.00	0.70	233.90	2,501.03	686.97	-2.63	-4.71	-2.60	0.26	387,832.37	685,827.29	
877.00	0.40	263.40	2,311.04	876.96	-3.39	-6.31	-3.34	0.21	387,831.61	685,825.69	
1,067.00	0.90	109.00	2,121.05	1,066.95	-3.95	-5.55	-3.91	0.67	387,831.05	685,826.45	
1,257.00	1.00	165.10	1,931.07	1,256.93	-6.04	-3.72	-6.01	0.47	387,828.96	685,828.28	
1,360.00	0.80	220.30	1,828.08	1,359.92	-7.46	-3.95	-7.43	0.83	387,827.54	685,828.05	
1,534.00	1.00	248.30	1,654.10	1,533.90	-8.95	-6.15	-8.90	0.27	387,826.05	685,825.85	
1,724.00	1.00	252.30	1,464.13	1,723.87	-10.06	-9.27	-10.00	0.04	387,824.94	685,822.73	
1,914.00	1.20	237.80	1,274.16	1,913.84	-11.63	-12.53	-11.54	0.18	387,823.37	685,819.47	
2,104.00	1.60	247.50	1,084.22	2,103.78	-13.70	-16.66	-13.58	0.24	387,821.30	685,815.34	
2,199.00	1.00	247.80	989.25	2,198.75	-14.52	-18.66	-14.39	0.63	387,820.48	685,813.34	
2,300.00	1.05	206.38	888.26	2,299.74	-15.68	-19.88	-15.54	0.72	387,819.32	685,812.12	
2,400.00	0.63	209.57	788.27	2,399.73	-16.98	-20.56	-16.84	0.42	387,818.02	685,811.44	
2,500.00	0.84	199.54	688.28	2,499.72	-18.15	-21.08	-18.00	0.25	387,816.85	685,810.92	
2,600.00	0.54	187.95	588.29	2,599.71	-19.31	-21.39	-19.16	0.33	387,815.69	685,810.61	
2,700.00	0.25	160.45	488.29	2,699.71	-19.98	-21.38	-19.83	0.34	387,815.02	685,810.62	
2,800.00	0.21	134.11	388.29	2,799.71	-20.32	-21.18	-20.16	0.11	387,814.68	685,810.82	
2,900.00	0.18	35.49	288.29	2,899.71	-20.32	-20.95	-20.16	0.30	387,814.68	685,811.05	
3,000.00	0.62	20.35	188.29	2,999.71	-19.68	-20.67	-19.53	0.45	387,815.32	685,811.33	
3,100.00	1.22	40.83	88.31	3,099.69	-18.37	-19.79	-18.23	0.67	387,816.63	685,812.21	
3,200.00	1.28	44.64	-11.67	3,199.67	-16.77	-18.31	-16.64	0.10	387,818.23	685,813.69	
3,300.00	1.55	53.09	-111.64	3,299.64	-15.16	-16.44	-15.04	0.34	387,819.84	685,815.56	
3,400.00	1.63	52.72	-211.60	3,399.60	-13.49	-14.23	-13.38	0.08	387,821.51	685,817.77	

