WR-35
Rev. 8/23/13

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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 017 - 06328 County DODDRIDGE District WEST UNION
Quad OXFORD 7.5' Pad Name OXF156 Field/Pool Name
Farm name HEASTER, CHARLES P., ET AL Well Number 513139
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing	4342161.0	Easting	518344.5
Landing Point of Curve	Northing	4342090.2	Easting	518455.1
Bottom Hole	Northing	4340543.9	Easting	519206.8

Elevation (ft) 1202 GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep □ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other ____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine ■Gas ■ NGL □ Oil □ Other ____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air ■ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
SBM 12.5ppg – powdered hydrocarbon resin, calcium carbonate, ground almond hulls, barium sulfate, calcium chloride, lecithin liquid, organophilic clay, polyaminated fatty acid, calcium hydroxide, polyimide surfactant, modified fatty acid, dimer.trimer fatty acid, ground walnut hulls, refined base oil.

Date permit issued 11/20/2013 Date drilling commenced 5/7/2014 Date drilling ceased 8/26/2014
Date completion activities began 12/5/2014 Date completion activities ceased 12/14/2014
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 169,216,320,386,462,600,1084 Open mine(s) (Y/N) depths ____
Salt water depth(s) ft 1456 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1272,1312 Cavern(s) encountered (Y/N) depths ____
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15
W.S. 06/01/15

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API 47- 017 - 06328 Farm name HEASTER, CHARLES P., ET AL Well number 513139

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	94lb/ft	N/A	Y
Surface	17-1/2"	13-3/8"	1,189'	New	54.5lb/ft	N/A	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	5,267'	New	40lb/ft	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	12,781'	New	20lb/ft	N/A	N
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	38	15.6	1.18	44.84	0	8
Surface	Class A	975	15.6	1.18	1150	0	8
Coal							
Intermediate 1	Class A 5050 POZ/Class A/Class A	380/340/1060	14.2/15.6/15.6	1.28/1.18/1.18	2138	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	270/765	14.2/15.2	1.26/1.97	1846	5,500'	72
Tubing							

Drillers TD (ft) 12,794' Loggers TD (ft)
Deepest formation penetrated Marcellus Plug back to (ft)
Plug back procedure

Kick off depth (ft) 5,346'

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ■ temperature ☐sonic

Well cored ☐ Yes ■ No ☐ Conventional ☐ Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Conductor- N/A
Surface-Bowspring centralizer on shoe track and every 300' to surface
Intermediate-Bowspring centralizer on shoe track and every 500' to surface
Production- Composite bodied centralizers on every joint from Shoe track up to 4,306'

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 017 - 06328 Farm name HEASTER, CHARLES P., ET AL Well number 513139

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					SEE ATTACHMENT

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
								SEE ATTACH

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6,601.3 TVD	6,953 MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 1,929 psi Bottom Hole NA psi DURATION OF TEST 87 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3,489 mcfpd	0 bpd	24 bpd	292 bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

Please insert additional pages as applicable.

Drilling Contractor Savanna Drilling
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company Hoss Co. Services LLC
Address 614 Trotters Lane City Charleston State WV Zip 25312

Cementing Company Nabors Completion & Production Services Co.
Address PO BOX 975682 City Dallas State TX Zip 75397-5682

Stimulating Company FTS International, LLC
Address 301 East 18th Street City Cisco State TX Zip 76437

Please insert additional pages as applicable.

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Completed by James E. Helmick Jr. Telephone 412-395-5518
Signature Title Vice President - Completions Operations Date 3/9/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1	1	1,084.00	1,084.00
SAND/SHALE	1,084.00	1,084.00	1,272.00	1,272.00
COAL	1,272.00	1,272.00	1,277.00	1,277.00
SAND/SHALE	1,277.00	1,277.00	1,312.00	1,312.00
COAL	1,312.00	1,312.00	1,318.00	1,318.00
SAND/SHALE	1,318.00	1,318.00	1,513.00	1,513.00
MAXTON	1,513.00	1,513.00	1,865.00	1,865.00
BIG LIME	1,865.00	1,865.00	1,923.00	1,922.90
KEENER	1,923.00	1,922.90	2,163.00	2,162.90
WEIR	2,163.00	2,162.90	2,358.00	2,357.90
BEREA	2,358.00	2,357.90	2,367.00	2,366.90
GANTZ	2,367.00	2,366.90	2,442.00	2,441.90
50F	2,442.00	2,441.90	2,563.00	2,562.90
30F	2,563.00	2,562.90	2,612.00	2,611.90
GORDON	2,612.00	2,611.90	2,710.00	2,709.90
4TH	2,710.00	2,709.90	2,918.00	2,917.90
BAYARD	2,918.00	2,917.90	3,207.00	3,206.80
WARREN	3,207.00	3,206.80	3,293.00	3,292.80
SPEECHLEY	3,293.00	3,292.80	3,796.00	3,795.70
BALLTOWN A	3,796.00	3,795.70	4,023.00	4,022.70
BALLTOWN B	4,023.00	4,022.70	4,183.00	4,182.70
BRADFORD	4,183.00	4,182.70	4,424.00	4,423.60
RILEY	4,424.00	4,423.60	4,871.00	4,865.90
BENSON	4,871.00	4,865.90	5,122.00	5,109.20
ALEXANDER	5,122.00	5,109.20	6,530.00	6,398.40
MIDDLESEX	6,530.00	6,398.40	6,608.00	6,449.00
GENESEE	6,608.00	6,449.00	6,728.00	6,514.30
GENESEO	6,728.00	6,514.30	6,827.00	6,558.30
TULLY	6,827.00	6,558.30	6,893.00	6,583.00
HAMILTON	6,893.00	6,583.00	6,953.00	6,601.30
MARCELLUS	6,953.00	6,601.30	12,794.00	6,583.50

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Well Operator's Report of Well Work

EQT

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Well Number: 513139

API: 47 - 017 - 06328

Submission: ☑ Initial ☐ Amended

Notes:

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EQT Production - Marcellus

Doddridge County, WV Grid
Doddridge County 513139
Well #513139

Main Wellbore

Design: As Drilled Surveys

Standard Survey Report

27 August, 2014

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Phoenix Technology Services

Survey Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513139
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513139	**North Reference:**	Grid
Well:	Well #513139	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Project — Doddridge County, WV Grid

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		Using geodetic scale factor

Site — Doddridge County 513139

Site Position:		**Northing:**	267,935.80 usft	**Latitude:**	39.23
From:	Map	**Easting:**	1,635,240.40 usft	**Longitude:**	-80.79
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.82 °

Well — Well #513139

Well Position	**+N/-S**	0.0 usft	**Northing:**	267,935.80 usft	**Latitude:**	39° 13' 42.473 N
	+E/-W	0.0 usft	**Easting:**	1,635,240.40 usft	**Longitude:**	80° 47' 15.496 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,202.0 usft

Wellbore — Main Wellbore

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	8/12/2013	-8.42	66.84	52,366

Design — As Drilled Surveys

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	152.84

Survey Program — **Date** 8/27/2014

From ()	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,188.0	513139 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop
0.00	12,794.0	513139 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3:standard declination

Survey

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	-1,218.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.21	24.39	100.0	-1,118.0	0.2	0.1	-0.1	0.21	0.21	0.00
200.0	0.13	21.13	200.0	-1,018.0	0.4	0.2	-0.3	0.08	-0.08	-3.26
300.0	0.12	31.70	300.0	-918.0	0.6	0.3	-0.4	0.03	0.01	10.57
400.0	0.17	47.13	400.0	-818.0	0.8	0.5	-0.5	0.06	0.05	15.43
500.0	0.25	62.84	500.0	-718.0	1.0	0.8	-0.6	0.10	0.08	15.71
600.0	0.25	86.66	600.0	-618.0	1.1	1.2	-0.5	0.10	0.00	23.82
700.0	0.41	119.27	700.0	-518.0	1.0	1.7	-0.1	0.24	0.16	32.61

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Well:	Well #513139	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
800.0	0.42	132.10	800.0	-418.0	0.6	2.3	0.5	0.09	0.01	12.83
900.0	0.52	121.58	900.0	-318.0	0.1	2.9	1.3	0.13	0.10	-10.52
1,000.0	0.55	127.03	1,000.0	-218.0	-0.5	3.7	2.1	0.06	0.03	5.45
1,100.0	0.50	126.62	1,100.0	-118.0	-1.0	4.4	2.9	0.05	-0.05	-0.41
1,200.0	0.55	131.47	1,200.0	-18.0	-1.6	5.2	3.8	0.07	0.05	4.85
1,300.0	0.58	127.22	1,300.0	82.0	-2.2	5.9	4.7	0.05	0.03	-4.25
1,400.0	0.62	114.59	1,400.0	182.0	-2.7	6.8	5.5	0.14	0.04	-12.63
1,500.0	0.65	110.21	1,500.0	282.0	-3.2	7.8	6.4	0.06	0.03	-4.38
1,600.0	0.38	129.89	1,600.0	382.0	-3.6	8.6	7.1	0.32	-0.27	19.68
1,700.0	0.32	144.31	1,700.0	482.0	-4.0	9.0	7.7	0.11	-0.06	14.42
1,800.0	0.44	144.76	1,800.0	582.0	-4.5	9.4	8.3	0.12	0.12	0.45
1,900.0	0.39	156.90	1,899.9	681.9	-5.2	9.8	9.1	0.10	-0.05	12.14
2,000.0	0.39	154.43	1,999.9	781.9	-5.8	10.1	9.7	0.02	0.00	-2.47
2,100.0	0.38	155.34	2,099.9	881.9	-6.4	10.3	10.4	0.01	-0.01	0.91
2,200.0	0.34	184.26	2,199.9	981.9	-7.0	10.5	11.0	0.18	-0.04	28.92
2,300.0	0.40	191.86	2,299.9	1,081.9	-7.6	10.4	11.5	0.08	0.06	7.60
2,400.0	0.44	197.55	2,399.9	1,181.9	-8.3	10.2	12.1	0.06	0.04	5.69
2,500.0	0.52	203.19	2,499.9	1,281.9	-9.1	9.9	12.6	0.09	0.08	5.64
2,600.0	0.70	205.23	2,599.9	1,381.9	-10.1	9.4	13.3	0.18	0.18	2.04
2,700.0	0.83	202.60	2,699.9	1,481.9	-11.3	8.9	14.1	0.13	0.13	-2.63
2,800.0	0.97	204.96	2,799.9	1,581.9	-12.8	8.3	15.1	0.14	0.14	2.36
2,900.0	0.99	203.27	2,899.9	1,681.9	-14.3	7.6	16.2	0.04	0.02	-1.69
3,000.0	1.06	201.16	2,999.9	1,781.9	-16.0	6.9	17.4	0.08	0.07	-2.11
3,100.0	1.01	202.02	3,099.9	1,881.9	-17.7	6.2	18.6	0.05	-0.05	0.86
3,200.0	1.13	201.66	3,199.8	1,981.8	-19.4	5.5	19.8	0.12	0.12	-0.36
3,300.0	1.11	196.93	3,299.8	2,081.8	-21.2	4.9	21.1	0.09	-0.02	-4.73
3,400.0	1.17	198.02	3,399.8	2,181.8	-23.1	4.3	22.5	0.06	0.06	1.09
3,500.0	1.01	197.00	3,499.8	2,281.8	-24.9	3.7	23.9	0.16	-0.16	-1.02
3,600.0	0.94	199.29	3,599.8	2,381.8	-26.6	3.2	25.1	0.08	-0.07	2.29
3,700.0	0.91	205.56	3,699.8	2,481.8	-28.0	2.6	26.1	0.11	-0.03	6.27
3,800.0	0.81	221.70	3,799.7	2,581.7	-29.3	1.8	26.9	0.26	-0.10	16.14
3,900.0	0.84	239.56	3,899.7	2,681.7	-30.2	0.7	27.2	0.26	0.03	17.86
4,000.0	0.83	256.38	3,999.7	2,781.7	-30.7	-0.7	27.0	0.24	-0.01	16.82
4,100.0	1.14	273.32	4,099.7	2,881.7	-30.8	-2.4	26.4	0.42	0.31	16.94
4,200.0	1.56	280.76	4,199.7	2,981.7	-30.5	-4.7	25.0	0.45	0.42	7.44
4,300.0	1.76	286.68	4,299.6	3,081.6	-29.8	-7.5	23.1	0.26	0.20	5.92
4,400.0	2.17	293.06	4,399.6	3,181.6	-28.7	-10.7	20.6	0.46	0.41	6.38
4,500.0	3.73	299.12	4,499.4	3,281.4	-26.3	-15.3	16.4	1.59	1.56	6.06
4,600.0	7.34	306.30	4,599.0	3,381.0	-21.0	-23.3	8.0	3.67	3.61	7.18
4,700.0	9.76	308.37	4,697.8	3,479.8	-11.9	-35.1	-5.4	2.44	2.42	2.07
4,800.0	10.59	309.90	4,796.3	3,578.3	-0.8	-48.8	-21.6	0.87	0.83	1.53
4,900.0	12.87	310.34	4,894.2	3,676.2	12.3	-64.3	-40.3	2.28	2.28	0.44

