



Project: Allegheny County, PA
Site: Edgar Thomson Pad
Well: Braddock 1H
Wellbore: Lateral #1
Design: Plan #1
Rig:
Job:

SECTION DETAILS

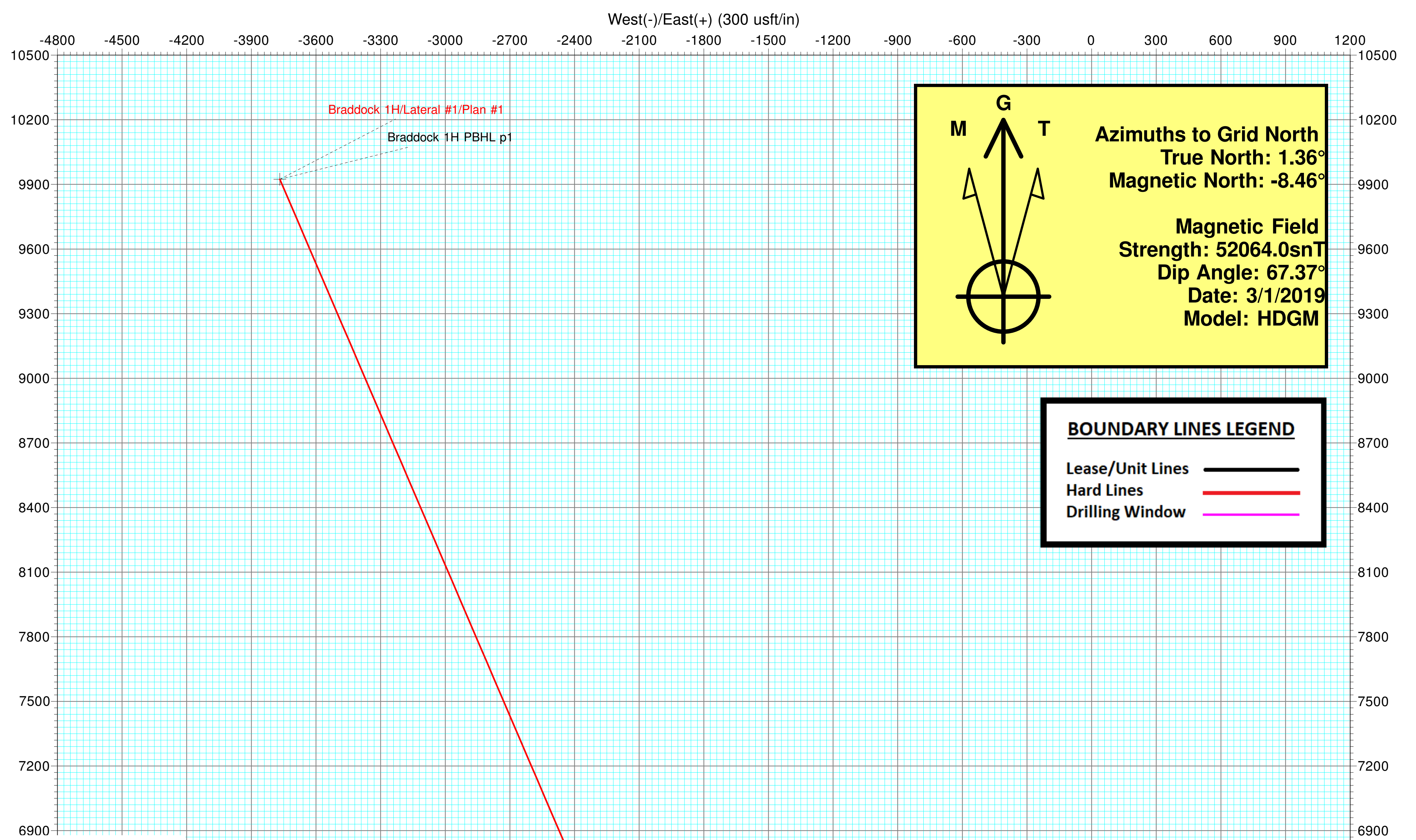
MD	Inc	Asi	TVD	+N-S	+E-W	Dleg	TFace	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5800.00	0.00	0.00	5800.00	0.00	0.00	0.00	0.00	0.00
6111.11	28.00	66.80	6098.87	29.36	68.49	9.00	66.80	0.00
6258.11	28.00	66.80	6228.67	56.54	131.92	0.00	0.00	0.00
7267.93	91.00	336.80	6788.23	770.25	156.22	9.00	-89.53	646.42
17228.60	91.00	336.80	6614.40	9923.84	-3767.62	0.00	0.00	10605.57

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
Braddock 1H SHL	0.00	0.00	0.00	393018.75	1384644.78	40.39318	-79.84634
Braddock 1H KOP-1 p1	5800.00	0.00	0.00	393018.75	1384644.78	40.39318	-79.84634
Braddock 1H KOP-2 p1	6228.67	56.54	131.92	393075.29	1384776.70	40.39334	-79.84587
Braddock 1H PBHL p1	6614.40	9923.84	-3767.62	402942.58	1380677.16	40.42017	-79.86071
Braddock 1H LP p1	6788.23	770.25	156.22	393788.99	1384801.00	40.39530	-79.84584

