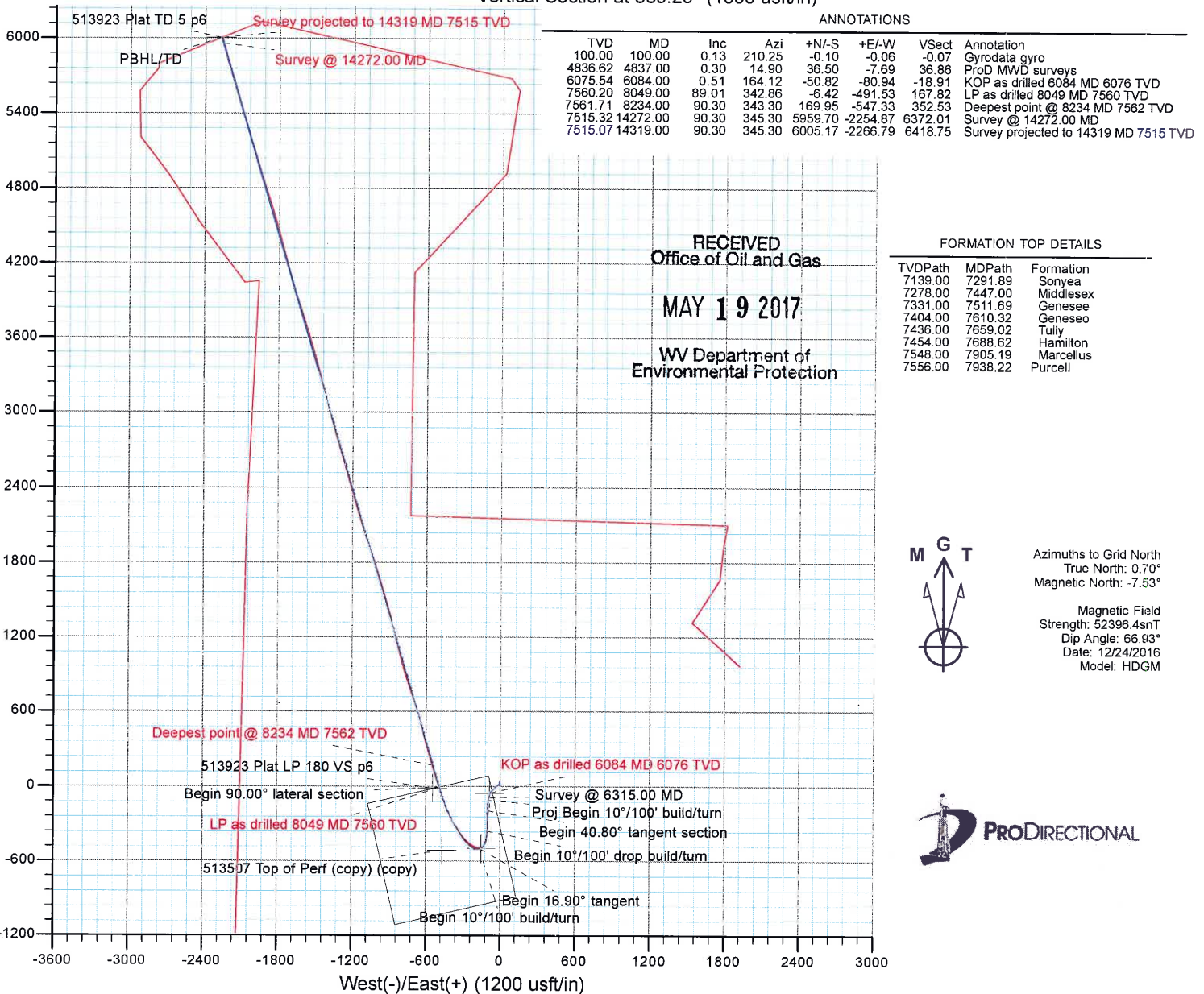