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Site:	PLU Phantom Banks 3-26-30 USA 1H	MD Reference:	WELL @ 3188.00usft (Patterson 62)
Well:	Job # 1210245	North Reference:	Grid
Wellbore:	Rig: Patterson 62	Survey Calculation Method:	Minimum Curvature
Design:	Rig: Patterson 62	Database:	Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
3,500.00	1.48	58.55	-311.56	3,499.56	-11.95	-12.00	-11.86	0.22	387,823.05	685,820.00	
3,600.00	1.59	72.23	-411.53	3,599.53	-10.85	-9.57	-10.78	0.38	387,824.15	685,822.43	
3,700.00	1.33	51.53	-511.50	3,699.50	-9.71	-7.34	-9.66	0.58	387,825.29	685,824.66	
3,800.00	1.13	66.43	-611.47	3,799.47	-8.59	-5.53	-8.55	0.38	387,826.41	685,826.47	
3,827.00	1.20	64.00	-638.47	3,826.47	-8.36	-5.03	-8.33	0.32	387,826.64	685,826.97	
4,017.00	1.10	66.10	-828.43	4,016.43	-6.75	-1.58	-6.74	0.06	387,828.25	685,830.42	
4,207.00	1.10	49.80	-1,018.40	4,206.40	-4.83	1.48	-4.85	0.16	387,830.17	685,833.48	
4,397.00	0.90	43.30	-1,208.37	4,396.37	-2.57	3.90	-2.60	0.12	387,832.43	685,835.90	
4,586.00	0.80	4.20	-1,397.35	4,585.35	-0.18	5.01	-0.21	0.31	387,834.82	685,837.01	
4,776.00	0.70	4.70	-1,587.33	4,775.33	2.30	5.21	2.27	0.05	387,837.30	685,837.21	
4,966.00	0.70	2.60	-1,777.32	4,965.32	4.62	5.35	4.58	0.01	387,839.62	685,837.35	
5,157.00	0.50	357.80	-1,968.31	5,156.31	6.62	5.37	6.58	0.11	387,841.62	685,837.37	
5,347.00	0.30	358.10	-2,158.30	5,346.30	7.94	5.33	7.91	0.11	387,842.94	685,837.33	
5,537.00	0.40	307.10	-2,348.30	5,536.30	8.84	4.78	8.81	0.17	387,843.84	685,836.78	
5,727.00	0.30	272.90	-2,538.30	5,726.30	9.27	3.75	9.24	0.12	387,844.27	685,835.75	
5,917.00	0.80	220.40	-2,728.29	5,916.29	8.28	2.40	8.26	0.35	387,843.28	685,834.40	
6,107.00	0.70	222.20	-2,918.27	6,106.27	6.41	0.76	6.41	0.05	387,841.41	685,832.76	
6,296.00	1.00	228.20	-3,107.25	6,295.25	4.46	-1.25	4.47	0.17	387,839.46	685,830.75	
6,485.00	0.90	209.60	-3,296.22	6,484.22	2.07	-3.21	2.09	0.17	387,837.07	685,828.79	
6,675.00	0.50	185.50	-3,486.21	6,674.21	-0.06	-4.03	-0.03	0.26	387,834.94	685,827.97	
6,864.00	0.70	156.10	-3,675.20	6,863.20	-1.93	-3.64	-1.91	0.19	387,833.07	685,828.36	
7,053.00	0.80	148.20	-3,864.18	7,052.18	-4.11	-2.47	-4.09	0.08	387,830.89	685,829.53	
7,242.00	1.10	152.00	-4,053.16	7,241.16	-6.83	-0.93	-6.82	0.16	387,828.17	685,831.07	
7,431.00	1.20	170.70	-4,242.12	7,430.12	-10.39	0.25	-10.39	0.20	387,824.61	685,832.25	
7,620.00	0.60	143.90	-4,431.10	7,619.10	-13.14	1.15	-13.15	0.38	387,821.86	685,833.15	
7,810.00	0.40	107.60	-4,621.09	7,809.09	-14.14	2.37	-14.16	0.19	387,820.86	685,834.37	
7,927.00	12.50	3.50	-4,737.17	7,925.17	-1.58	3.53	-1.60	10.77	387,833.42	685,835.53	

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Site:	PLU Phantom Banks 3-26-30 USA-1H	MD Reference:	WELL @ 3188.00usft (Patterson 62)
Well:	Job # 1210245	North Reference:	Grid
Wellbore:	Rig Patterson 62	Survey Calculation Method:	Minimum Curvature
Design:	Rig Patterson 62	Database:	Compass5000