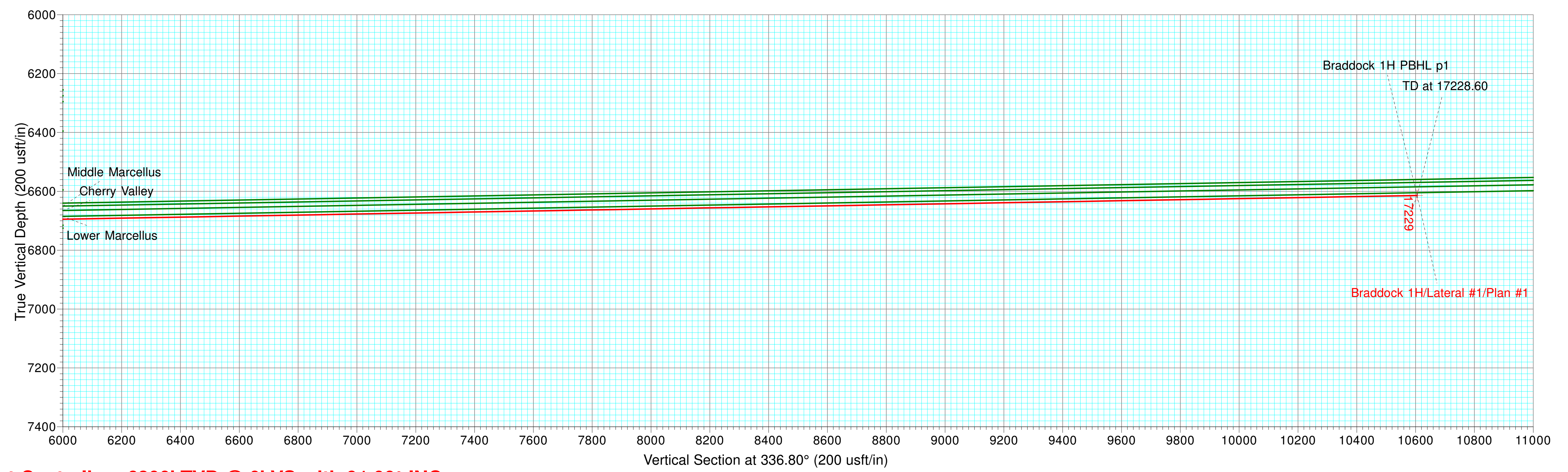
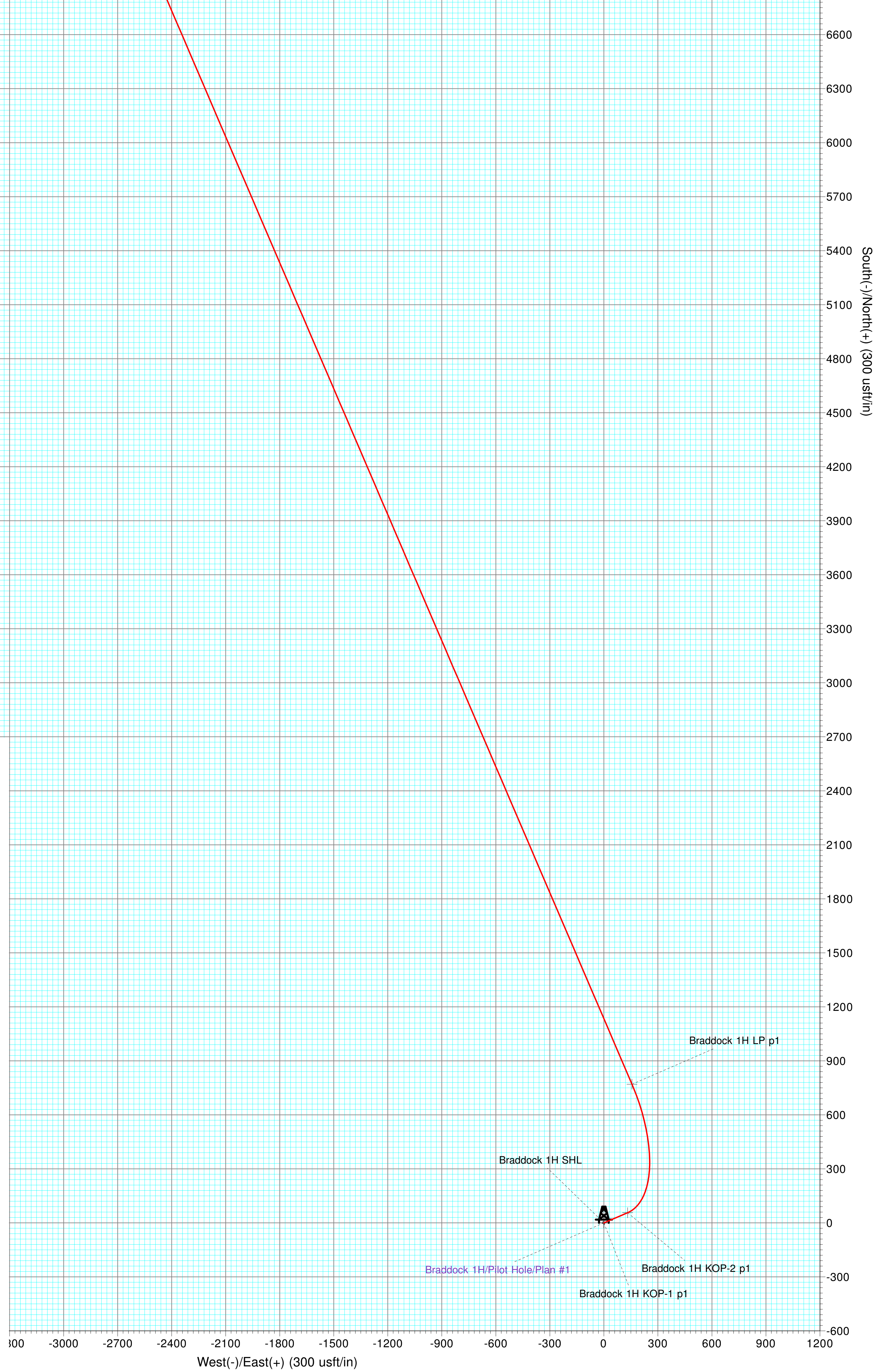
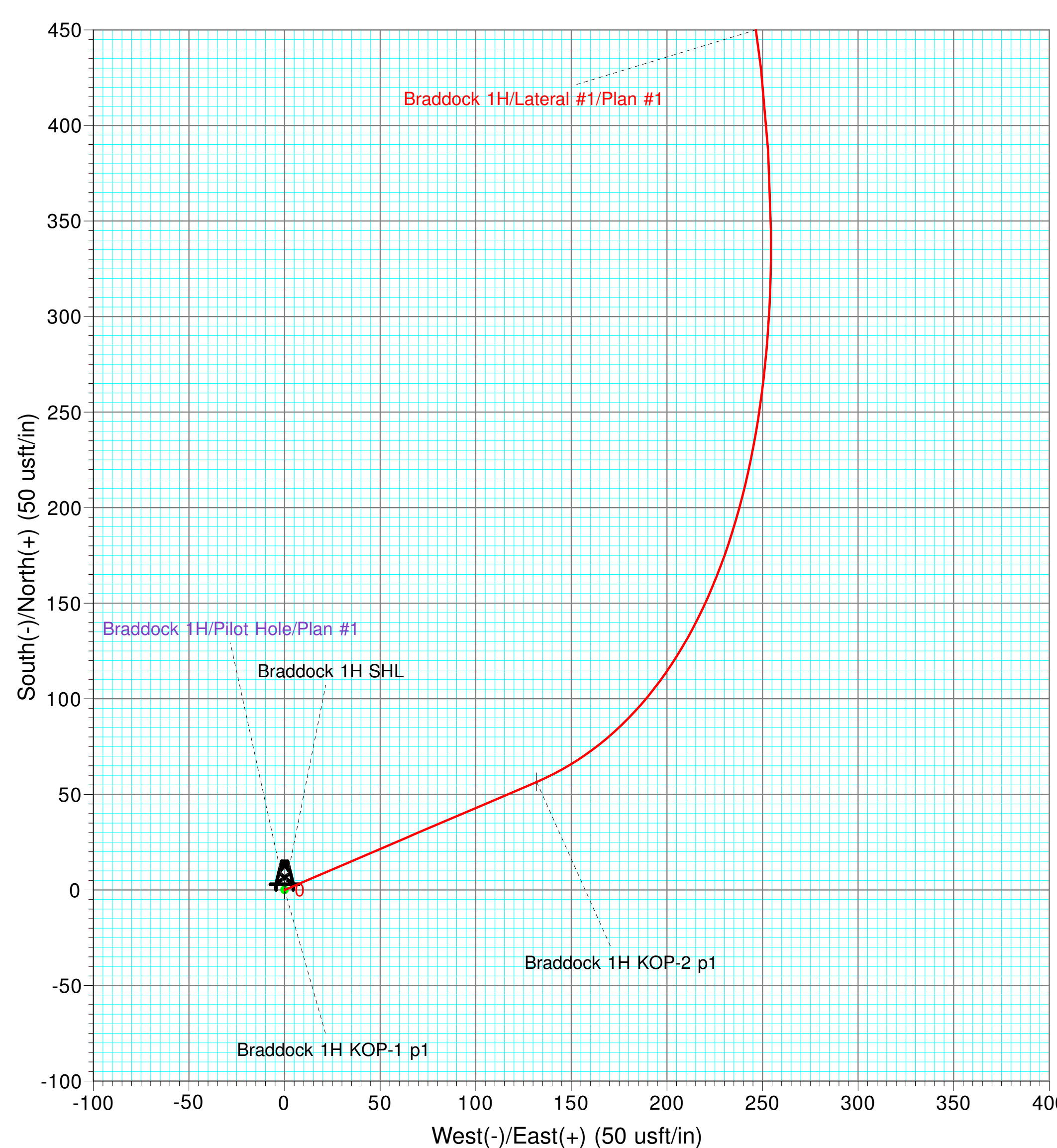
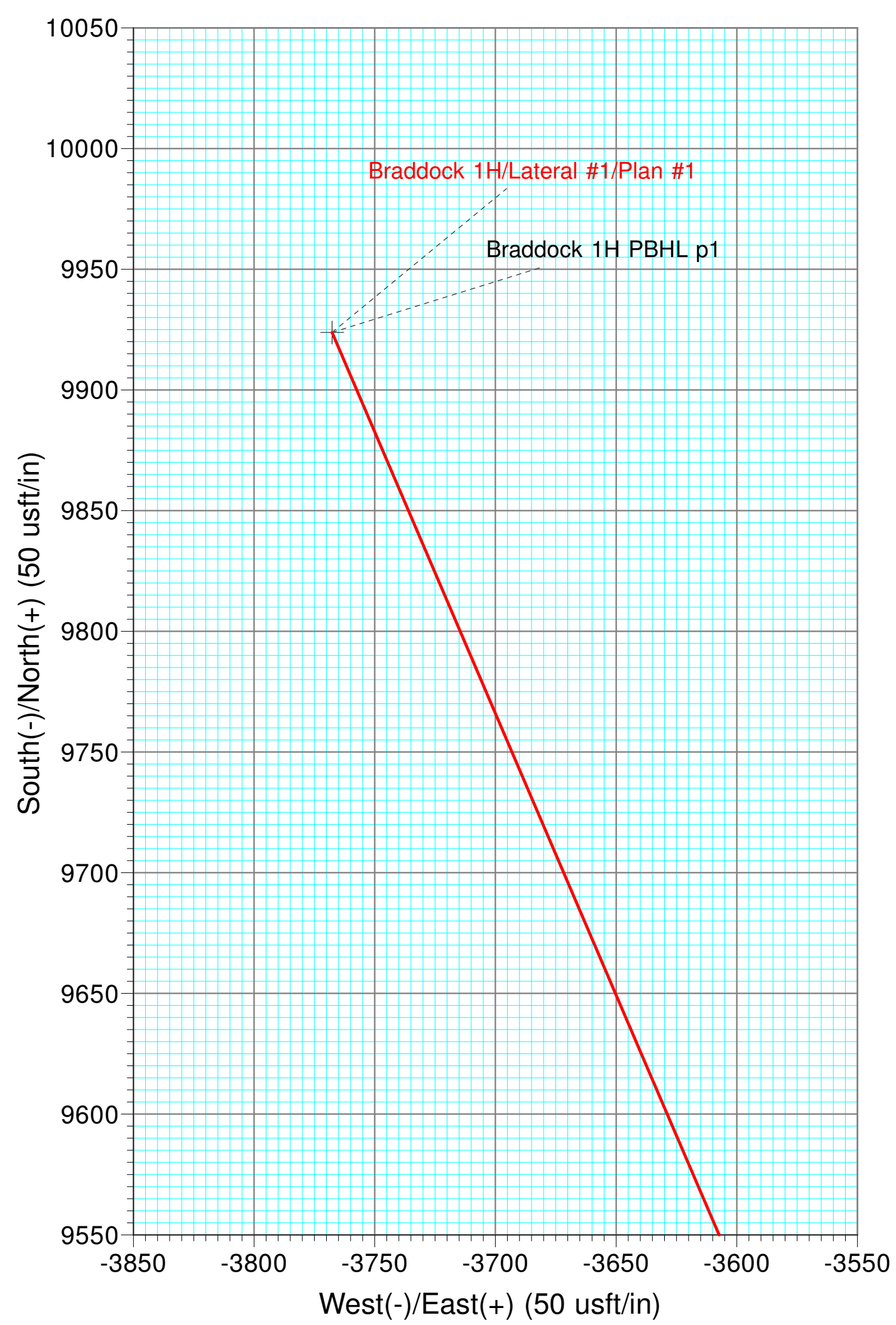
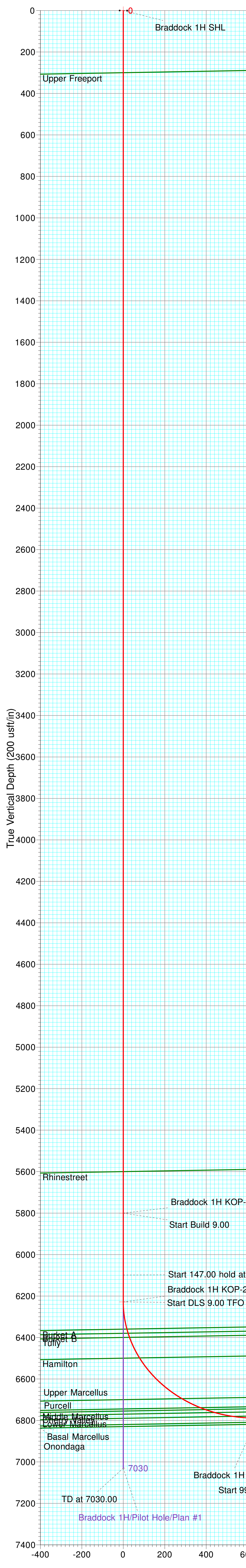
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
300.00	300.00	Upper Freeport
5600.00	5600.00	Rhinestreet
6359.69	6407.96	Burket A
6379.59	6431.27	Burket B
6399.47	6454.81	Tully
6498.63	6577.42	Hamilton
6695.06	6883.32	Upper Marcellus
6738.51	6985.26	Puncell
6748.06	7012.89	Middle Marcellus
6762.28	7060.74	Cherry Valley
6780.75	7150.66	Lower Marcellus