Phoenix Technology Services

Survey Report

EQT
Where energy meets innovation.

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513139
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
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Site:	Doddridge County 513139	**North Reference:**	Grid
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Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
5,000.0	13.18	313.46	4,991.6	3,773.6	27.4	-81.1	-61.4	0.77	0.31	3.12
5,100.0	16.99	316.98	5,088.1	3,870.1	45.9	-99.3	-86.2	3.92	3.81	3.52
Gyro Tie In=5188' MD										
5,188.0	17.80	319.77	5,172.1	3,954.1	65.6	-116.8	-111.7	1.32	0.92	3.17
5,320.0	17.80	320.80	5,297.8	4,079.8	96.6	-142.6	-151.1	0.24	0.00	0.78
5,352.0	18.70	325.70	5,328.2	4,110.2	104.7	-148.6	-160.9	5.56	2.81	15.31
5,384.0	19.60	333.10	5,358.4	4,140.4	113.7	-153.9	-171.4	8.08	2.81	23.13
5,416.0	20.60	340.00	5,388.5	4,170.5	123.8	-158.2	-182.4	8.04	3.13	21.56
5,447.0	21.50	347.50	5,417.4	4,199.4	134.4	-161.3	-193.3	9.16	2.90	24.19
5,479.0	22.60	352.20	5,447.1	4,229.1	146.3	-163.4	-204.7	6.50	3.44	14.69
5,510.0	24.60	355.00	5,475.5	4,257.5	158.6	-164.8	-216.3	7.39	6.45	9.03
5,542.0	27.00	356.00	5,504.3	4,286.3	172.5	-165.9	-229.2	7.62	7.50	3.13
5,573.0	29.10	357.50	5,531.7	4,313.7	187.0	-166.7	-242.5	7.15	6.77	4.84
5,605.0	31.80	358.70	5,559.2	4,341.2	203.2	-167.2	-257.2	8.65	8.44	3.75
5,636.0	31.40	1.90	5,585.6	4,367.6	219.5	-167.2	-271.6	5.56	-1.29	10.32
5,668.0	28.30	6.20	5,613.4	4,395.4	235.3	-166.1	-285.2	11.77	-9.69	13.44
5,700.0	24.80	11.60	5,642.0	4,424.0	249.5	-163.9	-296.8	13.28	-10.94	16.88
5,731.0	22.80	14.70	5,670.4	4,452.4	261.6	-161.1	-306.3	7.61	-6.45	10.00
5,763.0	21.70	15.10	5,700.0	4,482.0	273.4	-158.0	-315.3	3.47	-3.44	1.25
5,794.0	20.40	17.00	5,728.9	4,510.9	284.1	-154.9	-323.4	4.74	-4.19	6.13
5,826.0	19.10	21.20	5,759.1	4,541.1	294.3	-151.4	-330.9	6.01	-4.06	13.13
5,857.0	17.70	27.90	5,788.5	4,570.5	303.2	-147.3	-337.0	8.17	-4.52	21.61
5,889.0	16.70	35.60	5,819.0	4,601.0	311.2	-142.4	-341.9	7.76	-3.13	24.06
5,920.0	16.30	42.50	5,848.8	4,630.8	318.0	-136.8	-345.4	6.45	-1.29	22.26
5,952.0	16.20	48.70	5,879.5	4,661.5	324.3	-130.4	-348.1	5.43	-0.31	19.38
5,983.0	16.40	54.40	5,909.2	4,691.2	329.7	-123.6	-349.8	5.20	0.65	18.39
6,015.0	15.90	60.10	5,940.0	4,722.0	334.5	-116.2	-350.6	5.19	-1.56	17.81
6,046.0	16.00	68.80	5,969.8	4,751.8	338.2	-108.5	-350.4	7.71	0.32	28.06
6,078.0	16.70	78.30	6,000.5	4,782.5	340.7	-99.9	-348.7	8.63	2.19	29.69
6,109.0	17.50	86.40	6,030.1	4,812.1	341.9	-90.9	-345.7	8.10	2.58	26.13
6,140.0	18.40	93.40	6,059.6	4,841.6	341.9	-81.3	-341.3	7.53	2.90	22.58
6,172.0	19.20	100.00	6,089.9	4,871.9	340.7	-71.1	-335.6	7.10	2.50	20.63
6,203.0	19.80	108.90	6,119.2	4,901.2	338.1	-61.1	-328.7	9.77	1.94	28.71
6,235.0	20.90	117.40	6,149.2	4,931.2	333.7	-50.9	-320.2	9.85	3.44	26.56
6,266.0	22.40	125.10	6,178.0	4,960.0	327.8	-41.2	-310.4	10.35	4.84	24.84
6,298.0	24.50	130.40	6,207.3	4,989.3	320.0	-31.1	-298.9	9.30	6.56	16.56
6,330.0	26.90	133.20	6,236.2	5,018.2	310.7	-20.8	-285.9	8.40	7.50	8.75
6,361.0	29.30	133.70	6,263.5	5,045.5	300.7	-10.2	-272.2	7.78	7.74	1.61
6,393.0	31.80	132.80	6,291.1	5,073.1	289.5	1.6	-256.8	[illegible]	7.81	-2.81
6,424.0	34.40	133.40	6,317.0	5,099.0	278.0	14.0	-240.9	8.45	8.39	1.94
6,456.0	37.70	133.60	6,342.9	5,124.9	265.0	27.7	-223.1	10.32	10.31	0.63
6,488.0	40.80	134.10	6,367.7	5,149.7	251.0	42.3	-204.0	[illegible]	9.69	1.56
6,519.0	44.10	134.80	6,390.6	5,172.6	236.3	57.2	-184.1	10.75	10.65	2.26

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Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513139
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513139	**North Reference:**	Grid
Well:	Well #513139	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
6,551.0	47.70	135.00	6,412.8	5,194.8	220.1	73.5	-162.3	11.26	11.25	0.63
6,583.0	51.10	135.70	6,433.7	5,215.7	202.8	90.5	-139.1	10.75	10.63	2.19
6,614.0	53.40	137.50	6,452.6	5,234.6	185.0	107.4	-115.6	8.72	7.42	5.81
6,646.0	55.40	138.90	6,471.3	5,253.3	165.6	124.7	-90.4	7.19	6.25	4.38
6,677.0	57.80	139.90	6,488.3	5,270.3	146.0	141.5	-65.2	8.20	7.74	3.23
6,709.0	59.90	142.70	6,504.9	5,286.9	124.6	158.7	-38.4	9.96	6.56	8.75
6,740.0	61.60	145.40	6,520.0	5,302.0	102.7	174.5	-11.7	9.37	5.48	8.71
6,771.0	63.00	147.00	6,534.4	5,316.4	79.9	189.8	15.6	6.42	4.52	5.16
6,803.0	65.10	148.20	6,548.4	5,330.4	55.6	205.2	44.2	7.38	6.56	3.75
6,834.0	66.60	149.10	6,561.1	5,343.1	31.4	219.9	72.4	5.52	4.84	2.90
6,866.0	68.20	148.80	6,573.4	5,355.4	6.1	235.2	101.9	5.07	5.00	-0.94
6,897.0	70.30	149.50	6,584.4	5,366.4	-18.8	250.0	130.8	7.10	6.77	2.26
6,929.0	73.00	150.50	6,594.5	5,376.5	-45.1	265.2	161.2	8.94	8.44	3.13
6,960.0	74.50	152.30	6,603.2	5,385.2	-71.2	279.5	190.9	7.38	4.84	5.81
6,991.0	76.20	152.70	6,611.0	5,393.0	-97.8	293.3	220.9	5.62	5.48	1.29
7,023.0	78.10	153.90	6,618.1	5,400.1	-125.7	307.3	252.1	6.97	5.94	3.75
7,054.0	80.70	154.60	6,623.8	5,405.8	-153.1	320.6	282.6	8.68	8.39	2.26
7,085.0	83.30	155.20	6,628.1	5,410.1	-180.9	333.6	313.2	8.60	8.39	1.94
7,117.0	85.70	156.10	6,631.2	5,413.2	-209.9	346.7	345.1	8.01	7.50	2.81
LP=7148' MD/ 6633' TVD										
7,148.0	88.80	156.50	6,632.7	5,414.7	-238.3	359.2	376.0	10.08	10.00	1.29
7,179.0	91.50	156.00	6,632.6	5,414.6	-266.7	371.6	406.9	8.86	8.71	-1.61
7,211.0	93.50	155.70	6,631.2	5,413.2	-295.8	384.7	438.8	6.32	6.25	-0.94
7,273.0	91.60	153.90	6,628.4	5,410.4	-351.9	411.1	500.7	4.22	-3.06	-2.90
7,336.0	91.80	153.90	6,626.6	5,408.6	-408.4	438.8	563.7	0.32	0.32	0.00
7,399.0	90.60	153.20	6,625.3	5,407.3	-464.8	466.8	626.7	2.21	-1.90	-1.11
7,461.0	90.10	151.90	6,624.9	5,406.9	-519.8	495.4	688.7	2.25	-0.81	-2.10
7,524.0	89.80	149.90	6,624.9	5,406.9	-574.9	526.1	751.6	3.21	-0.48	-3.17
7,587.0	89.40	149.50	6,625.4	5,407.4	-629.3	557.8	814.5	0.90	-0.63	-0.63
7,650.0	89.10	151.50	6,626.2	5,408.2	-684.1	588.9	877.5	3.21	-0.48	3.17
7,713.0	90.60	152.50	6,626.4	5,408.4	-739.7	618.4	940.5	2.86	2.38	1.59
7,776.0	91.90	156.00	6,625.0	5,407.0	-796.4	645.8	1,003.4	5.93	2.06	5.56
7,839.0	91.60	156.30	6,623.1	5,405.1	-854.0	671.3	1,066.3	0.67	-0.48	0.48
7,902.0	90.80	156.40	6,621.7	5,403.7	-911.7	696.5	1,129.1	1.28	-1.27	0.16
7,965.0	89.70	157.20	6,621.5	5,403.5	-969.6	721.3	1,192.0	2.16	-1.75	1.27
8,028.0	89.00	157.60	6,622.2	5,404.2	-1,027.8	745.6	1,254.8	1.28	-1.11	0.63
8,091.0	89.50	158.50	6,623.0	5,405.0	-1,086.2	769.1	1,317.5	1.63	0.79	1.43
8,155.0	89.80	157.60	6,623.4	5,405.4	-1,145.6	793.0	1,381.2	1.48	0.47	-1.41
8,218.0	89.20	157.20	6,623.9	5,405.9	-1,203.7	817.2	1,444.0	1.14	-0.95	-0.63
8,280.0	88.30	156.20	6,625.3	5,407.3	-1,260.7	841.7	1,505.9	2.17	-1.45	-1.61
8,344.0	89.10	156.50	6,626.8	5,408.8	-1,319.3	867.4	1,569.8	1.33	1.25	0.47
8,407.0	88.90	156.00	6,627.9	5,409.9	-1,376.9	892.8	1,632.6	0.85	-0.32	-0.79
8,470.0	88.10	153.70	6,629.5	5,411.5	-1,433.9	919.5	1,695.6	3.86	-1.27	-3.65