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
7,959.00	16.80	6.70	-4,768.12	7,956.12	6.48	4.28	6.44	13.67	387,841.48	685,836.28
7,990.00	20.50	4.20	-4,797.49	7,985.49	16.34	5.21	16.30	12.21	387,851.34	685,837.21
8,022.00	23.80	0.10	-4,827.13	8,015.13	28.39	5.63	28.35	11.38	387,863.39	685,837.63
8,053.00	26.30	355.20	-4,855.21	8,043.21	41.49	5.06	41.46	10.47	387,876.49	685,837.06
8,085.00	30.50	354.80	-4,883.35	8,071.35	56.65	3.73	56.62	13.14	387,891.65	685,835.73
8,117.00	32.40	355.90	-4,910.65	8,098.65	73.29	2.38	73.27	6.20	387,908.29	685,834.38
8,148.00	35.00	357.40	-4,936.44	8,124.44	90.46	1.39	90.45	8.81	387,925.46	685,833.39
8,180.00	38.30	357.20	-4,962.11	8,150.11	109.54	0.49	109.53	10.32	387,944.54	685,832.49
8,212.00	41.10	357.10	-4,986.73	8,174.73	129.95	-0.53	129.95	8.75	387,964.95	685,831.47
8,244.00	44.80	357.30	-5,010.15	8,198.15	151.72	-1.59	151.73	11.57	387,986.72	685,830.41
8,275.00	48.50	358.10	-5,031.42	8,219.42	174.24	-2.49	174.26	12.08	388,009.24	685,829.51
8,307.00	50.90	358.30	-5,052.12	8,240.12	198.64	-3.26	198.65	7.52	388,033.64	685,828.74
8,339.00	53.80	359.10	-5,071.66	8,259.66	223.96	-3.83	223.98	9.28	388,058.96	685,828.17
8,371.00	56.50	0.00	-5,089.95	8,277.95	250.22	-4.03	250.24	8.75	388,085.22	685,827.97
8,403.00	58.50	0.80	-5,107.14	8,295.14	277.21	-3.84	277.23	6.60	388,112.21	685,828.16
8,434.00	62.50	0.60	-5,122.40	8,310.40	304.18	-3.51	304.20	12.92	388,139.18	685,828.49
8,466.00	65.90	358.90	-5,136.33	8,324.33	332.98	-3.65	333.00	11.65	388,167.98	685,828.35
8,498.00	68.60	358.60	-5,148.70	8,336.70	362.48	-4.29	362.51	8.48	388,197.48	685,827.71
8,529.00	71.70	359.60	-5,159.23	8,347.23	391.64	-4.75	391.66	10.45	388,226.64	685,827.25
8,561.00	74.40	0.60	-5,168.56	8,356.56	422.24	-4.69	422.26	8.95	388,257.24	685,827.31
8,593.00	76.90	1.00	-5,176.49	8,364.49	453.24	-4.26	453.26	7.91	388,288.24	685,827.74
8,625.00	79.90	1.50	-5,182.92	8,370.92	484.57	-3.57	484.59	9.50	388,319.57	685,828.43
8,656.00	82.10	1.80	-5,187.77	8,375.77	515.18	-2.69	515.18	7.16	388,350.18	685,829.31
8,688.00	85.50	1.70	-5,191.23	8,379.23	546.97	-1.72	546.97	10.63	388,381.97	685,830.28
8,720.00	90.90	1.30	-5,192.23	8,380.23	578.93	-0.88	578.92	16.92	388,413.93	685,831.12
8,777.00	91.60	0.30	-5,190.99	8,378.99	635.91	-0.09	635.90	2.14	388,470.91	685,831.91
8,872.00	91.50	0.80	-5,188.42	8,376.42	730.87	0.82	730.85	0.54	388,565.87	685,832.82

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8,967.00	92.10	1.10	-5,185.43	8,373.43	825.81	2.40	825.77	0.71	388,660.81	685,834.40	
9,063.00	92.80	1.10	-5,181.33	8,369.33	921.71	4.24	921.65	0.73	388,756.71	685,836.24	
9,158.00	92.90	1.00	-5,176.61	8,364.61	1,016.57	5.98	1,016.50	0.15	388,851.57	685,837.98	
9,253.00	92.00	359.40	-5,172.55	8,360.55	1,111.48	6.31	1,111.41	1.93	388,946.48	685,838.31	
9,348.00	89.10	358.10	-5,171.63	8,359.63	1,206.44	4.24	1,206.38	3.35	389,041.44	685,836.24	
9,443.00	88.10	357.80	-5,173.95	8,361.95	1,301.35	0.84	1,301.31	1.10	389,136.35	685,832.84	
9,538.00	89.50	358.10	-5,175.94	8,363.94	1,396.27	-2.56	1,396.25	1.51	389,231.27	685,829.44	
9,634.00	90.90	358.10	-5,175.61	8,363.61	1,492.21	-5.74	1,492.21	1.46	389,327.21	685,826.26	
9,729.00	91.70	358.40	-5,173.45	8,361.45	1,587.14	-8.64	1,587.16	0.90	389,422.14	685,823.36	
9,824.00	92.20	358.50	-5,170.22	8,358.22	1,682.05	-11.21	1,682.09	0.54	389,517.05	685,820.79	
9,919.00	90.90	358.30	-5,167.65	8,355.65	1,776.98	-13.86	1,777.03	1.38	389,611.98	685,818.14	
10,014.00	90.90	359.30	-5,166.16	8,354.16	1,871.94	-15.85	1,872.01	1.05	389,706.94	685,816.15	
10,110.00	91.30	359.50	-5,164.32	8,352.32	1,967.92	-16.86	1,967.99	0.47	389,802.92	685,815.14	
10,205.00	91.30	359.60	-5,162.16	8,350.16	2,062.89	-17.60	2,062.97	0.11	389,897.89	685,814.40	
10,300.00	91.20	359.40	-5,160.09	8,348.09	2,157.87	-18.43	2,157.94	0.24	389,992.87	685,813.57	
10,395.00	91.30	359.80	-5,158.02	8,346.02	2,252.84	-19.09	2,252.92	0.43	390,087.84	685,812.91	
10,490.00	92.00	0.40	-5,155.28	8,343.28	2,347.80	-18.93	2,347.88	0.97	390,182.80	685,813.07	
10,586.00	91.30	359.70	-5,152.52	8,340.52	2,443.76	-18.84	2,443.83	1.03	390,278.76	685,813.16	
10,681.00	91.50	0.30	-5,150.20	8,338.20	2,538.73	-18.84	2,538.80	0.67	390,373.73	685,813.16	
10,776.00	90.30	0.90	-5,148.70	8,336.70	2,633.71	-17.85	2,633.77	1.41	390,468.71	685,814.15	
10,871.00	90.50	1.00	-5,148.04	8,336.04	2,728.70	-16.27	2,728.74	0.24	390,563.70	685,815.73	
10,966.00	90.90	0.70	-5,146.88	8,334.88	2,823.68	-14.87	2,823.71	0.53	390,658.68	685,817.13	
11,061.00	91.50	1.70	-5,144.89	8,332.89	2,918.64	-12.88	2,918.65	1.23	390,753.64	685,819.12	
11,157.00	92.00	1.60	-5,141.96	8,329.96	3,014.55	-10.11	3,014.55	0.53	390,849.55	685,821.89	
11,253.00	90.90	1.00	-5,139.53	8,327.53	3,110.49	-7.94	3,110.47	1.31	390,945.49	685,824.06	
11,348.00	89.70	1.00	-5,139.03	8,327.03	3,205.48	-6.28	3,205.44	1.26	391,040.48	685,825.72	
11,443.00	90.50	1.60	-5,138.87	8,326.87	3,300.45	-4.12	3,300.39	1.05	391,135.45	685,827.88	