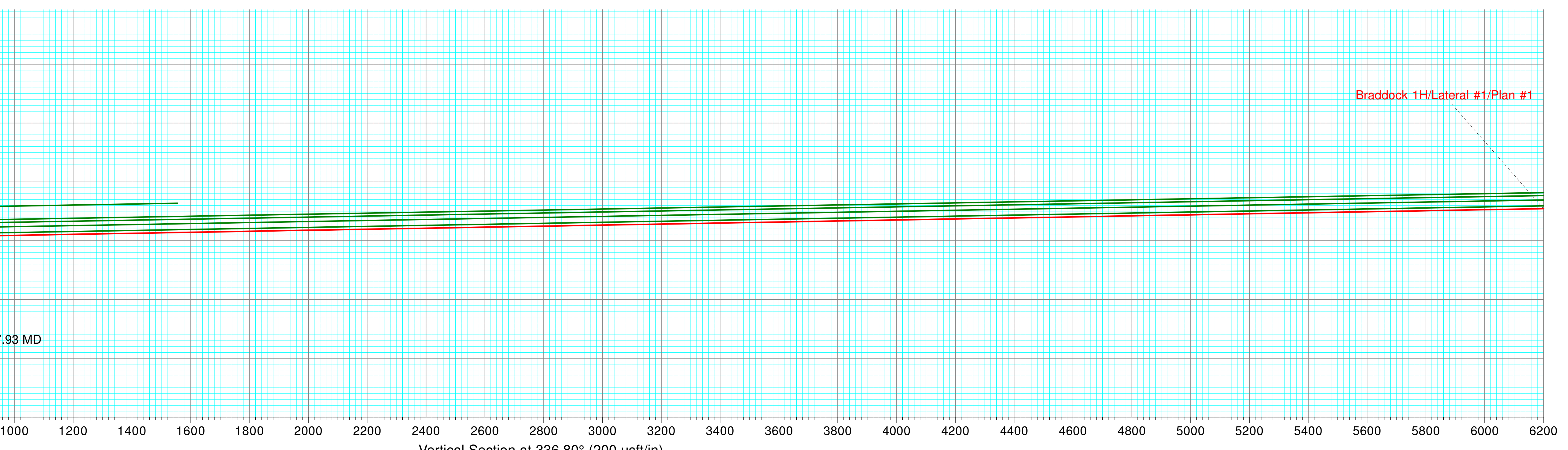


Azimuths to Grid North
 True North: 1.36°
 Magnetic North: -8.46°
Magnetic Field
 Strength: 52064.0snT
 Dip Angle: 67.37°
 Date: 3/1/2019
 Model: HDGM