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Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513139
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513139	**North Reference:**	Grid
Well:	Well #513139	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
8,533.0	88.00	153.20	6,631.6	5,413.6	-1,490.2	947.7	1,758.5	0.81	-0.16	-0.79
8,595.0	88.50	153.00	6,633.5	5,415.5	-1,545.5	975.7	1,820.5	0.87	0.81	-0.32
8,658.0	89.10	152.60	6,634.9	5,416.9	-1,601.5	1,004.5	1,883.5	1.14	0.95	-0.63
8,720.0	89.80	154.20	6,635.5	5,417.5	-1,657.0	1,032.3	1,945.5	2.82	1.13	2.58
8,783.0	90.20	154.90	6,635.5	5,417.5	-1,713.8	1,059.3	2,008.4	1.28	0.63	1.11
8,846.0	89.30	153.90	6,635.7	5,417.7	-1,770.7	1,086.6	2,071.4	2.14	-1.43	-1.59
8,910.0	88.90	156.70	6,636.7	5,418.7	-1,828.8	1,113.3	2,135.3	4.42	-0.63	4.38
8,973.0	89.30	153.90	6,637.7	5,419.7	-1,886.0	1,139.6	2,198.3	4.49	0.63	-4.44
9,035.0	89.80	154.30	6,638.2	5,420.2	-1,941.8	1,166.7	2,260.3	1.03	0.81	0.65
9,098.0	90.10	155.40	6,638.3	5,420.3	-1,998.8	1,193.5	2,323.2	1.81	0.48	1.75
9,161.0	90.70	155.50	6,637.8	5,419.8	-2,056.1	1,219.7	2,386.1	0.97	0.95	0.16
9,224.0	91.50	155.10	6,636.6	5,418.6	-2,113.3	1,246.0	2,449.1	1.42	1.27	-0.63
9,288.0	91.10	156.30	6,635.2	5,417.2	-2,171.7	1,272.3	2,513.0	1.98	-0.63	1.88
9,350.0	91.30	155.30	6,633.9	5,415.9	-2,228.2	1,297.7	2,574.9	1.64	0.32	-1.61
9,414.0	92.00	155.20	6,632.0	5,414.0	-2,286.3	1,324.5	2,638.8	1.10	1.09	-0.16
9,477.0	91.00	155.70	6,630.4	5,412.4	-2,343.6	1,350.7	2,701.7	1.77	-1.59	0.79
9,540.0	90.80	155.70	6,629.4	5,411.4	-2,401.0	1,376.6	2,764.6	0.32	-0.32	0.00
9,603.0	91.30	157.20	6,628.2	5,410.2	-2,458.7	1,401.8	2,827.5	2.51	0.79	2.38
9,666.0	92.20	157.40	6,626.3	5,408.3	-2,516.8	1,426.1	2,890.3	1.46	1.43	0.32
9,730.0	91.20	156.40	6,624.4	5,406.4	-2,575.7	1,451.2	2,954.1	2.21	-1.56	-1.56
9,793.0	90.90	155.40	6,623.3	5,405.3	-2,633.2	1,476.9	3,017.0	1.66	-0.48	-1.59
9,856.0	89.50	153.90	6,623.0	5,405.0	-2,690.1	1,503.8	3,079.9	3.26	-2.22	-2.38
9,919.0	89.70	154.30	6,623.5	5,405.5	-2,746.8	1,531.4	3,142.9	0.71	0.32	0.63
9,982.0	90.30	154.40	6,623.5	5,405.5	-2,803.6	1,558.6	3,205.9	0.97	0.95	0.16
10,045.0	90.90	155.10	6,622.8	5,404.8	-2,860.5	1,585.5	3,268.9	1.46	0.95	1.11
10,108.0	91.60	155.30	6,621.4	5,403.4	-2,917.7	1,611.9	3,331.8	1.16	1.11	0.32
10,171.0	90.70	155.50	6,620.2	5,402.2	-2,975.0	1,638.1	3,394.7	1.46	-1.43	0.32
10,234.0	90.90	155.20	6,619.3	5,401.3	-3,032.2	1,664.4	3,457.7	0.57	0.32	-0.48
10,297.0	91.40	155.30	6,618.0	5,400.0	-3,089.4	1,690.8	3,520.6	0.81	0.79	0.16
10,361.0	92.30	155.00	6,616.0	5,398.0	-3,147.5	1,717.7	3,584.5	1.48	1.41	-0.47
10,424.0	91.00	155.60	6,614.1	5,396.1	-3,204.7	1,744.0	3,647.4	2.27	-2.06	0.95
10,487.0	90.80	155.10	6,613.2	5,395.2	-3,261.9	1,770.3	3,710.3	0.85	-0.32	-0.79
10,550.0	91.40	155.20	6,611.9	5,393.9	-3,319.1	1,796.7	3,773.3	0.97	0.95	0.16
10,613.0	89.80	155.30	6,611.3	5,393.3	-3,376.3	1,823.1	3,836.2	2.54	-2.54	0.16
10,677.0	90.10	155.30	6,611.3	5,393.3	-3,434.4	1,849.8	3,900.2	0.47	0.47	0.00
10,740.0	90.80	156.70	6,610.9	5,392.9	-3,492.0	1,875.5	3,963.1	2.48	1.11	2.22
10,803.0	91.60	156.20	6,609.5	5,391.5	-3,549.7	1,900.6	4,025.9	1.50	1.27	-0.79
10,866.0	91.40	155.90	6,607.9	5,389.9	-3,607.3	1,926.2	4,088.8	0.57	-0.32	-0.48
10,929.0	90.90	155.60	6,606.6	5,388.6	-3,664.7	1,952.1	4,151.7	0.93	-0.79	-0.48
10,992.0	91.30	155.30	6,605.4	5,387.4	-3,722.0	1,978.2	4,214.6	0.79	0.63	-0.48
11,055.0	91.40	155.10	6,603.9	5,385.9	-3,779.2	2,004.7	4,277.6	0.35	0.16	-0.32
11,118.0	91.80	154.10	6,602.2	5,384.2	-3,836.1	2,031.7	4,340.5	1.71	0.63	-1.59

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513139
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513139	**North Reference:**	Grid
Well:	Well #513139	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
11,181.0	91.30	154.80	6,600.5	5,382.5	-3,892.9	2,058.8	4,403.5	1.37	-0.79	1.11
11,244.0	91.80	156.40	6,598.8	5,380.8	-3,950.2	2,084.8	4,466.4	2.66	0.79	2.54
11,307.0	91.00	155.50	6,597.2	5,379.2	-4,007.8	2,110.5	4,529.2	1.91	-1.27	-1.43
11,371.0	90.80	155.60	6,596.2	5,378.2	-4,066.0	2,137.0	4,593.2	0.35	-0.31	0.16
11,433.0	89.10	155.50	6,596.3	5,378.3	-4,122.4	2,162.7	4,655.1	2.75	-2.74	-0.16
11,497.0	89.00	155.30	6,597.3	5,379.3	-4,180.6	2,189.3	4,719.0	0.35	-0.16	-0.31
11,560.0	89.50	155.30	6,598.2	5,380.2	-4,237.9	2,215.6	4,782.0	0.79	0.79	0.00
11,623.0	89.80	155.30	6,598.5	5,380.5	-4,295.1	2,241.9	4,844.9	0.48	0.48	0.00
11,686.0	90.20	155.20	6,598.5	5,380.5	-4,352.3	2,268.3	4,907.8	0.65	0.63	-0.16
11,749.0	90.80	155.30	6,598.0	5,380.0	-4,409.5	2,294.7	4,970.8	0.97	0.95	0.16
11,812.0	91.40	155.30	6,596.8	5,378.8	-4,466.7	2,321.0	5,033.7	0.95	0.95	0.00
11,876.0	92.00	155.00	6,594.9	5,376.9	-4,524.8	2,347.9	5,097.6	1.05	0.94	-0.47
11,939.0	90.90	154.70	6,593.3	5,375.3	-4,581.8	2,374.7	5,160.6	1.81	-1.75	-0.48
12,002.0	90.90	155.80	6,592.3	5,374.3	-4,639.0	2,401.0	5,223.5	1.75	0.00	1.75
12,065.0	91.80	155.90	6,590.8	5,372.8	-4,696.5	2,426.8	5,286.4	1.44	1.43	0.16
12,129.0	92.40	156.10	6,588.5	5,370.5	-4,754.9	2,452.8	5,350.3	0.99	0.94	0.31
12,192.0	90.90	155.30	6,586.7	5,368.7	-4,812.3	2,478.7	5,413.2	2.70	-2.38	-1.27
12,255.0	90.00	153.90	6,586.2	5,368.2	-4,869.2	2,505.8	5,476.1	2.64	-1.43	-2.22
12,318.0	90.20	153.40	6,586.0	5,368.0	-4,925.7	2,533.7	5,539.1	0.85	0.32	-0.79
12,381.0	90.80	153.90	6,585.5	5,367.5	-4,982.1	2,561.7	5,602.1	1.24	0.95	0.79
12,444.0	91.20	154.40	6,584.4	5,366.4	-5,038.8	2,589.1	5,665.1	1.02	0.63	0.79
12,508.0	89.90	153.50	6,583.8	5,365.8	-5,096.3	2,617.2	5,729.1	2.47	-2.03	-1.41
12,571.0	89.40	154.10	6,584.2	5,366.2	-5,152.8	2,645.1	5,792.0	1.24	-0.79	0.95
12,634.0	89.80	154.30	6,584.6	5,366.6	-5,209.5	2,672.5	5,855.0	0.71	0.63	0.32
12,697.0	90.20	154.50	6,584.6	5,366.6	-5,266.3	2,699.7	5,918.0	0.71	0.63	0.32
Last Survey=12742' MD/ 6584' TVD										
12,742.0	90.80	154.50	6,584.2	5,366.2	-5,307.0	2,719.1	5,963.0	1.33	1.33	0.00
Projection to TD=12794' MD/ 6584' TVD										
12,794.0	90.80	154.50	6,583.5	5,365.5	-5,353.9	2,741.5	6,015.0	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,188.0	5,172.1	65.6	-116.8	Gyro Tie In=5188' MD
7,148.0	6,632.7	-238.3	359.2	LP=7148' MD/ 6633' TVD
12,742.0	6,584.2	-5,307.0	2,719.1	Last Survey=12742' MD/ 6584' TVD
12,794.0	6,583.5	-5,353.9	2,741.5	Projection to TD=12794' MD/ 6584' TVD