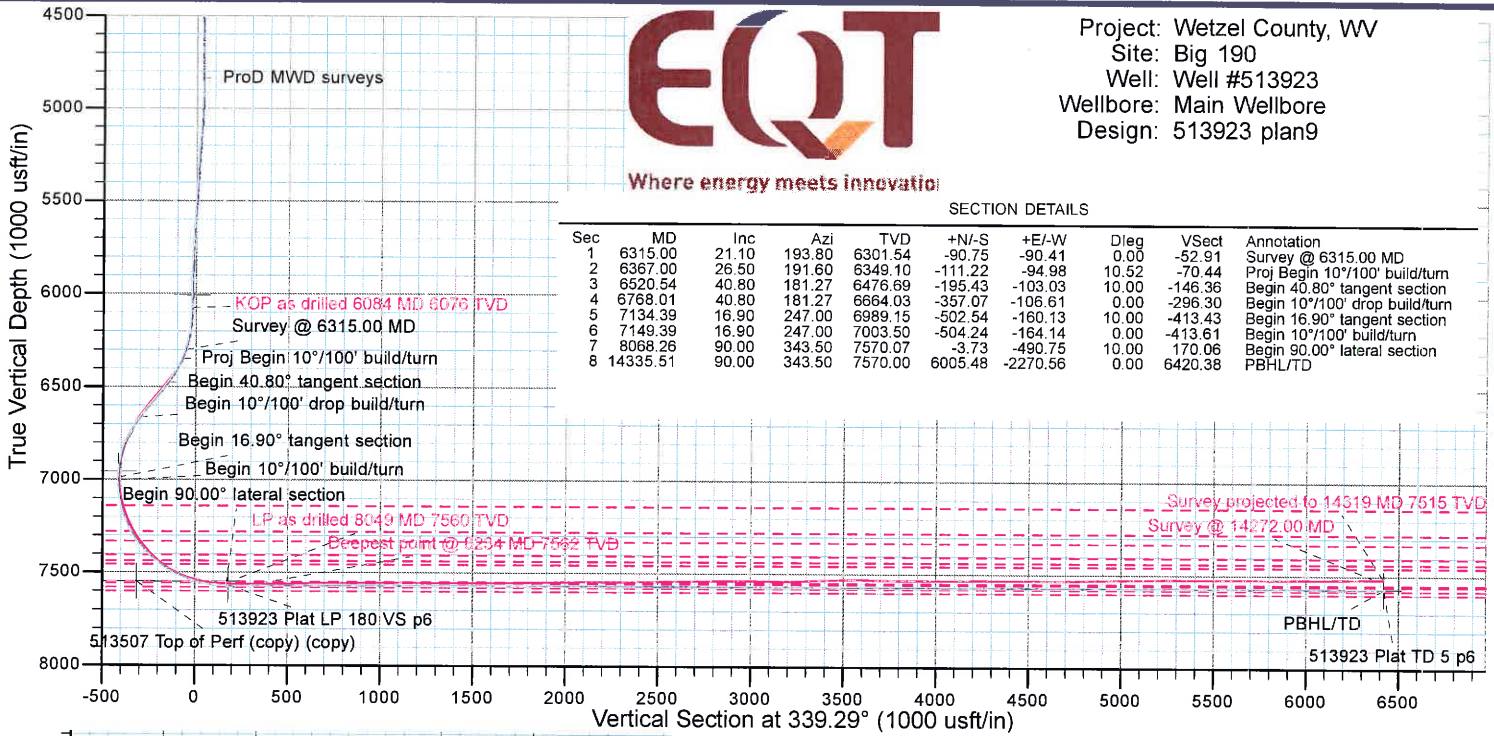