BOUNDARY LINES LEGEND
 Lease/Unit Lines ———
 Hard Lines ———
 Drilling Window ———



Target Centerline: 6800' TVD @ 0° VS with 91.00° INC



Merrion Oil & Gas

**Allegheny County, PA
Edgar Thomson Pad
Braddock 1H**

Lateral #1

Plan: Plan #1

Standard Survey Report

04 March, 2019

Survey Report

Company: Merrion Oil & Gas	Local Co-ordinate Reference: Well Braddock 1H
Project: Allegheny County, PA	TVD Reference: 750+20 @ 770.00usft
Site: Edgar Thomson Pad	MD Reference: 750+20 @ 770.00usft
Well: Braddock 1H	North Reference: Grid
Wellbore: Lateral #1	Survey Calculation Method: Minimum Curvature
Design: Plan #1	Database: EDM 5000.14 Multi User

Project Allegheny County, PA		
Map System: US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum: North American Datum 1983		
Map Zone: Pennsylvania Southern Zone		

Site Edgar Thomson Pad			
Site Position:	Northing: 393,018.74 usft	Latitude:	40.39318
From: Lat/Long	Easting: 1,384,644.78 usft	Longitude:	-79.84634
Position Uncertainty: 0.00 usft	Slot Radius: 13.200 in	Grid Convergence:	-1.36 °

Well Braddock 1H			
Well Position	+N/-S 0.00 usft	Northing: 393,018.74 usft	Latitude: 40.39318
	+E/-W 0.00 usft	Easting: 1,384,644.78 usft	Longitude: -79.84634
Position Uncertainty	0.00 usft	Wellhead Elevation: usft	Ground Level: 750.00 usft

Wellbore Lateral #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/1/2019	-9.82	67.37	52,064

Design Plan #1				
Audit Notes:				
Version:	Phase: PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	336.80

Survey Tool Program		Date 3/4/2019
From (usft)	To (usft)	Survey (Wellbore)
0.00	17,228.60	Plan #1 (Lateral #1)
		Tool Name
		MWD+HRGM
		Description
		OWSG MWD + HRGM

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	

Survey Report

Company:	Merrion Oil & Gas	Local Co-ordinate Reference:	Well Braddock 1H
Project:	Allegheny County, PA	TVD Reference:	750+20 @ 770.00usft
Site:	Edgar Thomson Pad	MD Reference:	750+20 @ 770.00usft
Well:	Braddock 1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.14 Multi User

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00

Survey Report

Company:	Merrion Oil & Gas	Local Co-ordinate Reference:	Well Braddock 1H
Project:	Allegheny County, PA	TVD Reference:	750+20 @ 770.00usft
Site:	Edgar Thomson Pad	MD Reference:	750+20 @ 770.00usft
Well:	Braddock 1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.14 Multi User