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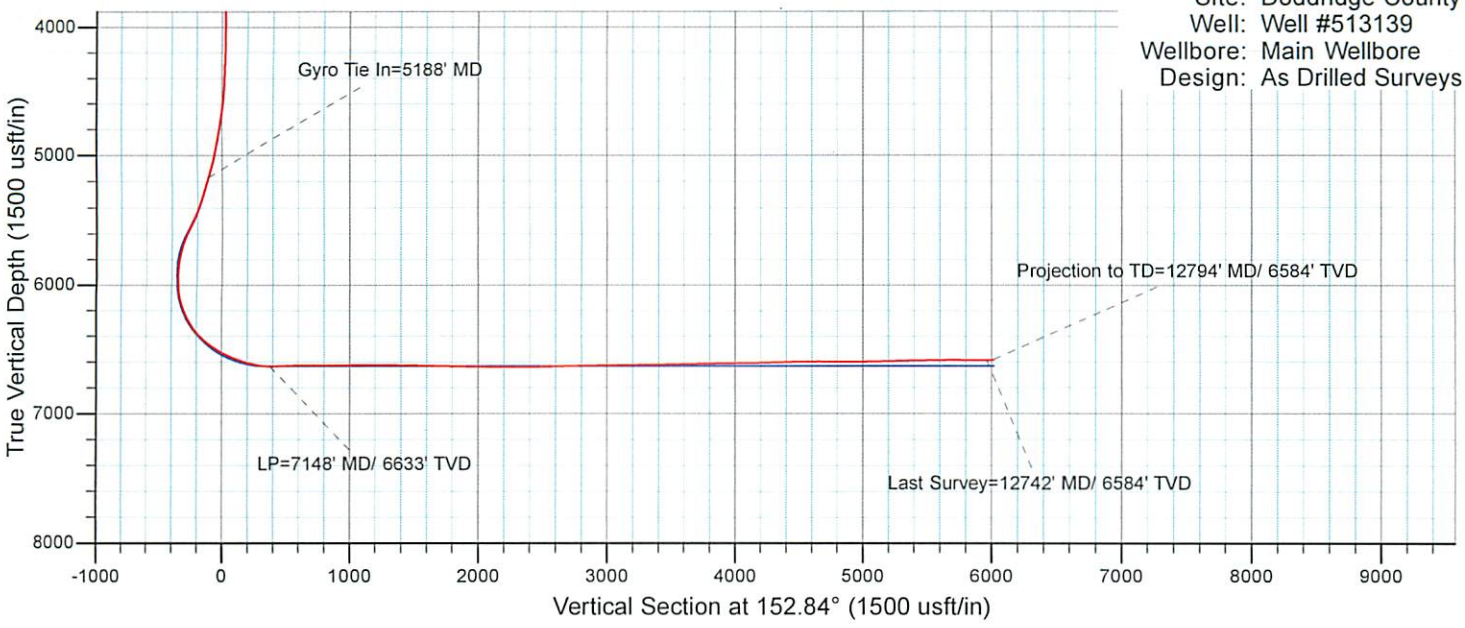
Checked By: _____ Approved By: _____ Date MAR 10 2015

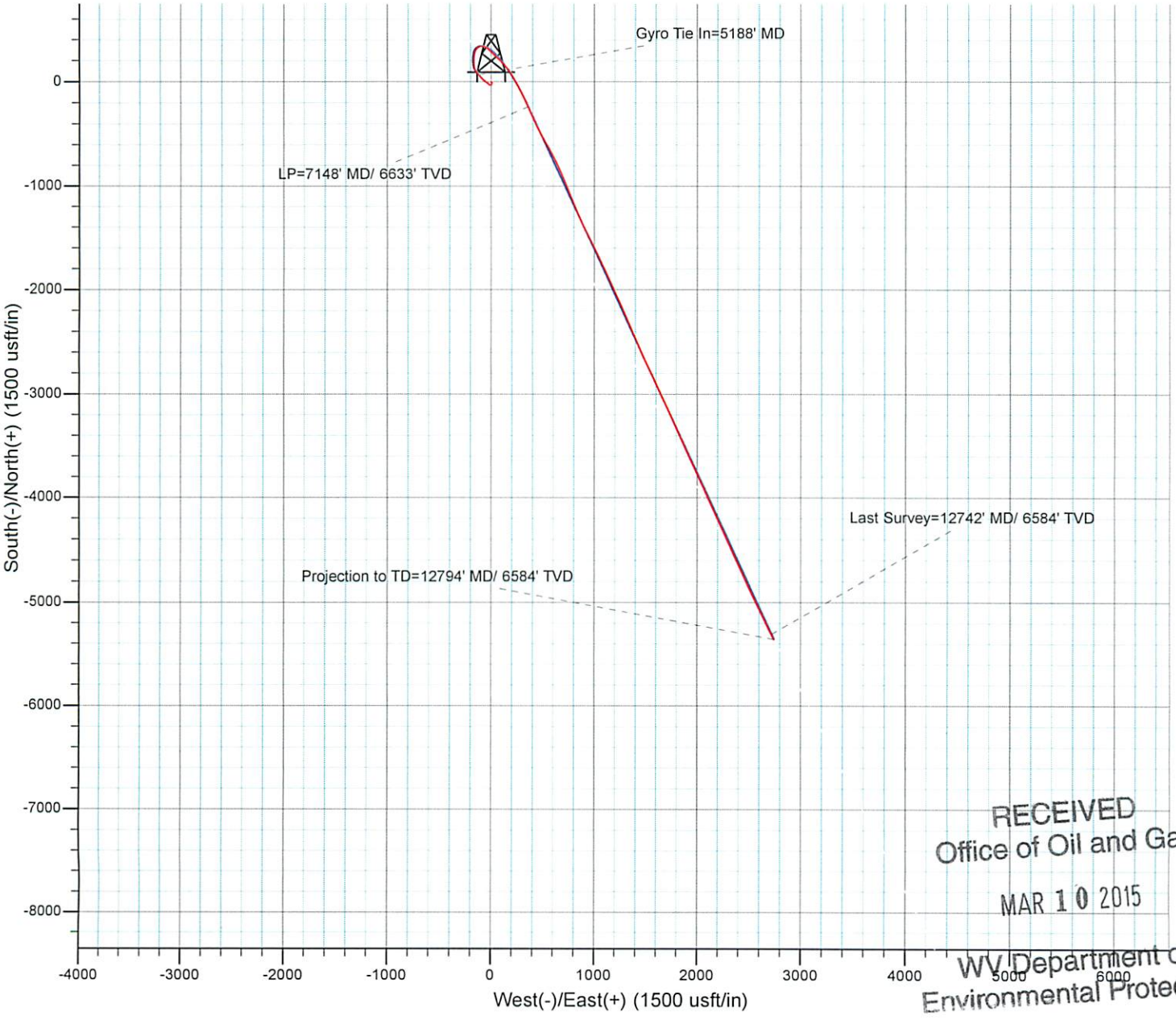
WV Department of
Environmental Protection

PHOENIX TECHNOLOGY SERVICES

EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513139
Well: Well #513139
Wellbore: Main Wellbore
Design: As Drilled Surveys





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MAR 10 2015
WV Department of
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513139 - 47-017-06328-0000 - Perforations					
Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	12/5/2014	12,755.00	12,758.00	10	MARCELLUS
1	12/5/2014	12,756.00	12,725.00	32	MARCELLUS
2	12/5/2014	12,485.00	12,605.00	40	MARCELLUS
3	12/5/2014	12,335.00	12,455.00	40	MARCELLUS
4	12/6/2014	12,185.00	12,305.00	40	MARCELLUS
5	12/6/2014	12,035.00	12,155.00	40	MARCELLUS
6	12/7/2012	11,885.00	12,005.00	40	MARCELLUS
7	12/7/2014	11,735.00	11,854.00	40	MARCELLUS
8	12/7/2014	11,585.00	11,705.00	40	MARCELLUS
9	12/8/2014	11,435.00	11,555.00	40	MARCELLUS
10	12/8/2014	11,285.00	11,405.00	40	MARCELLUS
11	12/8/2014	11,135.00	11,255.00	40	MARCELLUS
12	12/8/2014	10,985.00	11,105.00	40	MARCELLUS
13	12/9/2014	10,835.00	10,955.00	40	MARCELLUS
14	12/9/2014	10,685.00	10,802.00	40	MARCELLUS
15	12/10/2014	10,535.00	10,655.00	40	MARCELLUS
16	12/10/2014	10,385.00	10,503.00	40	MARCELLUS
17	12/10/2014	10,234.00	10,355.00	40	MARCELLUS
18	12/10/2014	10,085.00	10,205.00	40	MARCELLUS
19	12/10/2014	9,935.00	10,055.00	40	MARCELLUS
20	12/11/2014	9,785.00	9,905.00	40	MARCELLUS
21	12/11/2014	9,635.00	9,752.00	40	MARCELLUS
22	12/11/2012	9,485.00	9,605.00	40	MARCELLUS
23	12/11/2014	9,335.00	9,455.00	40	MARCELLUS
24	12/12/2014	9,183.00	9,305.00	40	MARCELLUS
25	12/12/2014	9,035.00	9,155.00	40	MARCELLUS
26	12/12/2014	8,885.00	9,005.00	40	MARCELLUS
27	12/12/2014	8,735.00	8,855.00	40	MARCELLUS
28	12/12/2014	8,585.00	8,708.00	40	MARCELLUS
29	12/13/2014	8,435.00	8,555.00	40	MARCELLUS
30	12/13/2014	8,285.00	8,405.00	40	MARCELLUS
31	12/13/2014	8,137.00	8,255.00	40	MARCELLUS
32	12/13/2014	7,985.00	8,105.00	40	MARCELLUS
33	12/13/2014	7,835.00	7,955.00	40	MARCELLUS
34	12/13/2014	7,685.00	7,805.00	40	MARCELLUS
35	12/14/2014	7,535.00	7,655.00	40	MARCELLUS
36	12/14/2014	7,385.00	7,505.00	40	MARCELLUS
37	12/14/2014	7,235.00	7,355.00	40	MARCELLUS
38	12/14/2014	7,089.00	7,205.00	40	MARCELLUS