Where energy meets innovation

Project: Wetzel County, WV
 Site: Big 190
 Well: Well #513923
 Wellbore: Main Wellbore
 Design: 513923 plan9



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FORMATION TOP DETAILS

TVDPath	MDPath	Formation
7139.00	7291.89	Sonyea
7278.00	7447.00	Middlesex
7331.00	7511.69	Genesee
7404.00	7610.32	Genesee
7436.00	7659.02	Tully
7454.00	7688.62	Hamilton
7548.00	7905.19	Marcellus
7556.00	7938.22	Purcell



Azimuths to Grid North
 True North: 0.70°
 Magnetic North: -7.53°

Magnetic Field
 Strength: 52396.4snT
 Dip Angle: 66.93°
 Date: 12/24/2016
 Model: HDGM



06/02/2017



Where energy meets innovation.

EQT PRODUCTION

Wetzel County, WV

Big 190

Well #513923

Main Wellbore

Design: 513923 As Drilled

API # 47-103-02732

Standard Survey Report

07 January, 2017

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06/02/2017



Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #513923
Project:	Wetzel County, WV	TVD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Site:	Big 190	MD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Well:	Well #513923	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	513923 As Drilled	Database:	DB Jul2216dt

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

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WV Department of
Environmental Protection

Site	Big 190				
Site Position:		Northing:	385,255.46 usft	Latitude:	39° 33' 8.9435 N
From:	Map	Easting:	1,688,243.35 usft	Longitude:	80° 36' 20.3370 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.71 °

Well	Well #513923					
Well Position	+N/-S	0.00 usft	Northing:	385,158.34 usft	Latitude:	39° 33' 7.9790 N
	+E/-W	0.00 usft	Easting:	1,688,205.06 usft	Longitude:	80° 36' 20.8105 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	1,474.00 usft

Wellbore	Main Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/24/2016	-8.23	66.93	52,396