Chesapeake Energy, Survey Report

Company:	Chesapeake Operating Inc	Local Co-ordinate Reference:	Well Job # 1210245
Project:	Eddy County, New Mexico (NAD 1983)	TVD Reference:	WELL @ 3188.00usft (Patterson 62)
Site:	PLU Phantom Banks 3-26-30 USA 1H	MD Reference:	WELL @ 3188.00usft (Patterson 62)
Well:	Job # 1210245	North Reference:	Grid
Wellbore:	Rig: Patterson 62	Survey Calculation Method:	Minimum Curvature
Design:	Rig: Patterson 62	Database:	Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
11,538.00	91.10	2.40	-5,137.54	8,325.54	3,395.38	-0.81	3,395.30	1.05	391,230.38	685,831.19	
11,634.00	91.10	2.40	-5,135.70	8,323.70	3,491.28	3.21	3,491.17	0.00	391,326.28	685,835.21	
11,729.00	88.70	0.40	-5,135.86	8,323.86	3,586.24	5.53	3,586.11	3.29	391,421.24	685,837.53	
11,824.00	89.40	1.20	-5,137.44	8,325.44	3,681.22	6.86	3,681.07	1.12	391,516.22	685,838.86	
11,919.00	87.60	359.50	-5,139.92	8,327.92	3,776.17	7.44	3,776.02	2.61	391,611.17	685,839.44	
12,014.00	88.30	358.40	-5,143.32	8,331.32	3,871.10	5.70	3,870.96	1.37	391,706.10	685,837.70	
12,110.00	89.30	358.70	-5,145.33	8,333.33	3,967.04	3.27	3,966.92	1.09	391,802.04	685,835.27	
12,205.00	88.80	358.80	-5,146.91	8,334.91	4,062.01	1.20	4,061.89	0.54	391,897.01	685,833.20	
12,300.00	88.00	358.30	-5,149.56	8,337.56	4,156.94	-1.20	4,156.84	0.99	391,991.94	685,830.80	
12,396.00	88.30	357.70	-5,152.66	8,340.66	4,252.83	-4.55	4,252.75	0.70	392,087.83	685,827.45	
12,491.00	89.30	357.40	-5,154.65	8,342.65	4,347.72	-8.61	4,347.67	1.10	392,182.72	685,823.39	
12,586.00	90.00	356.70	-5,155.23	8,343.23	4,442.59	-13.50	4,442.57	1.04	392,277.59	685,818.50	
12,681.00	92.70	356.00	-5,152.99	8,340.99	4,537.36	-19.55	4,537.39	2.94	392,372.36	685,812.45	
12,776.00	92.60	356.40	-5,148.60	8,336.60	4,632.05	-25.84	4,632.12	0.43	392,467.05	685,806.16	
12,872.00	93.20	356.40	-5,143.74	8,331.74	4,727.74	-31.86	4,727.85	0.62	392,562.74	685,800.14	
12,898.00	93.10	355.90	-5,142.31	8,330.31	4,753.64	-33.60	4,753.76	1.96	392,588.64	685,798.40	
12,947.00	93.10	355.90	-5,139.66	8,327.66	4,802.44	-37.10	4,802.59	0.00	392,637.44	685,794.90	
Last Phoenix MWD Surveys @ 12947' MD											
12,957.00	93.10	355.90	-5,139.12	8,327.12	4,812.40	-37.81	4,812.55	0.00	392,647.40	685,794.19	
Projection to TD @ 12957' MD											