513139 - 47-017-06328-0000 - Stimulated Stages

Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	12/5/2014	14.80	6,899.00	8,124.00	4,690	0	906	0
1	12/5/2014	89.30	8,499.00	8,849.00	4,501	251,456	6,711	0
2	12/5/2014	91.80	8,097.00	8,468.00	4,627	255,907	6,781	0
3	12/5/2014	90.90	8,254.00	8,640.00	5,290	250,658	6,633	0
4	12/6/2014	100.00	8,467.00	8,898.00	4,674	251,100	6,452	0
5	12/7/2014	98.10	8,296.00	8,634.00	4,572	251,100	6,628	0
6	12/7/2014	99.80	8,273.00	8,512.00	5,193	250,900	6,566	0
7	12/7/2014	99.20	8,259.00	8,820.00	5,404	250,050	6,510	0
8	12/8/2014	99.70	8,234.00	8,492.00	4,516	251,875	6,535	0
9	12/8/2014	96.50	8,369.00	8,824.00	4,063	253,000	6,554	0
10	12/8/2014	94.20	8,019.00	9,002.00	4,211	249,061	6,383	0
11	12/8/2014	99.60	8,121.00	8,496.00	4,480	250,573	6,696	0
12	12/9/2014	100.50	8,077.00	8,357.00	4,595	250,972	6,530	0
13	12/9/2014	96.00	8,152.00	8,785.00	5,182	251,446	6,308	0
14	12/9/2014	99.80	8,140.00	8,336.00	4,382	250,637	6,727	0
15	12/10/2014	100.10	8,214.00	8,785.00	4,844	250,678	6,516	0
16	12/10/2014	98.80	8,105.00	8,456.00	4,707	261,483	6,519	0
17	12/10/2014	97.10	8,181.00	8,606.00	4,732	257,693	6,478	0
18	12/10/2014	98.70	8,164.00	8,527.00	5,617	256,778	6,567	0
19	12/11/2014	96.30	8,078.00	8,822.00	4,804	250,596	6,281	0
20	12/11/2014	99.70	8,085.00	8,388.00	4,279	251,624	6,416	0
21	12/11/2014	98.50	7,993.00	8,144.00	4,408	251,203	6,362	0
22	12/11/2014	99.70	8,106.00	8,616.00	5,238	251,687	6,492	0
23	12/12/2014	99.30	8,020.00	8,799.00	5,154	251,224	6,519	0
24	12/12/2014	99.60	8,028.00	8,263.00	5,249	251,541	6,284	0
25	12/12/2014	99.50	8,167.00	8,474.00	5,272	252,329	6,302	0
26	12/12/2014	100.10	8,466.00	8,735.00	5,461	250,648	6,552	0
27	12/12/2014	99.70	7,929.00	8,102.00	5,490	251,139	6,417	0
28	12/13/2014	99.80	7,839.00	8,066.00	5,475	250,373	6,438	0
29	12/13/2014	98.70	7,912.00	8,700.00	5,071	250,919	6,094	0
30	12/13/2014	99.50	7,825.00	8,020.00	5,516	251,068	6,122	0
31	12/13/2014	100.00	7,602.00	7,753.00	5,293	250,775	6,207	0
32	12/13/2014	99.50	7,537.00	7,776.00	4,806	251,371	6,082	0
33	12/13/2014	99.70	7,568.00	7,684.00	4,956	251,413	6,045	0
34	12/14/2014	99.50	7,608.00	7,767.00	4,941	250,579	6,005	0
35	12/14/2014	99.00	7,880.00	8,776.00	5,342	238,667	6,201	0
36	12/14/2014	99.80	7,590.00	7,933.00	5,111	250,763	6,161	0
37	12/14/2014	99.80	7,528.00	8,436.00	5,545	251,498	5,969	0
38	12/14/2014	99.50	7,675.00	7,938.00	5,707	250,006	6,546	0

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/5/2014
Job End Date:	12/14/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06328-00-00
Operator Name:	EQT Production
Well Name and Number:	OXF156 - 513139
Longitude:	-80.78746400
Latitude:	39.22854900
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,638
Total Base Water Volume (gal):	10,654,434
Total Base Non Water Volume:	484,586

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

INTERSTATE Oil & Gas COMPACT COMMISSION

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	FTSI	Carrier					
			Water	7732-18-5	100.00000	89.85436	
Sand	FTSI	Proppant					
			Crystalline Silica	14808-60-7	100.00000	9.67353	
Hydrochloric Acid 15%	FTSI	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.04939	
FRW-600	FTSI	Friction Reducer					
			Hydrotreated light distillate	64742-47-8	30.00000	0.02271	
			Ammonium acetate	631-61-8	6.00000	0.00454	
B-10	FTSI	Buffer Agent					
			Potassium carbonate	584-08-7	48.00000	0.00956	
			Potassium hydroxide	1310-58-3	20.00000	0.00398	
HVG-1	FTSI	Gel					
			Petroleum Distillate	64742-47-8	55.00000	0.00504	
			Guar Gum	9000-30-0	50.00000	0.00458	
			Surfactant	68439-51-0	2.00000	0.00018	
			Clay	14808-60-7	2.00000	0.00018	
ICI-3240	FTSI	Biocide					

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			Dazomet (Tetrahydro-3, 5-dimethyl-2H-1, 3, 5-thiadiazine-2-thione	533-74-4	24.00000	0.00242	
			Sodium Hydroxide	1310-73-2	4.00000	0.00040	
CS-500-SI	FTSI	Scale Inhibitor					
			Ethylene Glycol	107-21-1	10.00000	0.00248	
ClO2	Neptune	Biocide					
			Chlorine Dioxide	10049-04-4	100.00000	0.00095	
CI-150	FTSI	Corrosion Inhibitor					
			Isopropanol	67-63-0	30.00000	0.00018	
			Organic amine resin salt	Proprietary	30.00000	0.00018	
			Ethylene Glycol	107-21-1	30.00000	0.00018	
			Aromatic aldehyde	Proprietary	10.00000	0.00006	
			Dimethylformamide	68-12-2	10.00000	0.00006	
			Quaternary ammonium compound	Proprietary	10.00000	0.00006	
FE-100L	FTSI	Iron Control					
			Citric Acid	77-92-9	55.00000	0.00062	
APB-1	FTSI	Gel Breaker					
			Ammonium Persulfate	7727-54-0	95.00000	0.00015	
NE-100	FTSI	Non-Emulsifier					
			2-Propanol	67-63-0	10.00000	0.00003	
			2-Butoxyethanol	111-76-2	10.00000	0.00003	
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00002	

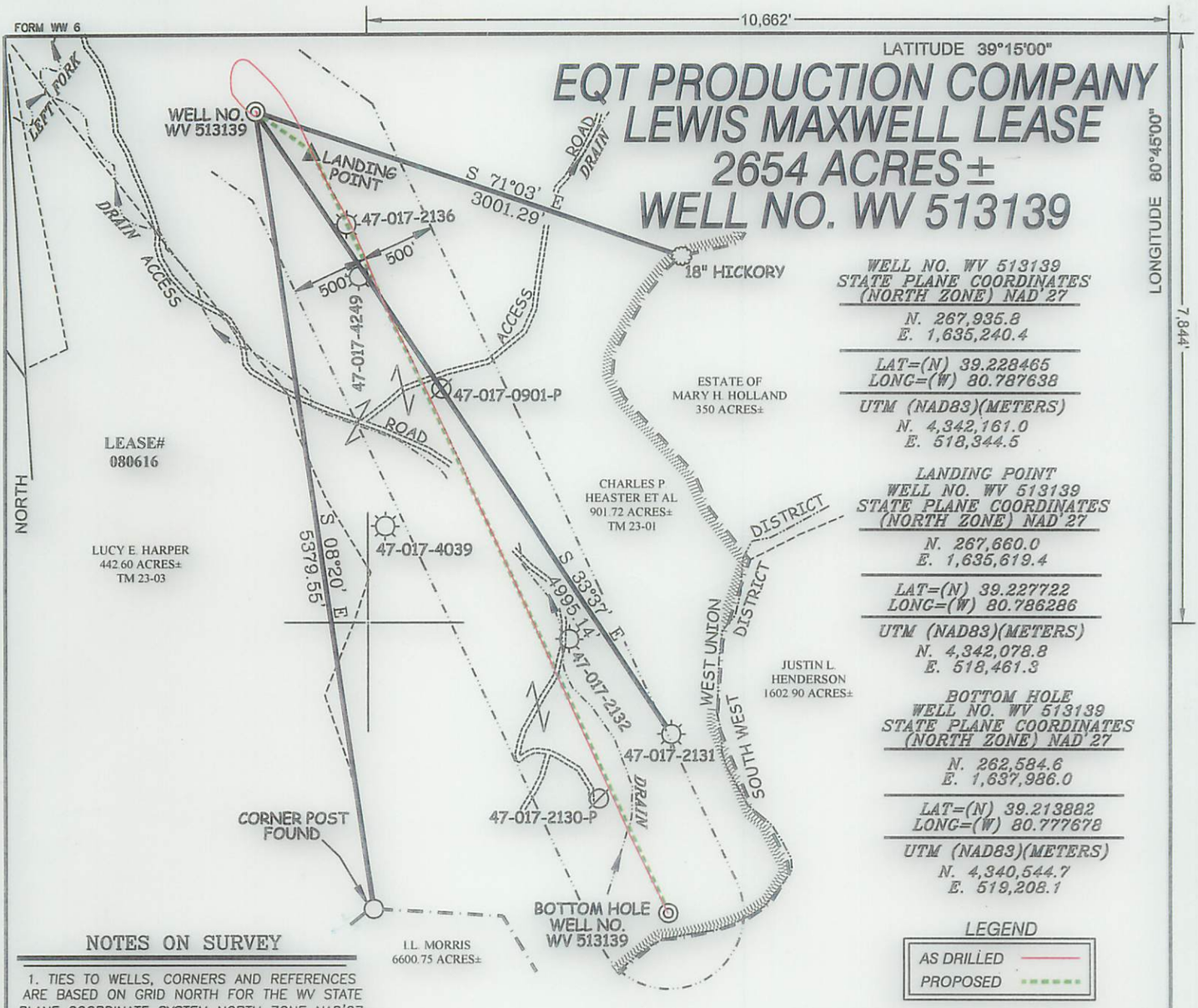
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