Design	513923 As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00		339.29

Survey Program	Date 1/7/2017				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	4,700.00	513923 Gyrodata gyro (Main Wellbore)	Gyrodata_DP_MS	Gyrodata gyro-compassing and drop	
4,837.00	14,319.00	513923 MWD ProD (Main Wellbore)	MWD - OWSG	MWD - OWSG	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.13	210.25	100.00	-0.10	-0.06	-0.07	0.13	0.13	0.00	
Gyrodata gyro										
200.00	0.10	200.64	200.00	-0.28	-0.15	-0.21	0.04	-0.03	-9.61	
300.00	0.16	224.32	300.00	-0.46	-0.27	-0.33	0.08	0.06	23.68	
400.00	0.26	235.86	400.00	-0.69	-0.56	-0.44	0.11	0.10	11.54	
500.00	0.40	243.62	500.00	-0.97	-1.06	-0.53	0.15	0.14	7.76	
600.00	0.41	250.26	599.99	-1.24	-1.71	-0.56	0.05	0.01	6.64	
700.00	0.39	257.94	699.99	-1.44	-2.38	-0.50	0.06	-0.02	7.68	
800.00	0.40	267.53	799.99	-1.52	-3.06	-0.34	0.07	0.01	9.59	



Survey Report

MAY 19 2017



WV Department of
Environmental Protection

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #513923
Project:	Wetzel County, WV	TVD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Site:	Big 190	MD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Well:	Well #513923	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	513923 As Drilled	Database:	DB Jul2216dt

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
900.00	0.59	312.33	899.99	-1.19	-3.79	0.23	0.42	0.19	44.80	
1,000.00	0.62	315.70	999.98	-0.46	-4.55	1.18	0.05	0.03	3.37	
1,100.00	0.63	317.39	1,099.97	0.33	-5.30	2.19	0.02	0.01	1.69	
1,200.00	0.64	319.00	1,199.97	1.16	-6.04	3.22	0.02	0.01	1.61	
1,300.00	0.64	321.75	1,299.96	2.02	-6.75	4.28	0.03	0.00	2.75	
1,400.00	0.66	327.85	1,399.96	2.95	-7.40	5.37	0.07	0.02	6.10	
1,500.00	0.71	324.54	1,499.95	3.94	-8.07	6.54	0.06	0.05	-3.31	
1,600.00	0.71	325.41	1,599.94	4.95	-8.78	7.74	0.01	0.00	0.87	
1,700.00	0.76	329.14	1,699.93	6.03	-9.47	8.99	0.07	0.05	3.73	
1,800.00	0.80	331.14	1,799.92	7.21	-10.15	10.34	0.05	0.04	2.00	
1,900.00	0.72	335.44	1,899.91	8.40	-10.75	11.65	0.10	-0.08	4.30	
2,000.00	0.77	348.36	1,999.91	9.63	-11.14	12.94	0.17	0.05	12.92	
2,100.00	1.02	15.83	2,099.89	11.14	-11.03	14.32	0.49	0.25	27.47	
2,200.00	1.45	29.54	2,199.87	13.10	-10.17	15.85	0.52	0.43	13.71	
2,300.00	1.59	35.24	2,299.84	15.33	-8.74	17.43	0.21	0.14	5.70	
2,400.00	1.76	40.71	2,399.79	17.63	-6.94	18.94	0.23	0.17	5.47	
2,500.00	1.48	51.28	2,499.75	19.60	-4.93	20.08	0.41	-0.28	10.57	
2,600.00	1.26	59.84	2,599.73	20.96	-2.97	20.66	0.30	-0.22	8.56	
2,700.00	0.93	55.93	2,699.71	21.97	-1.35	21.03	0.34	-0.33	-3.91	
2,800.00	0.84	44.84	2,799.70	22.94	-0.16	21.52	0.19	-0.09	-11.09	
2,900.00	0.54	37.55	2,899.69	23.84	0.64	22.07	0.31	-0.30	-7.29	
3,000.00	0.43	23.67	2,999.68	24.55	1.08	22.58	0.16	-0.11	-13.88	
3,100.00	0.35	355.20	3,099.68	25.20	1.20	23.15	0.21	-0.08	-28.47	
3,200.00	0.30	346.83	3,199.68	25.76	1.12	23.70	0.07	-0.05	-8.37	
3,300.00	0.34	344.53	3,299.68	26.30	0.98	24.25	0.04	0.04	-2.30	
3,400.00	0.48	328.33	3,399.68	26.94	0.68	24.96	0.18	0.14	-16.20	
3,500.00	0.49	331.48	3,499.67	27.68	0.26	25.80	0.03	0.01	3.15	
3,600.00	0.51	326.26	3,599.67	28.42	-0.19	26.65	0.05	0.02	-5.22	
3,700.00	0.50	322.97	3,699.66	29.14	-0.70	27.51	0.03	-0.01	-3.29	
3,800.00	0.54	322.36	3,799.66	29.86	-1.25	28.38	0.04	0.04	-0.61	
3,900.00	0.55	315.80	3,899.66	30.58	-1.88	29.27	0.06	0.01	-6.56	
4,000.00	0.59	318.32	3,999.65	31.31	-2.55	30.19	0.05	0.04	2.52	
4,100.00	0.58	311.40	4,099.65	32.03	-3.28	31.12	0.07	-0.01	-6.92	
4,200.00	0.66	311.38	4,199.64	32.74	-4.09	32.07	0.08	0.08	-0.02	
4,300.00	0.45	305.82	4,299.64	33.35	-4.84	32.91	0.22	-0.21	-5.56	
4,400.00	0.59	305.13	4,399.63	33.88	-5.58	33.66	0.14	0.14	-0.69	
4,500.00	0.61	314.72	4,499.63	34.55	-6.38	34.57	0.10	0.02	9.59	
4,600.00	0.54	318.68	4,599.62	35.28	-7.07	35.50	0.08	-0.07	3.96	
4,700.00	0.32	321.81	4,699.62	35.85	-7.55	36.20	0.22	-0.22	3.13	
4,837.00	0.30	14.90	4,836.62	36.50	-7.69	36.86	0.20	-0.01	38.75	
ProD MWD surveys										
4,884.00	0.50	24.50	4,883.62	36.80	-7.58	37.11	0.45	0.43	20.43	
4,932.00	0.50	113.70	4,931.61	36.91	-7.30	37.11	1.46	0.00	185.83	