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
132.00	132.00	-0.50	-0.28	First Phoenix MWD Surveys @ 132' MD	
12,947.00	8,327.66	4,802.44	-37.10	Last Phoenix MWD Surveys @ 12947' MD	
12,957.00	8,327.12	4,812.40	-37.81	Projection to TD @ 12957' MD	

Chesapeake Energy, Survey Report

Company:	Chesapeake Operating Inc	Local Co-ordinate Reference:	Well Job # 1210245
Project:	Eddy County, New Mexico (NAD 1983)	TVD Reference:	WELL @ 3188.00usft (Patterson 62)
Site:	PLU Phantom Banks 3-26-30 USA 1H	MD Reference:	WELL @ 3188.00usft (Patterson 62)
Well:	Job # 1210245	North Reference:	Grid
Wellbore:	Rig: Patterson 62	Survey Calculation Method:	Minimum Curvature
Design:	Rig: Patterson 62	Database:	Compass5000

Checked By: _____	Approved By: _____	Date: _____
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MD	Inc	Az	TVDSS	TVD	N/S	E/W
0	0	0	-3188	0	0 N	0 E
132	0.5	209.1	-3056	132	0.5 S	0.28 W
311	0.2	194.7	-2877.01	310.99	1.49 S	0.74 W
497	0.9	267.2	-2691.01	496.99	1.87 S	2.28 W
687	0.7	233.9	-2501.03	686.97	2.63 S	4.71 W
877	0.4	263.4	-2311.04	876.96	3.39 S	6.31 W
1067	0.9	109	-2121.05	1066.95	3.95 S	5.55 W
1257	1	165.1	-1931.07	1256.93	6.04 S	3.72 W
1360	0.8	220.3	-1828.08	1359.92	7.46 S	3.95 W
1534	1	248.3	-1654.1	1533.9	8.95 S	6.15 W
1724	1	252.3	-1464.13	1723.87	10.06 S	9.27 W
1914	1.2	237.8	-1274.16	1913.84	11.63 S	12.53 W
2104	1.6	247.5	-1084.22	2103.78	13.7 S	16.66 W
2199	1	247.8	-989.25	2198.75	14.52 S	18.66 W
2300	1.05	206.38	-888.26	2299.74	15.68 S	19.88 W
2400	0.63	209.57	-788.27	2399.73	16.98 S	20.56 W
2500	0.84	199.54	-688.28	2499.72	18.15 S	21.08 W
2600	0.54	187.95	-588.29	2599.71	19.31 S	21.39 W
2700	0.25	160.45	-488.29	2699.71	19.98 S	21.38 W
2800	0.21	134.11	-388.29	2799.71	20.32 S	21.18 W
2900	0.18	35.49	-288.29	2899.71	20.32 S	20.95 W
3000	0.62	20.35	-188.29	2999.71	19.68 S	20.67 W
3100	1.22	40.83	-88.31	3099.69	18.37 S	19.79 W
3200	1.28	44.64	11.67	3199.67	16.77 S	18.31 W
3300	1.55	53.09	111.64	3299.64	15.16 S	16.44 W
3400	1.63	52.72	211.6	3399.6	13.49 S	14.23 W
3500	1.48	58.55	311.56	3499.56	11.95 S	12 W
3600	1.59	72.23	411.53	3599.53	10.85 S	9.57 W
3700	1.33	51.53	511.5	3699.5	9.71 S	7.34 W
3800	1.13	66.43	611.47	3799.47	8.59 S	5.53 W
3827	1.2	64	638.47	3826.47	8.36 S	5.03 W
4017	1.1	66.1	828.43	4016.43	6.75 S	1.58 W
4207	1.1	49.8	1018.4	4206.4	4.83 S	1.48 E
4397	0.9	43.3	1208.37	4396.37	2.57 S	3.9 E
4586	0.8	4.2	1397.35	4585.35	0.18 S	5.01 E
4776	0.7	4.7	1587.33	4775.33	2.3 N	5.21 E
4966	0.7	2.6	1777.32	4965.32	4.62 N	5.35 E
5157	0.5	357.8	1968.31	5156.31	6.62 N	5.37 E
5347	0.3	358.1	2158.3	5346.3	7.94 N	5.33 E
5537	0.4	307.1	2348.3	5536.3	8.84 N	4.78 E
5727	0.3	272.9	2538.3	5726.3	9.27 N	3.75 E
5917	0.8	220.4	2728.29	5916.29	8.28 N	2.4 E
6107	0.7	222.2	2918.27	6106.27	6.41 N	0.76 E
6296	1	228.2	3107.25	6295.25	4.46 N	1.25 W
6485	0.9	209.6	3296.22	6484.22	2.07 N	3.21 W
6675	0.5	185.5	3486.21	6674.21	0.06 S	4.03 W