FORM WW 6

EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
2654 ACRES±
WELL NO. WV 513139



WELL NO. WV 513139
STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 267,935.8
E. 1,635,240.4

LAT=(N) 39.228465
LONG=(W) 80.787638

UTM (NAD83)(METERS)
N. 4,342,161.0
E. 518,344.5

LANDING POINT
WELL NO. WV 513139
STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 267,660.0
E. 1,635,619.4

LAT=(N) 39.227722
LONG=(W) 80.786286

UTM (NAD83)(METERS)
N. 4,342,078.8
E. 518,461.3

BOTTOM HOLE
WELL NO. WV 513139
STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 262,584.6
E. 1,637,986.0

LAT=(N) 39.213882
LONG=(W) 80.777678

UTM (NAD83)(METERS)
N. 4,340,544.7
E. 519,208.1

LEGEND
AS DRILLED
PROPOSED

NOTES ON SURVEY

1. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD'27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DB 28 PG 177.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2013.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE TIE TO CORS NETWORK).
5. PLAT DATED 07/15/13 REVISED 08/01/13 TO SHOW 500' SPACING FROM PROPOSED LATERAL ETC.
6. AS DRILLED INFORMATION PROVIDED BY EQT.

SLS

AS DRILLED INFORMATION

BOTTOM HOLE	WELL NO. WV 513139
STATE PLANE COORDINATES (NORTH ZONE) NAD'27	STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 262,582.1 E. 1,637,981.8	N. 267,935.8 E. 1,635,240.4
LAT=(N) 39.213875 LONG=(W) 80.777693	LAT=(N) 39.228465 LONG=(W) 80.787638
UTM (NAD83)(METERS) N. 4,340,543.9 E. 519,206.8	UTM (NAD83)(METERS) N. 4,342,161.0 E. 518,344.5

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 Gregory A. Smith

GREGORY A. SMITH LICENSED No. 677 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE AUGUST 1, 20 13
REVISED DATE SEPTEMBER 05, 20 14
OPERATORS WELL NO. WV 513139
API WELL NO. 47 — 017 — 06328
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 6980ASDRILLED513139
SCALE 1" = 1000'
PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION:
ELEVATION 1,244'(GROUND) 1,202'(PROPOSED) WATERSHED LEFT FORK ARNOLDS CREEK
DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'
SURFACE OWNER CHARLES P. HEASTER ET AL ACREAGE 901.72 ±
ROYALTY OWNER LEWIS MAXWELL HRS ACREAGE 2654 ±
PROPOSED WORK: LEASE NO. 080616
DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH ___

COUNTY NAME
PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330 BRIDGEPORT, WV 26330

WR-35
Rev. 8/23/13

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Office of Oil & Gas
APR 14 2015

Page ___ of ___

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 017 - 06329 County DODDRIDGE District WEST UNION
Quad OXFORD 7.5' Pad Name OXF156 Field/Pool Name
Farm name HEASTER, CHARLES P., ET AL Well Number 513140
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4342156.5	Easting 518345.4
Landing Point of Curve	Northing 4342363.1	Easting 518532.0
Bottom Hole	Northing 4344567.4	Easting 517441.2

Elevation (ft) 1202 GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep □ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other ____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine ■Gas ■ NGL □ Oil □ Other ____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air ■ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine

Mud Type(s) and Additive(s)
SBM 12.5ppg – powdered hydrocarbon resin, calcium carbonate, ground almond hulls, barium sulfate, calcium chloride, lecithin liquid, organophilic clay, polyaminated fatty acid, calcium hydroxide, polyimide surfactant, modified fatty acid, dimer.trimer fatty acid, ground walnut hulls, refined base oil.

Date permit issued 11/20/2013 Date drilling commenced 5/7/2014 Date drilling ceased 8/20/2014
Date completion activities began 1/1/2015 Date completion activities ceased 1/18/2015
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 169,216,320,386,462,600,1084 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1456 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1272,1312 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
AL. 5/26/15 ✓
W.S. 6/01/15

WR-35
Rev. 8/23/13

API 47- 017 - 06329 Farm name HEASTER, CHARLES P., ET AL Well number 513140

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	94lb/ft	N/A	Y
Surface	17-1/2"	13-3/8"	1,215'	New	54.5lb/ft	N/A	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	5,255'	New	40lb/ft	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	15,344'	New	20lb/ft	N/A	N
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	38	15.6	1.18	44.84	0	8
Surface	Class A	975	15.6	1.18	1150	0	8
Coal							
Intermediate 1	Class A 5050 POZ/Class A/Class A	380/340/1115	14.2/15.6/15.6	1.28/1.18/1.18	2203	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	300/1065	14.2/15.2	1.26/1.97	2476	5,500'	72
Tubing							

Drillers TD (ft) 15,344' Loggers TD (ft)
Deepest formation penetrated Marcellus Plug back to (ft)
Plug back procedure

Kick off depth (ft) 5,286'

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ■ temperature ☐sonic

Well cored ☐ Yes ■ No ☐ Conventional ☐ Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Conductor- N/A
Surface-Bowspring centralizer on shoe track and every 300' to surface
Intermediate-Bowspring centralizer on shoe track and every 500' to surface
Production- Composite bodied centralizers on every joint from Shoe track up to 4,286'

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

WR-35
Rev. 8/23/13

API 47- 017 - 06329 Farm name HEASTER, CHARLES P., ET AL Well number 513140

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					Please See Attached

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
						Please	See	Attached

Please insert additional pages as applicable.

WR-35
Rev. 8/23/13

API 47- 017 - 06329 Farm name HEASTER, CHARLES P., ET AL Well number 513140

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6,598'	TVD	7,037'	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 1,995 psi Bottom Hole N/A psi DURATION OF TEST 208.5 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	9,788 mcfpd	0 bpd	48 bpd	559.7 bpd	☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

Please insert additional pages as applicable.

Drilling Contractor Savanna Drilling
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company Hoss Co. Services LLC
Address 614 Trotters Lane City Charleston State WV Zip 25312

Cementing Company Nabors Completion & Production Services Co.
Address PO BOX 975682 City Dallas State TX Zip 75397-5682

Stimulating Company FTSI
Address 301 E 18th Street City Cisco State TX Zip 76437

Please insert additional pages as applicable.

Completed by James Helmick Telephone 412-395-5518
Signature Title Completions VP Date 4/13/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1	1	1,084.00	1,084.00
SAND/SHALE	1,084.00	1,084.00	1,272.00	1,271.90
COAL	1,272.00	1,271.90	1,277.00	1,276.90
SAND/SHALE	1,277.00	1,276.90	1,312.00	1,311.90
COAL	1,312.00	1,311.90	1,318.00	1,317.90
SAND/SHALE	1,318.00	1,317.90	1,513.00	1,512.90
MAXTON	1,513.00	1,512.90	1,865.00	1,864.90
BIG LIME	1,865.00	1,864.90	1,923.00	1,922.90
KEENER	1,923.00	1,922.90	2,163.00	2,162.90
WEIR	2,163.00	2,162.90	2,358.00	2,357.90
BEREA	2,358.00	2,357.90	2,367.00	2,366.90
GANTZ	2,367.00	2,366.90	2,442.00	2,441.90
FIFTY FOOT	2,442.00	2,441.90	2,563.00	2,562.90
THIRTY FOOT	2,563.00	2,562.90	2,612.00	2,611.90
GORDON	2,612.00	2,611.90	2,710.00	2,709.90
FOURTH SAND	2,710.00	2,709.90	2,918.00	2,917.90
BAYARD	2,918.00	2,917.90	3,207.00	3,206.90
WARREN	3,207.00	3,206.90	3,293.00	3,292.90
SPEECHLEY	3,293.00	3,292.90	3,796.00	3,795.90
BALLTOWN A	3,796.00	3,795.90	4,424.00	4,423.70
RILEY	4,424.00	4,423.70	4,871.00	4,870.30
BENSON	4,871.00	4,870.30	5,122.00	5,120.80
ALEXANDER	5,122.00	5,120.80	6,681.00	6,401.50
MIDDLE SEX	6,681.00	6,401.50	6,760.00	6,453.50
GENESSE	6,760.00	6,453.50	6,868.00	6,517.00
GENESO	6,868.00	6,517.00	6,956.00	6,561.80
TULLY	6,956.00	6,561.80	7,007.00	6,585.30
HAMILTON	7,007.00	6,585.30	7,037.00	6,597.90
MARCELLUS	7,037.00	6,597.90	15,344.00	6,693.40

PHOENIX
TECHNOLOGY SERVICES

EQT Production - Marcellus

Doddridge County, WV Grid
Doddridge County 513140
Well #513140

513140 ST01

Design: 513140 ST01 As Drilled Surveys

Standard Survey Report

20 August, 2014

EQT
Where energy meets innovation.