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Survey Report

WV Department of
Environmental Protection



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #513923
Project:	Wetzel County, WV	TVD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Site:	Big 190	MD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Well:	Well #513923	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	513923 As Drilled	Database:	DB Jul2216dt

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,979.00	1.50	172.30	4,978.61	36.22	-7.03	36.36	2.79	2.13	124.68
5,026.00	2.60	177.10	5,025.58	34.54	-6.89	34.75	2.37	2.34	10.21
5,073.00	3.30	175.90	5,072.51	32.13	-6.74	32.44	1.50	1.49	-2.55
5,121.00	5.60	187.20	5,120.37	28.43	-6.94	29.04	5.11	4.79	23.54
5,152.00	6.30	199.10	5,151.20	25.32	-7.68	26.40	4.56	2.26	38.39
5,184.00	6.90	210.30	5,182.99	22.00	-9.23	23.84	4.43	1.88	35.00
5,215.00	8.10	219.00	5,213.72	18.70	-11.54	21.57	5.32	3.87	28.06
5,246.00	8.40	218.00	5,244.40	15.21	-14.31	19.29	1.07	0.97	-3.23
5,278.00	8.30	222.80	5,276.07	11.68	-17.32	17.05	2.20	-0.31	15.00
5,309.00	8.70	228.30	5,306.73	8.48	-20.59	15.21	2.92	1.29	17.74
5,340.00	9.30	232.50	5,337.34	5.39	-24.33	13.65	2.87	1.94	13.55
5,372.00	9.30	230.90	5,368.92	2.19	-28.38	12.08	0.81	0.00	-5.00
5,403.00	9.10	228.40	5,399.52	-1.02	-32.16	10.42	1.44	-0.65	-8.06
5,435.00	8.50	225.30	5,431.15	-4.36	-35.74	8.56	2.39	-1.88	-9.69
5,466.00	8.30	222.80	5,461.82	-7.62	-38.88	6.63	1.34	-0.65	-8.06
5,498.00	8.10	221.00	5,493.49	-11.01	-41.93	4.53	1.02	-0.63	-5.63
5,529.00	8.30	221.50	5,524.17	-14.34	-44.85	2.45	0.68	0.65	1.61
5,560.00	8.40	223.10	5,554.84	-17.67	-47.88	0.41	0.82	0.32	5.16
5,592.00	9.00	227.40	5,586.47	-21.07	-51.32	-1.56	2.76	1.88	13.44
5,623.00	9.50	232.60	5,617.07	-24.26	-55.13	-3.20	3.14	1.61	16.77
5,655.00	9.40	230.40	5,648.64	-27.53	-59.25	-4.80	1.17	-0.31	-6.88
5,686.00	9.10	230.70	5,679.23	-30.70	-63.09	-6.40	0.98	-0.97	0.97
5,718.00	8.80	227.10	5,710.85	-33.97	-66.84	-8.13	1.99	-0.94	-11.25
5,749.00	8.70	227.20	5,741.48	-37.17	-70.30	-9.91	0.33	-0.32	0.32
5,781.00	7.50	227.40	5,773.16	-40.23	-73.61	-11.60	3.75	-3.75	0.63
5,812.00	6.40	223.60	5,803.94	-42.85	-76.30	-13.10	3.84	-3.55	-12.26
5,843.00	5.30	223.00	5,834.77	-45.15	-78.46	-14.49	3.55	-3.55	-1.94
5,875.00	4.30	220.50	5,866.66	-47.14	-80.25	-15.72	3.19	-3.13	-7.81
5,906.00	3.20	207.80	5,897.60	-48.79	-81.41	-16.85	4.43	-3.55	-40.97
5,938.00	1.90	184.50	5,929.56	-50.11	-81.87	-17.92	5.12	-4.06	-72.81
5,969.00	1.40	174.20	5,960.55	-51.00	-81.87	-18.75	1.87	-1.61	-33.23
6,001.00	0.50	97.60	5,992.55	-51.41	-81.69	-19.20	4.29	-2.81	-239.38
6,032.00	1.00	42.10	6,023.55	-51.23	-81.38	-19.14	2.67	1.61	-179.03
6,064.00	0.80	38.50	6,055.54	-50.84	-81.05	-18.90	0.65	-0.63	-11.25
6,084.00	0.51	164.12	6,075.54	-50.82	-80.94	-18.91	5.85	-1.47	628.12
KOP as drilled 6084 MD 6076 TVD									
6,095.00	1.10	183.10	6,086.54	-50.97	-80.93	-19.06	5.85	5.40	172.51
6,127.00	3.60	189.90	6,118.51	-52.27	-81.12	-20.20	7.85	7.81	21.25
6,158.00	6.10	191.80	6,149.40	-54.84	-81.62	-22.43	8.08	8.06	6.13
6,189.00	9.20	191.40	6,180.12	-58.88	-82.45	-25.92	10.00	10.00	-1.29
6,221.00	12.40	193.10	6,211.55	-64.74	-83.74	-30.94	10.05	10.00	5.31
6,252.00	15.20	194.60	6,241.65	-71.91	-85.52	-37.03	9.10	9.03	4.84
6,284.00	17.90	195.00	6,272.32	-80.73	-87.85	-44.44	8.44	8.44	1.25
6,315.00	21.10	193.80	6,301.54	-90.75	-90.41	-52.91	10.40	10.32	-3.87