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,850.00	4.50	66.80	5,849.95	0.77	1.80	0.00	9.00	9.00	0.00	
5,900.00	9.00	66.80	5,899.59	3.09	7.20	0.00	9.00	9.00	0.00	
5,950.00	13.50	66.80	5,948.62	6.93	16.17	0.00	9.00	9.00	0.00	
6,000.00	18.00	66.80	5,996.73	12.27	28.64	0.00	9.00	9.00	0.00	
6,050.00	22.50	66.80	6,043.62	19.09	44.54	0.00	9.00	9.00	0.00	
6,100.00	27.00	66.80	6,089.02	27.33	63.78	0.00	9.00	9.00	0.00	
6,111.11	28.00	66.80	6,098.87	29.36	68.49	0.00	9.00	9.00	0.00	
6,200.00	28.00	66.80	6,177.36	45.80	106.85	0.00	0.00	0.00	0.00	
6,258.11	28.00	66.80	6,228.67	56.54	131.92	0.00	0.00	0.00	0.00	
6,300.00	28.26	58.82	6,265.62	65.55	149.45	1.38	9.00	0.63	-19.05	
6,350.00	29.17	49.63	6,309.49	79.58	168.87	6.62	9.00	1.81	-18.37	
6,400.00	30.65	41.11	6,352.85	97.09	186.55	15.75	9.00	2.98	-17.05	
6,450.00	32.65	33.41	6,395.43	117.96	202.36	28.70	9.00	3.99	-15.39	
6,500.00	35.06	26.59	6,436.97	142.07	216.22	45.40	9.00	4.82	-13.65	
6,550.00	37.81	20.58	6,477.20	169.27	228.04	65.75	9.00	5.50	-12.01	
6,600.00	40.83	15.31	6,515.89	199.40	237.75	89.62	9.00	6.04	-10.55	
6,650.00	44.06	10.66	6,552.80	232.27	245.29	116.85	9.00	6.46	-9.29	
6,700.00	47.45	6.54	6,587.69	267.67	250.60	147.30	9.00	6.79	-8.25	
6,750.00	50.98	2.85	6,620.35	305.38	253.67	180.76	9.00	7.06	-7.38	
6,800.00	54.62	359.52	6,650.58	345.18	254.46	217.03	9.00	7.27	-6.67	
6,850.00	58.33	356.47	6,678.19	386.82	252.98	255.89	9.00	7.44	-6.09	
6,900.00	62.12	353.67	6,703.02	430.05	249.23	297.09	9.00	7.57	-5.61	
6,950.00	65.96	351.05	6,724.91	474.59	243.24	340.39	9.00	7.67	-5.23	
7,000.00	69.83	348.59	6,743.72	520.17	235.04	385.51	9.00	7.76	-4.93	
7,050.00	73.75	346.25	6,759.35	566.51	224.68	432.18	9.00	7.82	-4.68	
7,100.00	77.68	344.00	6,771.69	613.32	212.24	480.11	9.00	7.87	-4.50	
7,150.00	81.64	341.81	6,780.66	660.32	197.77	529.01	9.00	7.91	-4.37	
7,200.00	85.60	339.67	6,786.22	707.22	181.39	578.57	9.00	7.93	-4.28	
7,250.00	89.57	337.55	6,788.32	753.72	163.17	628.49	9.00	7.94	-4.23	
7,267.93	91.00	336.80	6,788.23	770.25	156.22	646.42	9.00	7.95	-4.23	
7,300.00	91.00	336.80	6,787.67	799.72	143.58	678.48	0.00	0.00	0.00	
7,400.00	91.00	336.80	6,785.92	891.61	104.19	778.47	0.00	0.00	0.00	
7,500.00	91.00	336.80	6,784.18	983.51	64.80	878.45	0.00	0.00	0.00	
7,600.00	91.00	336.80	6,782.43	1,075.41	25.40	978.44	0.00	0.00	0.00	
7,700.00	91.00	336.80	6,780.69	1,167.31	-13.99	1,078.42	0.00	0.00	0.00	
7,800.00	91.00	336.80	6,778.94	1,259.20	-53.38	1,178.41	0.00	0.00	0.00	
7,900.00	91.00	336.80	6,777.20	1,351.10	-92.78	1,278.39	0.00	0.00	0.00	
8,000.00	91.00	336.80	6,775.45	1,443.00	-132.17	1,378.38	0.00	0.00	0.00	

Survey Report

Company:	Merrion Oil & Gas	Local Co-ordinate Reference:	Well Braddock 1H
Project:	Allegheny County, PA	TVD Reference:	750+20 @ 770.00usft
Site:	Edgar Thomson Pad	MD Reference:	750+20 @ 770.00usft
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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,100.00	91.00	336.80	6,773.71	1,534.90	-171.56	1,478.36	0.00	0.00	0.00	
8,200.00	91.00	336.80	6,771.96	1,626.79	-210.96	1,578.35	0.00	0.00	0.00	
8,300.00	91.00	336.80	6,770.22	1,718.69	-250.35	1,678.33	0.00	0.00	0.00	
8,400.00	91.00	336.80	6,768.47	1,810.59	-289.74	1,778.32	0.00	0.00	0.00	
8,500.00	91.00	336.80	6,766.73	1,902.48	-329.14	1,878.30	0.00	0.00	0.00	
8,600.00	91.00	336.80	6,764.98	1,994.38	-368.53	1,978.29	0.00	0.00	0.00	
8,700.00	91.00	336.80	6,763.24	2,086.28	-407.92	2,078.27	0.00	0.00	0.00	
8,800.00	91.00	336.80	6,761.49	2,178.18	-447.32	2,178.26	0.00	0.00	0.00	
8,900.00	91.00	336.80	6,759.75	2,270.07	-486.71	2,278.24	0.00	0.00	0.00	
9,000.00	91.00	336.80	6,758.00	2,361.97	-526.10	2,378.22	0.00	0.00	0.00	
9,100.00	91.00	336.80	6,756.26	2,453.87	-565.50	2,478.21	0.00	0.00	0.00	
9,200.00	91.00	336.80	6,754.51	2,545.77	-604.89	2,578.19	0.00	0.00	0.00	
9,300.00	91.00	336.80	6,752.77	2,637.66	-644.28	2,678.18	0.00	0.00	0.00	
9,400.00	91.00	336.80	6,751.02	2,729.56	-683.68	2,778.16	0.00	0.00	0.00	
9,500.00	91.00	336.80	6,749.28	2,821.46	-723.07	2,878.15	0.00	0.00	0.00	
9,600.00	91.00	336.80	6,747.53	2,913.36	-762.46	2,978.13	0.00	0.00	0.00	
9,700.00	91.00	336.80	6,745.79	3,005.25	-801.86	3,078.12	0.00	0.00	0.00	
9,800.00	91.00	336.80	6,744.04	3,097.15	-841.25	3,178.10	0.00	0.00	0.00	
9,900.00	91.00	336.80	6,742.30	3,189.05	-880.64	3,278.09	0.00	0.00	0.00	
10,000.00	91.00	336.80	6,740.55	3,280.94	-920.04	3,378.07	0.00	0.00	0.00	
10,100.00	91.00	336.80	6,738.81	3,372.84	-959.43	3,478.06	0.00	0.00	0.00	
10,200.00	91.00	336.80	6,737.06	3,464.74	-998.82	3,578.04	0.00	0.00	0.00	
10,300.00	91.00	336.80	6,735.32	3,556.64	-1,038.22	3,678.03	0.00	0.00	0.00	
10,400.00	91.00	336.80	6,733.57	3,648.53	-1,077.61	3,778.01	0.00	0.00	0.00	
10,500.00	91.00	336.80	6,731.82	3,740.43	-1,117.00	3,878.00	0.00	0.00	0.00	
10,600.00	91.00	336.80	6,730.08	3,832.33	-1,156.40	3,977.98	0.00	0.00	0.00	
10,700.00	91.00	336.80	6,728.33	3,924.23	-1,195.79	4,077.97	0.00	0.00	0.00	
10,800.00	91.00	336.80	6,726.59	4,016.12	-1,235.18	4,177.95	0.00	0.00	0.00	
10,900.00	91.00	336.80	6,724.84	4,108.02	-1,274.58	4,277.94	0.00	0.00	0.00	
11,000.00	91.00	336.80	6,723.10	4,199.92	-1,313.97	4,377.92	0.00	0.00	0.00	
11,100.00	91.00	336.80	6,721.35	4,291.82	-1,353.36	4,477.91	0.00	0.00	0.00	
11,200.00	91.00	336.80	6,719.61	4,383.71	-1,392.76	4,577.89	0.00	0.00	0.00	
11,300.00	91.00	336.80	6,717.86	4,475.61	-1,432.15	4,677.87	0.00	0.00	0.00	
11,400.00	91.00	336.80	6,716.12	4,567.51	-1,471.54	4,777.86	0.00	0.00	0.00	
11,500.00	91.00	336.80	6,714.37	4,659.40	-1,510.94	4,877.84	0.00	0.00	0.00	
11,600.00	91.00	336.80	6,712.63	4,751.30	-1,550.33	4,977.83	0.00	0.00	0.00	
11,700.00	91.00	336.80	6,710.88	4,843.20	-1,589.72	5,077.81	0.00	0.00	0.00	
11,800.00	91.00	336.80	6,709.14	4,935.10	-1,629.12	5,177.80	0.00	0.00	0.00	
11,900.00	91.00	336.80	6,707.39	5,026.99	-1,668.51	5,277.78	0.00	0.00	0.00	
12,000.00	91.00	336.80	6,705.65	5,118.89	-1,707.90	5,377.77	0.00	0.00	0.00	
12,100.00	91.00	336.80	6,703.90	5,210.79	-1,747.30	5,477.75	0.00	0.00	0.00	
12,200.00	91.00	336.80	6,702.16	5,302.69	-1,786.69	5,577.74	0.00	0.00	0.00	
12,300.00	91.00	336.80	6,700.41	5,394.58	-1,826.08	5,677.72	0.00	0.00	0.00	