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513140
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513140	**North Reference:**	Grid
Well:	Well #513140	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	513140 ST01		
Design:	513140 ST01 As Drilled Surveys		

Project — Doddridge County, WV Grid

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		Using geodetic scale factor

Site — Doddridge County 513140

Site Position:		**Northing:**	267,921.10 usft	**Latitude:**	39.23
From:	Map	**Easting:**	1,635,243.20 usft	**Longitude:**	-80.79
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.82 °

Well — Well #513140

Well Position	**+N/-S**	0.0 usft	**Northing:**	267,921.10 usft	**Latitude:**	39° 13' 42.329 N
	+E/-W	0.0 usft	**Easting:**	1,635,243.20 usft	**Longitude:**	80° 47' 15.457 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,202.0 usft

Wellbore — 513140 ST01

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	8/12/2014	-8.46	66.75	52,244

Design — 513140 ST01 As Drilled Surveys

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	10,043.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	340.62

Survey Program — **Date** 8/20/2014

From ()	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,260.0	513140 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop
0.00	10,043.0	513140 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3:standard declination
0.00	15,344.0	513140 PHX MWD (513140 ST01)	MWD+IGRF	MWD+IGRF v3:standard declination

Survey

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	-1,218.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.03	138.11	100.0	-1,118.0	0.0	0.0	0.0	0.03	0.03	0.00
200.0	0.05	227.16	200.0	-1,018.0	-0.1	0.0	-0.1	0.06	0.02	89.05
300.0	0.03	154.64	300.0	-918.0	-0.1	0.0	-0.1	0.05	-0.02	-72.52
400.0	0.04	180.58	400.0	-818.0	-0.2	0.0	-0.2	0.02	0.01	25.94
500.0	0.04	177.01	500.0	-718.0	-0.3	0.0	-0.2	0.00	0.00	-3.57
600.0	0.28	157.76	600.0	-618.0	-0.5	0.1	-0.5	0.24	0.24	-19.25

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513140
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513140	**North Reference:**	Grid
Well:	Well #513140	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	513140 ST01		
Design:	513140 ST01 As Drilled Surveys		

Survey

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)
700.0	0.50	144.17	700.0	-518.0	-1.1	0.4	-1.2	0.24	0.22	-13.59
800.0	0.41	151.07	800.0	-418.0	-1.8	0.9	-1.9	0.11	-0.09	6.90
900.0	0.87	106.37	900.0	-318.0	-2.3	1.8	-2.7	0.65	0.46	-44.70
1,000.0	0.93	108.32	1,000.0	-218.0	-2.8	3.3	-3.7	0.07	0.06	1.95
1,100.0	0.88	106.53	1,100.0	-118.0	-3.2	4.8	-4.6	0.06	-0.05	-1.79
1,200.0	0.93	105.91	1,200.0	-18.0	-3.7	6.3	-5.5	0.05	0.05	-0.62
1,300.0	1.01	104.33	1,299.9	81.9	-4.1	7.9	-6.5	0.08	0.08	-1.58
1,400.0	1.05	104.34	1,399.9	181.9	-4.6	9.7	-7.5	0.04	0.04	0.01
1,500.0	0.93	97.30	1,499.9	281.9	-4.9	11.4	-8.4	0.17	-0.12	-7.04
1,600.0	0.64	107.94	1,599.9	381.9	-5.2	12.7	-9.1	0.32	-0.29	10.64
1,700.0	0.53	120.41	1,699.9	481.9	-5.6	13.6	-9.8	0.17	-0.11	12.47
1,800.0	0.55	126.64	1,799.9	581.9	-6.1	14.4	-10.5	0.06	0.02	6.23
1,900.0	0.47	139.95	1,899.9	681.9	-6.7	15.1	-11.3	0.14	-0.08	13.31
2,000.0	0.43	141.27	1,999.9	781.9	-7.3	15.6	-12.0	0.04	-0.04	1.32
2,100.0	0.42	151.19	2,099.9	881.9	-7.9	16.0	-12.8	0.07	-0.01	9.92
2,200.0	0.44	163.02	2,199.9	981.9	-8.6	16.3	-13.5	0.09	0.02	11.83
2,300.0	0.44	162.42	2,299.9	1,081.9	-9.3	16.5	-14.3	0.00	0.00	-0.60
2,400.0	0.34	164.42	2,399.9	1,181.9	-10.0	16.7	-15.0	0.10	-0.10	2.00
2,500.0	0.30	172.94	2,499.9	1,281.9	-10.5	16.8	-15.5	0.06	-0.04	8.52
2,600.0	0.27	183.63	2,599.9	1,381.9	-11.0	16.8	-16.0	0.06	-0.03	10.69
2,700.0	0.26	187.26	2,699.9	1,481.9	-11.5	16.8	-16.4	0.02	-0.01	3.63
2,800.0	0.28	200.57	2,799.9	1,581.9	-11.9	16.7	-16.8	0.07	0.02	13.31
2,900.0	0.25	207.57	2,899.9	1,681.9	-12.4	16.5	-17.1	0.04	-0.03	7.00
3,000.0	0.26	201.83	2,999.9	1,781.9	-12.8	16.3	-17.4	0.03	0.01	-5.74
3,100.0	0.26	211.26	3,099.9	1,881.9	-13.2	16.1	-17.8	0.04	0.00	9.43
3,200.0	0.28	206.08	3,199.9	1,981.9	-13.6	15.9	-18.1	0.03	0.02	-5.18
3,300.0	0.26	213.55	3,299.9	2,081.9	-14.0	15.6	-18.4	0.04	-0.02	7.47
3,400.0	0.29	203.15	3,399.9	2,181.9	-14.4	15.4	-18.7	0.06	0.03	-10.40
3,500.0	0.32	211.35	3,499.9	2,281.9	-14.9	15.1	-19.1	0.05	0.03	8.20
3,600.0	0.32	215.13	3,599.9	2,381.9	-15.3	14.8	-19.4	0.02	0.00	3.78
3,700.0	0.28	221.32	3,699.9	2,481.9	-15.8	14.5	-19.7	0.05	-0.04	6.19
3,800.0	0.38	263.93	3,799.9	2,581.9	-16.0	14.0	-19.7	0.26	0.10	42.61
3,900.0	0.59	283.25	3,899.8	2,681.8	-15.9	13.2	-19.4	0.26	0.21	19.32
4,000.0	0.80	284.35	3,999.8	2,781.8	-15.6	12.0	-18.7	0.21	0.21	1.10
4,100.0	1.05	292.36	4,099.8	2,881.8	-15.1	10.5	-17.7	0.28	0.25	8.01
4,200.0	1.25	293.89	4,199.8	2,981.8	-14.3	8.7	-16.4	0.20	0.20	1.53
4,300.0	1.47	297.20	4,299.8	3,081.8	-13.3	6.5	-14.7	0.23	0.22	3.31
4,400.0	1.81	299.75	4,399.7	3,181.7	-11.9	4.0	-12.5	0.35	0.34	2.55
4,500.0	1.92	303.67	4,499.7	3,281.7	-10.2	1.2	-10.0	0.17	0.11	3.92
4,600.0	2.10	309.23	4,599.6	3,381.6	-8.1	-1.6	-7.1	0.27	0.18	5.56
4,700.0	2.47	313.58	4,699.5	3,481.5	-5.5	-4.6	-3.6	0.41	0.37	4.35
4,800.0	3.11	318.08	4,799.4	3,581.4	-1.9	-7.9	0.8	0.68	0.64	4.50
4,900.0	3.40	322.83	4,899.3	3,681.3	2.4	-11.5	6.1	0.40	0.29	4.75

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513140
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513140	**North Reference:**	Grid
Well:	Well #513140	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	513140 ST01		
Design:	513140 ST01 As Drilled Surveys		

Survey

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)
5,000.0	3.66	326.29	4,999.1	3,781.1	7.5	-15.1	12.0	0.34	0.26	3.46
5,100.0	4.19	327.19	5,098.8	3,880.8	13.2	-18.8	18.7	0.53	0.53	0.90
5,200.0	4.01	329.44	5,198.6	3,980.6	19.3	-22.6	25.7	0.24	-0.18	2.25
5,260.0	3.89	331.23	5,258.4	4,040.4	22.9	-24.7	29.7	0.29	-0.20	2.98
5,286.0	4.10	332.10	5,284.4	4,066.4	24.4	-25.5	31.5	0.84	0.81	3.35
5,317.0	3.60	349.70	5,315.3	4,097.3	26.4	-26.2	33.6	4.12	-1.61	56.77
5,349.0	3.40	33.10	5,347.3	4,129.3	28.2	-25.9	35.2	8.10	-0.63	135.63
5,381.0	5.70	68.80	5,379.2	4,161.2	29.5	-23.9	35.8	11.08	7.19	111.56
5,412.0	8.00	81.60	5,409.9	4,191.9	30.4	-20.3	35.4	8.86	7.42	41.29
5,444.0	10.00	86.10	5,441.5	4,223.5	30.9	-15.3	34.3	6.62	6.25	14.06
5,475.0	11.60	87.90	5,472.0	4,254.0	31.2	-9.5	32.6	5.27	5.16	5.81
5,507.0	14.20	89.90	5,503.2	4,285.2	31.3	-2.4	30.4	8.24	8.13	6.25
5,538.0	16.80	91.90	5,533.0	4,315.0	31.2	5.9	27.5	8.56	8.39	6.45
5,570.0	19.40	93.20	5,563.5	4,345.5	30.8	15.8	23.8	8.22	8.13	4.06
5,601.0	22.30	94.00	5,592.4	4,374.4	30.1	26.8	19.4	9.40	9.35	2.58
5,633.0	25.40	94.10	5,621.7	4,403.7	29.1	39.7	14.3	9.69	9.69	0.31
5,665.0	28.50	95.30	5,650.2	4,432.2	27.9	54.2	8.4	9.83	9.69	3.75
5,696.0	31.30	96.50	5,677.1	4,459.1	26.3	69.6	1.8	9.24	9.03	3.87
5,728.0	34.10	96.20	5,704.0	4,486.0	24.4	86.7	-5.7	8.76	8.75	-0.94
5,759.0	36.30	95.80	5,729.3	4,511.3	22.6	104.5	-13.4	7.14	7.10	-1.29
5,791.0	38.20	97.00	5,754.8	4,536.8	20.4	123.8	-21.8	6.36	5.94	3.75
5,822.0	40.00	98.90	5,778.9	4,560.9	17.7	143.1	-30.8	6.97	5.81	6.13
5,854.0	43.20	99.80	5,802.8	4,584.8	14.2	164.1	-41.0	10.17	10.00	2.81
5,885.0	46.00	99.90	5,824.9	4,606.9	10.5	185.5	-51.7	9.04	9.03	0.32
5,917.0	47.60	97.20	5,846.8	4,628.8	7.1	208.6	-62.6	7.93	5.00	-8.44
5,948.0	48.30	94.30	5,867.5	4,649.5	4.8	231.5	-72.3	7.30	2.26	-9.35
5,980.0	48.00	93.40	5,888.9	4,670.9	3.2	255.3	-81.7	2.30	-0.94	-2.81
6,012.0	47.60	93.20	5,910.4	4,692.4	1.8	278.9	-90.9	1.33	-1.25	-0.63
6,043.0	46.40	92.70	5,931.5	4,713.5	0.6	301.6	-99.5	4.05	-3.87	-1.61
6,074.0	44.00	91.40	5,953.4	4,735.4	-0.2	323.6	-107.5	8.29	-7.74	-4.19
6,106.0	43.10	91.40	5,976.6	4,758.6	-0.7	345.6	-115.4	2.81	-2.81	0.00
6,137.0	42.50	91.00	5,999.3	4,781.3	-1.1	366.7	-122.8	2.12	-1.94	-1.29
6,169.0	42.20	88.20	6,023.0	4,805.0	-1.0	388.2	-129.8	5.97	-0.94	-8.75
6,200.0	42.10	86.10	6,045.9	4,827.9	0.0	409.0	-135.7	4.56	-0.32	-6.77
6,232.0	42.20	83.50	6,069.7	4,851.7	2.0	430.4	-141.0	5.46	0.31	-8.13
6,263.0	41.10	80.10	6,092.8	4,874.8	4.9	450.8	-145.0	8.11	-3.55	-10.97
6,295.0	40.80	78.00	6,117.0	4,899.0	8.9	471.3	-148.0	4.40	-0.94	-6.56
6,326.0	40.80	73.40	6,140.5	4,922.5	13.9	491.0	-149.8	9.69	0.00	-14.84
6,358.0	41.20	68.20	6,164.6	4,946.6	20.8	510.8	-149.9	10.73	1.25	-16.25
6,390.0	42.30	62.00	6,188.5	4,970.5	29.8	530.1	-147.8	13.35	3.44	-19.38
6,421.0	42.90	56.50	6,211.3	4,993.3	40.5	548.1	-143.7	12.16	1.94	-17.74
6,453.0	41.90	50.30	6,235.0	5,017.0	53.3	565.4	-137.3	13.43	-3.13	-19.38