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Survey Report

WV Department of
Environmental Protection



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #513923
Project:	Wetzel County, WV	TVD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Site:	Big 190	MD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Well:	Well #513923	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	513923 As Drilled	Database:	DB Jul2216dt

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,347.00	24.30	192.10	6,331.06	-102.78	-93.17	-63.20	10.21	10.00	-5.31
6,378.00	27.90	190.40	6,358.89	-116.16	-95.81	-74.77	11.86	11.61	-5.48
6,410.00	31.20	187.70	6,386.73	-131.74	-98.28	-88.47	11.12	10.31	-8.44
6,441.00	34.60	184.90	6,412.75	-148.47	-100.10	-103.48	12.01	10.97	-9.03
6,473.00	38.50	182.90	6,438.45	-167.48	-101.38	-120.81	12.74	12.19	-6.25
6,504.00	41.30	181.90	6,462.23	-187.35	-102.21	-139.09	9.27	9.03	-3.23
6,535.00	41.80	181.00	6,485.43	-207.90	-102.73	-158.14	2.51	1.61	-2.90
6,567.00	41.20	180.00	6,509.40	-229.10	-102.92	-177.90	2.79	-1.88	-3.13
6,598.00	40.80	179.20	6,532.80	-249.44	-102.78	-196.98	2.13	-1.29	-2.58
6,630.00	40.70	178.80	6,557.04	-270.33	-102.41	-216.64	0.87	-0.31	-1.25
6,661.00	40.80	180.80	6,580.52	-290.56	-102.34	-235.59	4.22	0.32	6.45
6,693.00	40.70	181.00	6,604.77	-311.44	-102.67	-255.01	0.51	-0.31	0.63
6,724.00	40.60	180.60	6,628.29	-331.64	-102.95	-273.80	0.90	-0.32	-1.29
6,755.00	38.60	181.30	6,652.17	-351.39	-103.28	-292.16	6.61	-6.45	2.26
6,787.00	34.80	184.60	6,677.83	-370.48	-104.24	-309.68	13.38	-11.88	10.31
6,818.00	31.80	188.00	6,703.74	-387.40	-106.08	-324.85	11.39	-9.68	10.97
6,850.00	30.10	190.40	6,731.18	-403.64	-108.71	-339.11	6.56	-5.31	7.50
6,882.00	30.90	189.70	6,758.75	-419.63	-111.54	-353.07	2.74	2.50	-2.19
6,913.00	27.60	193.30	6,785.80	-434.47	-114.53	-365.89	12.06	-10.65	11.61
6,945.00	24.60	197.60	6,814.53	-448.04	-118.25	-377.27	11.08	-9.38	13.44
6,976.00	22.10	202.10	6,842.99	-459.59	-122.40	-386.61	9.90	-8.06	14.52
7,008.00	20.10	209.10	6,872.85	-469.98	-127.34	-394.58	10.04	-6.25	21.88
7,039.00	18.50	219.70	6,902.12	-478.42	-133.07	-400.45	12.40	-5.16	34.19
7,071.00	17.90	230.20	6,932.53	-485.48	-140.10	-404.56	10.40	-1.88	32.81
7,102.00	17.60	239.40	6,962.06	-490.91	-147.79	-406.93	9.09	-0.97	29.68
7,134.00	17.20	246.40	6,992.59	-495.27	-156.29	-407.99	6.66	-1.25	21.88
7,165.00	16.70	257.20	7,022.25	-498.09	-164.84	-407.61	10.27	-1.61	34.84
7,196.00	17.50	270.80	7,051.90	-499.01	-173.85	-405.29	13.12	2.58	43.87
7,228.00	19.30	282.60	7,082.27	-497.79	-183.82	-400.62	12.90	5.63	36.88
7,259.00	21.30	291.00	7,111.35	-494.66	-194.08	-394.06	11.39	6.45	27.10
7,291.00	23.30	296.40	7,140.96	-489.76	-205.18	-385.55	8.94	6.25	16.88
7,322.00	25.50	298.40	7,169.19	-483.86	-216.54	-376.01	7.58	7.10	6.45
7,354.00	27.20	300.70	7,197.86	-476.85	-228.89	-365.09	6.20	5.31	7.19
7,385.00	28.90	305.10	7,225.22	-468.92	-241.11	-353.35	8.64	5.48	14.19
7,417.00	30.90	311.30	7,252.97	-459.05	-253.62	-339.70	11.50	6.25	19.38
7,448.00	33.40	314.90	7,279.22	-447.77	-265.64	-324.89	10.16	8.06	11.61
7,480.00	35.30	315.70	7,305.63	-434.93	-278.34	-308.40	6.10	5.94	2.50
7,511.00	37.30	318.20	7,330.62	-421.52	-290.86	-291.42	8.02	6.45	8.06
7,542.00	39.60	321.20	7,354.90	-406.81	-303.31	-273.26	9.55	7.42	9.68
7,574.00	42.60	323.60	7,379.01	-390.14	-316.13	-253.14	10.59	9.38	7.50
7,605.00	45.70	324.70	7,401.25	-372.64	-328.77	-232.29	10.30	10.00	3.55
7,637.00	48.10	326.50	7,423.11	-353.36	-341.97	-209.59	8.55	7.50	5.63
7,668.00	51.70	328.70	7,443.08	-333.34	-354.66	-186.38	12.82	11.61	7.10