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6864	0.7	156.1	3675.2	6863.2	1.93 S	3.64 W
7053	0.8	148.2	3864.18	7052.18	4.11 S	2.47 W
7242	1.1	152	4053.16	7241.16	6.83 S	0.93 W
7431	1.2	170.7	4242.12	7430.12	10.39 S	0.25 E
7620	0.6	143.9	4431.1	7619.1	13.14 S	1.15 E
7810	0.4	107.6	4621.09	7809.09	14.14 S	2.37 E
7927	12.5	3.5	4737.17	7925.17	1.58 S	3.53 E
7959	16.8	6.7	4768.12	7956.12	6.48 N	4.28 E
7990	20.5	4.2	4797.49	7985.49	16.34 N	5.21 E
8022	23.8	0.1	4827.13	8015.13	28.39 N	5.63 E
8053	26.3	355.2	4855.21	8043.21	41.49 N	5.06 E
8085	30.5	354.8	4883.35	8071.35	56.65 N	3.73 E
8117	32.4	355.9	4910.65	8098.65	73.29 N	2.38 E
8148	35	357.4	4936.44	8124.44	90.46 N	1.39 E
8180	38.3	357.2	4962.11	8150.11	109.54 N	0.49 E
8212	41.1	357.1	4986.73	8174.73	129.95 N	0.53 W
8244	44.8	357.3	5010.15	8198.15	151.72 N	1.59 W
8275	48.5	358.1	5031.42	8219.42	174.24 N	2.49 W
8307	50.9	358.3	5052.12	8240.12	198.64 N	3.26 W
8339	53.8	359.1	5071.66	8259.66	223.96 N	3.83 W
8371	56.5	0	5089.95	8277.95	250.22 N	4.03 W
8403	58.5	0.8	5107.14	8295.14	277.21 N	3.84 W
8434	62.5	0.6	5122.4	8310.4	304.18 N	3.51 W
8466	65.9	358.9	5136.33	8324.33	332.98 N	3.65 W
8498	68.6	358.6	5148.7	8336.7	362.48 N	4.29 W
8529	71.7	359.6	5159.23	8347.23	391.64 N	4.75 W
8561	74.4	0.6	5168.56	8356.56	422.24 N	4.69 W
8593	76.9	1	5176.49	8364.49	453.24 N	4.26 W
8625	79.9	1.5	5182.92	8370.92	484.57 N	3.57 W
8656	82.1	1.8	5187.77	8375.77	515.18 N	2.69 W
8688	85.5	1.7	5191.23	8379.23	546.97 N	1.72 W
8720	90.9	1.3	5192.23	8380.23	578.93 N	0.88 W
8777	91.6	0.3	5190.99	8378.99	635.91 N	0.09 W
8872	91.5	0.8	5188.42	8376.42	730.87 N	0.82 E
8967	92.1	1.1	5185.43	8373.43	825.81 N	2.4 E
9063	92.8	1.1	5181.33	8369.33	921.71 N	4.24 E
9158	92.9	1	5176.61	8364.61	1016.57 N	5.98 E
9253	92	359.4	5172.55	8360.55	1111.48 N	6.31 E
9348	89.1	358.1	5171.63	8359.63	1206.44 N	4.24 E
9443	88.1	357.8	5173.95	8361.95	1301.35 N	0.84 E
9538	89.5	358.1	5175.94	8363.94	1396.27 N	2.56 W
9634	90.9	358.1	5175.61	8363.61	1492.21 N	5.74 W
9729	91.7	358.4	5173.45	8361.45	1587.14 N	8.64 W
9824	92.2	358.5	5170.22	8358.22	1682.05 N	11.21 W
9919	90.9	358.3	5167.65	8355.65	1776.98 N	13.86 W
10014	90.9	359.3	5166.16	8354.16	1871.94 N	15.85 W
10110	91.3	359.5	5164.32	8352.32	1967.92 N	16.86 W