Survey Report

Company:	Merrion Oil & Gas	Local Co-ordinate Reference:	Well Braddock 1H
Project:	Allegheny County, PA	TVD Reference:	750+20 @ 770.00usft
Site:	Edgar Thomson Pad	MD Reference:	750+20 @ 770.00usft
Well:	Braddock 1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.14 Multi User

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
12,400.00	91.00	336.80	6,698.67	5,486.48	-1,865.48	5,777.71	0.00	0.00	0.00	
12,500.00	91.00	336.80	6,696.92	5,578.38	-1,904.87	5,877.69	0.00	0.00	0.00	
12,600.00	91.00	336.80	6,695.18	5,670.28	-1,944.26	5,977.68	0.00	0.00	0.00	
12,700.00	91.00	336.80	6,693.43	5,762.17	-1,983.66	6,077.66	0.00	0.00	0.00	
12,800.00	91.00	336.80	6,691.69	5,854.07	-2,023.05	6,177.65	0.00	0.00	0.00	
12,900.00	91.00	336.80	6,689.94	5,945.97	-2,062.44	6,277.63	0.00	0.00	0.00	
13,000.00	91.00	336.80	6,688.20	6,037.86	-2,101.84	6,377.62	0.00	0.00	0.00	
13,100.00	91.00	336.80	6,686.45	6,129.76	-2,141.23	6,477.60	0.00	0.00	0.00	
13,200.00	91.00	336.80	6,684.71	6,221.66	-2,180.62	6,577.59	0.00	0.00	0.00	
13,300.00	91.00	336.80	6,682.96	6,313.56	-2,220.01	6,677.57	0.00	0.00	0.00	
13,400.00	91.00	336.80	6,681.22	6,405.45	-2,259.41	6,777.55	0.00	0.00	0.00	
13,500.00	91.00	336.80	6,679.47	6,497.35	-2,298.80	6,877.54	0.00	0.00	0.00	
13,600.00	91.00	336.80	6,677.72	6,589.25	-2,338.19	6,977.52	0.00	0.00	0.00	
13,700.00	91.00	336.80	6,675.98	6,681.15	-2,377.59	7,077.51	0.00	0.00	0.00	
13,800.00	91.00	336.80	6,674.23	6,773.04	-2,416.98	7,177.49	0.00	0.00	0.00	
13,900.00	91.00	336.80	6,672.49	6,864.94	-2,456.37	7,277.48	0.00	0.00	0.00	
14,000.00	91.00	336.80	6,670.74	6,956.84	-2,495.77	7,377.46	0.00	0.00	0.00	
14,100.00	91.00	336.80	6,669.00	7,048.74	-2,535.16	7,477.45	0.00	0.00	0.00	
14,200.00	91.00	336.80	6,667.25	7,140.63	-2,574.55	7,577.43	0.00	0.00	0.00	
14,300.00	91.00	336.80	6,665.51	7,232.53	-2,613.95	7,677.42	0.00	0.00	0.00	
14,400.00	91.00	336.80	6,663.76	7,324.43	-2,653.34	7,777.40	0.00	0.00	0.00	
14,500.00	91.00	336.80	6,662.02	7,416.32	-2,692.73	7,877.39	0.00	0.00	0.00	
14,600.00	91.00	336.80	6,660.27	7,508.22	-2,732.13	7,977.37	0.00	0.00	0.00	
14,700.00	91.00	336.80	6,658.53	7,600.12	-2,771.52	8,077.36	0.00	0.00	0.00	
14,800.00	91.00	336.80	6,656.78	7,692.02	-2,810.91	8,177.34	0.00	0.00	0.00	
14,900.00	91.00	336.80	6,655.04	7,783.91	-2,850.31	8,277.33	0.00	0.00	0.00	
15,000.00	91.00	336.80	6,653.29	7,875.81	-2,889.70	8,377.31	0.00	0.00	0.00	
15,100.00	91.00	336.80	6,651.55	7,967.71	-2,929.09	8,477.30	0.00	0.00	0.00	
15,200.00	91.00	336.80	6,649.80	8,059.61	-2,968.49	8,577.28	0.00	0.00	0.00	
15,300.00	91.00	336.80	6,648.06	8,151.50	-3,007.88	8,677.27	0.00	0.00	0.00	
15,400.00	91.00	336.80	6,646.31	8,243.40	-3,047.27	8,777.25	0.00	0.00	0.00	
15,500.00	91.00	336.80	6,644.57	8,335.30	-3,086.67	8,877.24	0.00	0.00	0.00	
15,600.00	91.00	336.80	6,642.82	8,427.20	-3,126.06	8,977.22	0.00	0.00	0.00	
15,700.00	91.00	336.80	6,641.08	8,519.09	-3,165.45	9,077.20	0.00	0.00	0.00	
15,800.00	91.00	336.80	6,639.33	8,610.99	-3,204.85	9,177.19	0.00	0.00	0.00	
15,900.00	91.00	336.80	6,637.59	8,702.89	-3,244.24	9,277.17	0.00	0.00	0.00	
16,000.00	91.00	336.80	6,635.84	8,794.79	-3,283.63	9,377.16	0.00	0.00	0.00	
16,100.00	91.00	336.80	6,634.10	8,886.68	-3,323.03	9,477.14	0.00	0.00	0.00	
16,200.00	91.00	336.80	6,632.35	8,978.58	-3,362.42	9,577.13	0.00	0.00	0.00	
16,300.00	91.00	336.80	6,630.61	9,070.48	-3,401.81	9,677.11	0.00	0.00	0.00	
16,400.00	91.00	336.80	6,628.86	9,162.37	-3,441.21	9,777.10	0.00	0.00	0.00	
16,500.00	91.00	336.80	6,627.12	9,254.27	-3,480.60	9,877.08	0.00	0.00	0.00	
16,600.00	91.00	336.80	6,625.37	9,346.17	-3,519.99	9,977.07	0.00	0.00	0.00	
16,700.00	91.00	336.80	6,623.63	9,438.07	-3,559.39	10,077.05	0.00	0.00	0.00	