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Survey Report

WV Department of
Environmental Protection

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #513923
Project:	Wetzel County, WV	TVD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Site:	Big 190	MD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Well:	Well #513923	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	513923 As Drilled	Database:	DB Jul2216dt

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,700.00	55.10	330.50	7,462.16	-311.18	-367.65	-161.06	11.54	10.63	5.63
7,731.00	58.40	331.80	7,479.15	-288.47	-380.15	-135.40	11.21	10.65	4.19
7,762.00	62.40	333.00	7,494.46	-264.59	-392.63	-108.64	13.33	12.90	3.87
7,794.00	66.10	334.20	7,508.36	-238.78	-405.44	-79.97	12.05	11.56	3.75
7,825.00	69.50	336.50	7,520.07	-212.69	-417.40	-51.34	12.94	10.97	7.42
7,857.00	72.70	338.00	7,530.44	-184.78	-429.10	-21.09	10.94	10.00	4.69
7,888.00	75.40	339.00	7,538.96	-157.05	-440.02	8.71	9.25	8.71	3.23
7,919.00	78.50	340.10	7,545.96	-128.75	-450.57	38.90	10.58	10.00	3.55
7,951.00	81.10	340.90	7,551.62	-99.07	-461.08	70.39	8.49	8.13	2.50
7,982.00	83.10	341.40	7,555.88	-70.01	-471.00	101.08	6.65	6.45	1.61
8,014.00	86.30	342.00	7,558.84	-39.76	-481.01	132.91	10.17	10.00	1.88
8,046.00	89.00	342.90	7,560.15	-9.28	-490.65	164.83	8.89	8.44	2.81
8,049.00	89.01	342.86	7,560.20	-6.42	-491.53	167.82	1.25	0.43	-1.17
LP as drilled 8049 MD 7560 TVD									
8,140.00	89.40	341.80	7,561.46	80.28	-519.14	258.68	1.25	0.43	-1.17
8,234.00	90.30	343.30	7,561.71	169.95	-547.33	352.53	1.86	0.96	1.60
Deepest point @ 8234 MD 7562 TVD									
8,328.00	91.10	343.10	7,560.56	259.93	-574.50	446.30	0.88	0.85	-0.21
8,423.00	90.90	344.90	7,558.90	351.24	-600.68	540.96	1.91	-0.21	1.89
8,517.00	91.70	345.20	7,556.77	442.03	-624.92	634.46	0.91	0.85	0.32
8,611.00	90.60	343.50	7,554.88	532.52	-650.27	728.07	2.15	-1.17	-1.81
8,706.00	90.20	342.70	7,554.22	623.42	-677.89	822.86	0.94	-0.42	-0.84
8,800.00	90.50	342.40	7,553.65	713.09	-706.08	916.71	0.45	0.32	-0.32
8,895.00	90.70	340.40	7,552.65	803.12	-736.37	1,011.63	2.12	0.21	-2.11
8,989.00	90.20	342.20	7,551.91	892.15	-766.51	1,105.57	1.99	-0.53	1.91
9,083.00	88.60	345.50	7,552.90	982.42	-792.65	1,199.25	3.90	-1.70	3.51
9,178.00	89.20	345.20	7,554.72	1,074.31	-816.67	1,293.70	0.71	0.63	-0.32
9,272.00	90.10	346.40	7,555.30	1,165.43	-839.73	1,387.09	1.60	0.96	1.28
9,367.00	90.60	344.20	7,554.72	1,257.32	-863.84	1,481.56	2.37	0.53	-2.32
9,461.00	91.70	344.60	7,552.83	1,347.84	-889.11	1,575.16	1.25	1.17	0.43
9,556.00	90.20	343.80	7,551.25	1,439.23	-914.97	1,669.80	1.79	-1.58	-0.84
9,651.00	91.20	344.00	7,550.09	1,530.50	-941.31	1,764.48	1.07	1.05	0.21
9,745.00	90.20	343.50	7,548.94	1,620.73	-967.61	1,858.19	1.19	-1.06	-0.53
9,839.00	90.90	342.50	7,548.04	1,710.62	-995.10	1,951.99	1.30	0.74	-1.06
9,934.00	91.90	342.70	7,545.72	1,801.24	-1,023.50	2,046.80	1.07	1.05	0.21
10,029.00	89.40	342.10	7,544.64	1,891.78	-1,052.22	2,141.64	2.71	-2.63	-0.63
10,123.00	89.90	342.20	7,545.22	1,981.26	-1,081.03	2,235.53	0.54	0.53	0.11
10,218.00	90.60	342.80	7,544.80	2,071.86	-1,109.60	2,330.37	0.97	0.74	0.63
10,313.00	90.70	342.30	7,543.73	2,162.48	-1,138.08	2,425.21	0.54	0.11	-0.53
10,407.00	91.40	342.70	7,542.00	2,252.11	-1,166.34	2,519.05	0.86	0.74	0.43
10,502.00	90.40	344.50	7,540.51	2,343.23	-1,193.16	2,613.77	2.17	-1.05	1.69
10,596.00	91.50	344.30	7,538.95	2,433.76	-1,218.44	2,707.38	1.19	1.17	-0.21
10,691.00	89.90	343.80	7,537.79	2,525.09	-1,244.54	2,802.04	1.76	-1.68	-0.53
10,786.00	90.00	343.40	7,537.87	2,616.22	-1,271.36	2,896.77	0.43	0.11	-0.42