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10205	91.3	359.6	5162.16	8350.16	2062.89 N	17.6 W
10300	91.2	359.4	5160.09	8348.09	2157.87 N	18.43 W
10395	91.3	359.8	5158.02	8346.02	2252.84 N	19.09 W
10490	92	0.4	5155.28	8343.28	2347.8 N	18.93 W
10586	91.3	359.7	5152.52	8340.52	2443.76 N	18.84 W
10681	91.5	0.3	5150.2	8338.2	2538.73 N	18.84 W
10776	90.3	0.9	5148.7	8336.7	2633.71 N	17.85 W
10871	90.5	1	5148.04	8336.04	2728.7 N	16.27 W
10966	90.9	0.7	5146.88	8334.88	2823.68 N	14.87 W
11061	91.5	1.7	5144.89	8332.89	2918.64 N	12.88 W
11157	92	1.6	5141.96	8329.96	3014.55 N	10.11 W
11253	90.9	1	5139.53	8327.53	3110.49 N	7.94 W
11348	89.7	1	5139.03	8327.03	3205.48 N	6.28 W
11443	90.5	1.6	5138.87	8326.87	3300.45 N	4.12 W
11538	91.1	2.4	5137.54	8325.54	3395.38 N	0.81 W
11634	91.1	2.4	5135.7	8323.7	3491.28 N	3.21 E
11729	88.7	0.4	5135.86	8323.86	3586.24 N	5.53 E
11824	89.4	1.2	5137.44	8325.44	3681.22 N	6.86 E
11919	87.6	359.5	5139.92	8327.92	3776.17 N	7.44 E
12014	88.3	358.4	5143.32	8331.32	3871.1 N	5.7 E
12110	89.3	358.7	5145.33	8333.33	3967.04 N	3.27 E
12205	88.8	358.8	5146.91	8334.91	4062.01 N	1.2 E
12300	88	358.3	5149.56	8337.56	4156.94 N	1.2 W
12396	88.3	357.7	5152.66	8340.66	4252.83 N	4.55 W
12491	89.3	357.4	5154.65	8342.65	4347.72 N	8.61 W
12586	90	356.7	5155.23	8343.23	4442.59 N	13.5 W
12681	92.7	356	5152.99	8340.99	4537.36 N	19.55 W
12776	92.6	356.4	5148.6	8336.6	4632.05 N	25.84 W
12872	93.2	356.4	5143.74	8331.74	4727.74 N	31.86 W
12898	93.1	355.9	5142.31	8330.31	4753.64 N	33.6 W
12947	93.1	355.9	5139.66	8327.66	4802.44 N	37.1 W
12957	93.1	355.9	5139.12	8327.12	4812.4 N	37.81 W

Northing	Easting	Vsec	D Leg
387835 N	685832 E	0	0
387834.5 N	685831.7 E	-0.5	0.38
387833.5 N	685831.3 E	-1.48	0.17
387833.1 N	685829.7 E	-1.86	0.46
387832.4 N	685827.3 E	-2.6	0.26
387831.6 N	685825.7 E	-3.34	0.21
387831 N	685826.4 E	-3.91	0.67
387829 N	685828.3 E	-6.01	0.47
387827.5 N	685828.1 E	-7.43	0.83
387826.1 N	685825.9 E	-8.9	0.27
387824.9 N	685822.7 E	-10	0.04
387823.4 N	685819.5 E	-11.54	0.18
387821.3 N	685815.3 E	-13.58	0.24
387820.5 N	685813.3 E	-14.39	0.63
387819.3 N	685812.1 E	-15.54	0.72
387818 N	685811.4 E	-16.84	0.42
387816.8 N	685810.9 E	-18	0.25
387815.7 N	685810.6 E	-19.16	0.33
387815 N	685810.6 E	-19.83	0.34
387814.7 N	685810.8 E	-20.16	0.11
387814.7 N	685811 E	-20.16	0.3
387815.3 N	685811.3 E	-19.53	0.45
387816.6 N	685812.2 E	-18.23	0.67
387818.2 N	685813.7 E	-16.64	0.1
387819.8 N	685815.6 E	-15.04	0.34
387821.5 N	685817.8 E	-13.38	0.08
387823 N	685820 E	-11.86	0.22
387824.1 N	685822.4 E	-10.78	0.38
387825.3 N	685824.7 E	-9.66	0.58
387826.4 N	685826.5 E	-8.55	0.38
387826.6 N	685827 E	-8.33	0.32
387828.2 N	685830.4 E	-6.74	0.06
387830.2 N	685833.5 E	-4.85	0.16
387832.4 N	685835.9 E	-2.6	0.12
387834.8 N	685837 E	-0.21	0.31
387837.3 N	685837.2 E	2.27	0.05
387839.6 N	685837.4 E	4.58	0.01
387841.6 N	685837.4 E	6.58	0.11
387842.9 N	685837.3 E	7.91	0.11
387843.8 N	685836.8 E	8.81	0.17
387844.3 N	685835.8 E	9.24	0.12
387843.3 N	685834.4 E	8.26	0.35
387841.4 N	685832.8 E	6.41	0.05
387839.5 N	685830.8 E	4.47	0.17
387837.1 N	685828.8 E	2.09	0.17
387834.9 N	685828 E	-0.03	0.26