Survey Report

Company: Merrion Oil & Gas	Local Co-ordinate Reference: Well Braddock 1H
Project: Allegheny County, PA	TVD Reference: 750+20 @ 770.00usft
Site: Edgar Thomson Pad	MD Reference: 750+20 @ 770.00usft
Well: Braddock 1H	North Reference: Grid
Wellbore: Lateral #1	Survey Calculation Method: Minimum Curvature
Design: Plan #1	Database: EDM 5000.14 Multi User

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
16,800.00	91.00	336.80	6,621.88	9,529.96	-3,598.78	10,177.04	0.00	0.00	0.00	
16,900.00	91.00	336.80	6,620.13	9,621.86	-3,638.17	10,277.02	0.00	0.00	0.00	
17,000.00	91.00	336.80	6,618.39	9,713.76	-3,677.57	10,377.01	0.00	0.00	0.00	
17,100.00	91.00	336.80	6,616.64	9,805.66	-3,716.96	10,476.99	0.00	0.00	0.00	
17,200.00	91.00	336.80	6,614.90	9,897.55	-3,756.35	10,576.98	0.00	0.00	0.00	
17,228.60	91.00	336.80	6,614.40	9,923.84	-3,767.62	10,605.57	0.00	0.00	0.00	

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Braddock 1H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	393,018.74	1,384,644.78	40.39318	-79.84634	
Braddock 1H KOP-1 p1 - plan hits target center - Point	0.00	0.00	5,800.00	0.00	0.00	393,018.74	1,384,644.78	40.39318	-79.84634	
Braddock 1H KOP-2 p1 - plan hits target center - Point	0.00	360.00	6,228.67	56.54	131.92	393,075.29	1,384,776.71	40.39335	-79.84587	
Braddock 1H PBHL p1 - plan hits target center - Point	0.00	360.00	6,614.40	9,923.84	-3,767.62	402,942.58	1,380,877.16	40.42017	-79.86071	
Braddock 1H LP p1 - plan hits target center - Point	0.00	360.00	6,788.23	770.25	156.22	393,788.99	1,384,801.00	40.39531	-79.84584	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
300.00	300.00	Upper Freeport		-1.00	336.80	
5,600.00	5,600.00	Rhinestreet		-1.00	336.80	
6,407.96	6,359.69	Burket A		-1.00	336.80	
6,431.27	6,379.59	Burket B		-1.00	336.80	
6,454.81	6,399.47	Tully		-1.00	336.80	
6,577.42	6,498.63	Hamilton		-1.00	336.80	
6,883.32	6,695.06	Upper Marcellus		-1.00	336.80	
6,985.26	6,738.51	Purcell		-1.00	336.80	
7,012.89	6,748.06	Middle Marcellus		-1.00	336.80	
7,060.74	6,762.28	Cherry Valley		-1.00	336.80	
7,150.66	6,780.75	Lower Marcellus		-1.00	336.80	

Checked By: _____	Approved By: _____	Date: _____
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