Survey Report

MAY 19 2017



WV Department of
Environmental Protection

Company: EQT PRODUCTION
Project: Wetzel County, WV
Site: Big 190
Well: Well #513923
Wellbore: Main Wellbore
Design: 513923 As Drilled

Local Co-ordinate Reference: Well Well #513923
TVD Reference: KB@23 @ 1497.00usft (Savanna 803)
MD Reference: KB@23 @ 1497.00usft (Savanna 803)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: DB Jul2216dt

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,880.00	90.50	343.20	7,537.46	2,706.26	-1,298.37	2,990.54	0.57	0.53	-0.21	
10,975.00	89.20	344.30	7,537.71	2,797.46	-1,324.96	3,085.25	1.79	-1.37	1.16	
11,069.00	90.40	344.00	7,538.04	2,887.88	-1,350.63	3,178.91	1.32	1.28	-0.32	
11,164.00	91.50	344.10	7,536.47	2,979.21	-1,376.73	3,273.56	1.16	1.16	0.11	
11,258.00	92.90	344.10	7,532.86	3,069.55	-1,402.46	3,367.16	1.49	1.49	0.00	
11,353.00	92.00	344.90	7,528.80	3,161.00	-1,427.83	3,461.68	1.27	-0.95	0.84	
11,448.00	89.80	344.60	7,527.30	3,252.64	-1,452.81	3,556.23	2.34	-2.32	-0.32	
11,542.00	88.40	344.70	7,528.78	3,343.28	-1,477.69	3,649.81	1.49	-1.49	0.11	
11,637.00	90.00	344.50	7,530.11	3,434.85	-1,502.91	3,744.39	1.70	1.68	-0.21	
11,732.00	89.40	343.90	7,530.61	3,526.26	-1,528.78	3,839.04	0.89	-0.63	-0.63	
11,826.00	89.70	343.00	7,531.34	3,616.36	-1,555.55	3,932.79	1.01	0.32	-0.96	
11,921.00	90.60	342.90	7,531.09	3,707.19	-1,583.41	4,027.59	0.95	0.95	-0.11	
12,015.00	89.70	342.20	7,530.85	3,796.86	-1,611.60	4,121.44	1.21	-0.96	-0.74	
12,109.00	90.40	340.90	7,530.77	3,886.03	-1,641.34	4,215.36	1.57	0.74	-1.38	
12,203.00	90.80	342.90	7,529.78	3,975.36	-1,670.55	4,309.25	2.17	0.43	2.13	
12,298.00	90.20	344.60	7,528.95	4,066.56	-1,697.13	4,403.96	1.90	-0.63	1.79	
12,392.00	89.00	344.50	7,529.61	4,157.16	-1,722.17	4,497.56	1.28	-1.28	-0.11	
12,487.00	89.80	344.90	7,530.60	4,248.79	-1,747.23	4,592.13	0.94	0.84	0.42	
12,581.00	90.30	345.00	7,530.52	4,339.56	-1,771.64	4,685.67	0.54	0.53	0.11	
12,675.00	91.70	344.40	7,528.88	4,430.22	-1,796.44	4,779.23	1.62	1.49	-0.64	
12,769.00	92.40	343.00	7,525.52	4,520.38	-1,822.81	4,872.89	1.66	0.74	-1.49	
12,864.00	89.90	343.40	7,523.61	4,611.30	-1,850.26	4,967.65	2.67	-2.63	0.42	
12,958.00	90.30	342.60	7,523.45	4,701.19	-1,877.74	5,061.45	0.95	0.43	-0.85	
13,052.00	91.00	342.30	7,522.38	4,790.81	-1,906.08	5,155.30	0.81	0.74	-0.32	
13,147.00	89.60	342.90	7,521.88	4,881.45	-1,934.49	5,250.14	1.60	-1.47	0.63	
13,241.00	90.50	343.20	7,521.80	4,971.37	-1,961.89	5,343.93	1.01	0.96	0.32	
13,336.00	91.20	342.50	7,520.39	5,062.14	-1,989.90	5,438.74	1.04	0.74	-0.74	
13,431.00	89.30	343.40	7,519.98	5,152.95	-2,017.75	5,533.54	2.21	-2.00	0.95	
13,525.00	90.20	343.00	7,520.39	5,242.94	-2,044.92	5,627.32	1.05	0.96	-0.43	
13,619.00	91.10	343.60	7,519.32	5,332.97	-2,071.93	5,721.08	1.15	0.96	0.64	
13,714.00	89.20	343.40	7,519.07	5,424.05	-2,098.91	5,815.82	2.01	-2.00	-0.21	
13,808.00	89.60	342.80	7,520.06	5,513.99	-2,126.24	5,909.60	0.77	0.43	-0.64	
13,903.00	90.70	343.40	7,519.81	5,604.88	-2,153.85	6,004.39	1.32	1.16	0.63	
13,997.00	91.30	343.40	7,518.17	5,694.95	-2,180.70	6,098.14	0.64	0.64	0.00	
14,092.00	89.70	343.40	7,517.34	5,785.98	-2,207.84	6,192.88	1.68	-1.68	0.00	
14,186.00	91.30	345.40	7,516.52	5,876.51	-2,233.12	6,286.50	2.72	1.70	2.13	
14,272.00	90.30	345.30	7,515.32	5,959.71	-2,254.87	6,372.01	1.17	-1.16	-0.12	
Survey @ 14272.00 MD										
14,319.00	90.30	345.30	7,515.07	6,005.17	-2,266.79	6,418.75	0.00	0.00	0.00	
Survey projected to 14319 MD 7515 TVD										

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #513923
Project:	Wetzel County, WV	TVD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Site:	Big 190	MD Reference:	KB@23 @ 1497.00usft (Savanna 803)
Well:	Well #513923	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	513923 As Drilled	Database:	DB Jul2216dt

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
513923 BHL as drilled - hit/miss target - Shape - Point	0.00	0.00	7,515.07	6,005.17	-2,266.79	391,163.51	1,685,938.27	39° 34' 7.0519 N	80° 36' 50.6994 W
- actual wellpath misses target center by 0.01usft at 14319.00usft MD (7515.07 TVD, 6005.17 N, -2266.79 E)									
513923 LP as drilled - actual wellpath hits target center - Point	0.00	0.00	7,560.20	-6.42	-491.53	385,151.92	1,687,713.53	39° 33' 7.8557 N	80° 36' 27.0845 W

Design Annotations

	Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
			+N/-S (usft)	+E/-W (usft)	
	100.00	100.00	-0.10	-0.06	Gyrodata gyro
	4,837.00	4,836.62	36.50	-7.69	ProD MWD surveys
	6,084.00	6,075.54	-50.82	-80.94	KOP as drilled 6084 MD 6076 TVD
	8,049.00	7,560.20	-6.42	-491.53	LP as drilled 8049 MD 7560 TVD
	8,234.00	7,561.71	169.95	-547.33	Deepest point @ 8234 MD 7562 TVD
	14,272.00	7,515.32	5,959.71	-2,254.87	Survey @ 14272.00 MD
	14,319.00	7,515.07	6,005.17	-2,266.79	Survey projected to 14319 MD 7515 TVD

Checked By: _____	Approved By: _____	Date: _____
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