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387833.1 N	685828.4 E	-1.91	0.19
387830.9 N	685829.5 E	-4.09	0.08
387828.2 N	685831.1 E	-6.82	0.16
387824.6 N	685832.2 E	-10.39	0.2
387821.9 N	685833.1 E	-13.15	0.38
387820.9 N	685834.4 E	-14.16	0.19
387833.4 N	685835.5 E	-1.6	10.77
387841.5 N	685836.3 E	6.44	13.67
387851.3 N	685837.2 E	16.3	12.21
387863.4 N	685837.6 E	28.35	11.38
387876.5 N	685837.1 E	41.46	10.47
387891.7 N	685835.7 E	56.62	13.14
387908.3 N	685834.4 E	73.27	6.2
387925.5 N	685833.4 E	90.45	8.81
387944.5 N	685832.5 E	109.53	10.32
387965 N	685831.5 E	129.95	8.75
387986.7 N	685830.4 E	151.73	11.57
388009.2 N	685829.5 E	174.26	12.08
388033.6 N	685828.7 E	198.65	7.52
388059 N	685828.2 E	223.98	9.28
388085.2 N	685828 E	250.24	8.75
388112.2 N	685828.2 E	277.23	6.6
388139.2 N	685828.5 E	304.2	12.92
388168 N	685828.4 E	333	11.65
388197.5 N	685827.7 E	362.51	8.48
388226.6 N	685827.3 E	391.66	10.45
388257.2 N	685827.3 E	422.26	8.95
388288.2 N	685827.7 E	453.26	7.91
388319.6 N	685828.4 E	484.59	9.5
388350.2 N	685829.3 E	515.18	7.16
388382 N	685830.3 E	546.97	10.63
388413.9 N	685831.1 E	578.92	16.92
388470.9 N	685831.9 E	635.9	2.14
388565.9 N	685832.8 E	730.85	0.54
388660.8 N	685834.4 E	825.77	0.71
388756.7 N	685836.2 E	921.65	0.73
388851.6 N	685838 E	1016.5	0.15
388946.5 N	685838.3 E	1111.41	1.93
389041.4 N	685836.2 E	1206.38	3.35
389136.4 N	685832.8 E	1301.31	1.1
389231.3 N	685829.4 E	1396.25	1.51
389327.2 N	685826.3 E	1492.21	1.46
389422.1 N	685823.4 E	1587.16	0.9
389517.1 N	685820.8 E	1682.09	0.54
389612 N	685818.1 E	1777.03	1.38
389706.9 N	685816.2 E	1872.01	1.05
389802.9 N	685815.1 E	1967.99	0.47

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389897.9 N	685814.4 E	2062.97	0.11
389992.9 N	685813.6 E	2157.94	0.24
390087.8 N	685812.9 E	2252.92	0.43
390182.8 N	685813.1 E	2347.88	0.97
390278.8 N	685813.2 E	2443.83	1.03
390373.7 N	685813.2 E	2538.8	0.67
390468.7 N	685814.2 E	2633.77	1.41
390563.7 N	685815.7 E	2728.74	0.24
390658.7 N	685817.1 E	2823.71	0.53
390753.6 N	685819.1 E	2918.65	1.23
390849.6 N	685821.9 E	3014.55	0.53
390945.5 N	685824.1 E	3110.47	1.31
391040.5 N	685825.7 E	3205.44	1.26
391135.5 N	685827.9 E	3300.39	1.05
391230.4 N	685831.2 E	3395.3	1.05
391326.3 N	685835.2 E	3491.17	0
391421.2 N	685837.5 E	3586.11	3.29
391516.2 N	685838.9 E	3681.07	1.12
391611.2 N	685839.4 E	3776.02	2.61
391706.1 N	685837.7 E	3870.96	1.37
391802 N	685835.3 E	3966.92	1.09
391897 N	685833.2 E	4061.89	0.54
391991.9 N	685830.8 E	4156.84	0.99
392087.8 N	685827.4 E	4252.75	0.7
392182.7 N	685823.4 E	4347.67	1.1
392277.6 N	685818.5 E	4442.57	1.04
392372.4 N	685812.5 E	4537.39	2.94
392467.1 N	685806.2 E	4632.12	0.43
392562.7 N	685800.1 E	4727.85	0.62
392588.6 N	685798.4 E	4753.76	1.96
392637.4 N	685794.9 E	4802.59	0
392647.4 N	685794.2 E	4812.55	0

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