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513140
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513140	**North Reference:**	Grid
Well:	Well #513140	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	513140 ST01		
Design:	513140 ST01 As Drilled Surveys		

Survey

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)
6,484.0	41.70	45.90	6,258.1	5,040.1	67.1	580.8	-129.4	9.48	-0.65	-14.19
6,516.0	41.90	40.50	6,282.0	5,064.0	82.7	595.4	-119.6	11.26	0.63	-16.88
6,548.0	42.30	35.80	6,305.7	5,087.7	99.5	608.6	-108.1	9.92	1.25	-14.69
6,579.0	42.90	30.90	6,328.5	5,110.5	117.0	620.1	-95.4	10.87	1.94	-15.81
6,611.0	43.80	26.00	6,351.8	5,133.8	136.4	630.6	-80.7	10.88	2.81	-15.31
6,643.0	44.70	22.80	6,374.7	5,156.7	156.7	639.8	-64.5	7.52	2.81	-10.00
6,674.0	45.50	18.10	6,396.6	5,178.6	177.2	647.5	-47.7	11.04	2.58	-15.16
6,705.0	48.00	14.70	6,417.9	5,199.9	198.9	653.8	-29.4	11.35	8.06	-10.97
6,737.0	50.00	12.80	6,438.9	5,220.9	222.4	659.5	-9.1	7.69	6.25	-5.94
6,768.0	51.30	10.10	6,458.5	5,240.5	245.9	664.3	11.4	7.93	4.19	-8.71
6,799.0	52.90	6.70	6,477.6	5,259.6	270.0	667.9	33.1	10.08	5.16	-10.97
6,831.0	54.90	3.30	6,496.4	5,278.4	295.8	670.1	56.6	10.62	6.25	-10.63
6,862.0	57.00	2.20	6,513.8	5,295.8	321.5	671.3	80.4	7.38	6.77	-3.55
6,894.0	58.50	359.50	6,530.9	5,312.9	348.5	671.7	105.8	8.54	4.69	-8.44
6,925.0	60.10	356.00	6,546.7	5,328.7	375.1	670.7	131.3	10.99	5.16	-11.29
6,957.0	61.50	354.30	6,562.3	5,344.3	403.0	668.3	158.3	6.38	4.38	-5.31
6,988.0	62.80	353.10	6,576.8	5,358.8	430.2	665.3	185.0	5.41	4.19	-3.87
7,019.0	64.90	352.50	6,590.4	5,372.4	457.8	661.8	212.2	6.99	6.77	-1.94
7,051.0	66.70	351.50	6,603.6	5,385.6	486.7	657.8	240.8	6.31	5.63	-3.13
7,085.0	68.50	350.50	6,616.5	5,398.5	517.8	652.8	271.7	5.95	5.29	-2.94
7,117.0	72.50	350.30	6,627.2	5,409.2	547.5	647.8	301.5	12.51	12.50	-0.63
7,148.0	77.10	349.40	6,635.3	5,417.3	576.9	642.5	331.0	15.10	14.84	-2.90
7,179.0	80.00	348.60	6,641.5	5,423.5	606.8	636.7	361.0	9.69	9.35	-2.58
7,211.0	83.90	347.70	6,646.0	5,428.0	637.8	630.2	392.4	12.50	12.19	-2.81
7,242.0	88.30	347.30	6,648.1	5,430.1	667.9	623.5	423.1	14.25	14.19	-1.29
7,273.0	93.00	346.60	6,647.7	5,429.7	698.1	616.5	453.9	15.33	15.16	-2.26
7,304.0	95.70	343.70	6,645.4	5,427.4	728.0	608.6	484.8	12.76	8.71	-9.35
7,336.0	95.20	339.80	6,642.3	5,424.3	758.3	598.6	516.6	12.23	-1.56	-12.19
7,398.0	92.30	337.00	6,638.3	5,420.3	815.8	575.9	578.4	6.49	-4.68	-4.52
7,461.0	90.30	335.70	6,636.8	5,418.8	873.5	550.6	641.2	3.79	-3.17	-2.06
7,524.0	89.80	334.50	6,636.8	5,418.8	930.6	524.1	703.9	2.06	-0.79	-1.90
7,587.0	90.10	334.00	6,636.8	5,418.8	987.3	496.7	766.5	0.93	0.48	-0.79
7,650.0	90.80	333.90	6,636.3	5,418.3	1,043.9	469.0	829.1	1.12	1.11	-0.16
7,713.0	91.00	333.90	6,635.4	5,417.4	1,100.5	441.3	891.7	0.32	0.32	0.00
7,776.0	87.80	332.20	6,636.0	5,418.0	1,156.7	412.8	954.1	5.75	-5.08	-2.70
7,839.0	87.30	332.20	6,638.7	5,420.7	1,212.3	383.4	1,016.4	0.79	-0.79	0.00
7,902.0	87.60	331.40	6,641.5	5,423.5	1,267.8	353.7	1,078.6	1.36	0.48	-1.27
7,965.0	88.40	332.30	6,643.7	5,425.7	1,323.3	324.0	1,140.8	1.91	1.27	1.43
8,028.0	88.40	333.40	6,645.5	5,427.5	1,379.3	295.3	1,203.2	1.75	0.00	1.75
8,091.0	88.40	333.40	6,647.2	5,429.2	1,435.7	267.1	1,265.7	0.00	0.00	0.00
8,154.0	92.10	333.50	6,647.0	5,429.0	1,492.0	238.9	1,328.1	5.88	5.87	0.16
8,217.0	92.50	334.00	6,644.4	5,426.4	1,548.5	211.1	1,390.6	1.02	0.63	0.79
8,280.0	91.40	333.10	6,642.3	5,424.3	1,604.8	183.0	1,453.1	2.26	-1.75	-1.43

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513140
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513140	**North Reference:**	Grid
Well:	Well #513140	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	513140 ST01		
Design:	513140 ST01 As Drilled Surveys		

Survey

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)
8,344.0	91.10	332.40	6,640.9	5,422.9	1,661.7	153.7	1,516.5	1.19	-0.47	-1.09
8,407.0	90.20	332.60	6,640.2	5,422.2	1,717.6	124.6	1,578.9	1.46	-1.43	0.32
8,469.0	90.10	332.00	6,640.0	5,422.0	1,772.5	95.8	1,640.2	0.98	-0.16	-0.97
8,533.0	90.10	332.10	6,639.9	5,421.9	1,829.0	65.8	1,703.5	0.16	0.00	0.16
8,596.0	90.30	333.20	6,639.7	5,421.7	1,885.0	36.9	1,765.9	1.77	0.32	1.75
8,659.0	89.40	334.00	6,639.8	5,421.8	1,941.4	8.9	1,828.4	1.91	-1.43	1.27
8,722.0	87.80	333.80	6,641.4	5,423.4	1,998.0	-18.8	1,891.0	2.56	-2.54	-0.32
8,785.0	88.00	333.90	6,643.7	5,425.7	2,054.5	-46.6	1,953.5	0.35	0.32	0.16
8,848.0	88.40	334.00	6,645.7	5,427.7	2,111.0	-74.2	2,016.0	0.65	0.63	0.16
8,911.0	87.70	334.10	6,647.8	5,429.8	2,167.7	-101.8	2,078.6	1.12	-1.11	0.16
8,974.0	87.60	334.60	6,650.4	5,432.4	2,224.4	-129.0	2,141.2	0.81	-0.16	0.79
9,037.0	87.30	333.80	6,653.2	5,435.2	2,281.1	-156.4	2,203.7	1.36	-0.48	-1.27
9,100.0	87.50	333.40	6,656.1	5,438.1	2,337.4	-184.4	2,266.2	0.71	0.32	-0.63
9,163.0	88.20	334.50	6,658.4	5,440.4	2,394.0	-212.1	2,328.7	2.07	1.11	1.75
9,226.0	89.50	335.90	6,659.7	5,441.7	2,451.2	-238.5	2,391.4	3.03	2.06	2.22
9,288.0	89.10	336.80	6,660.4	5,442.4	2,508.0	-263.4	2,453.2	1.59	-0.65	1.45
9,351.0	87.70	337.20	6,662.2	5,444.2	2,565.9	-288.0	2,516.1	2.31	-2.22	0.63
9,414.0	87.50	337.20	6,664.8	5,446.8	2,624.0	-312.4	2,578.9	0.32	-0.32	0.00
9,477.0	87.20	336.30	6,667.7	5,449.7	2,681.8	-337.2	2,641.7	1.50	-0.48	-1.43
9,540.0	87.30	336.30	6,670.8	5,452.8	2,739.4	-362.5	2,704.4	0.16	0.16	0.00
9,603.0	87.50	336.50	6,673.6	5,455.6	2,797.1	-387.7	2,767.2	0.45	0.32	0.32
9,666.0	87.30	334.90	6,676.5	5,458.5	2,854.4	-413.6	2,829.9	2.56	-0.32	-2.54
9,729.0	87.10	333.80	6,679.6	5,461.6	2,911.2	-440.8	2,892.4	1.77	-0.32	-1.75
9,792.0	86.80	333.60	6,682.9	5,464.9	2,967.6	-468.7	2,954.9	0.57	-0.48	-0.32
9,855.0	86.20	333.10	6,686.8	5,468.8	3,023.8	-496.9	3,017.3	1.24	-0.95	-0.79
9,918.0	86.80	332.30	6,690.6	5,472.6	3,079.6	-525.7	3,079.6	1.59	0.95	-1.27
9,980.0	87.70	331.40	6,693.6	5,475.6	3,134.2	-555.0	3,140.8	2.05	1.45	-1.45
ST01 Tie In=10043' MD										
10,043.0	88.40	330.70	6,695.7	5,477.7	3,189.3	-585.4	3,202.9	1.57	1.11	-1.11
10,106.0	86.10	332.90	6,698.8	5,480.8	3,244.8	-615.2	3,265.0	5.05	-3.65	3.49
10,169.0	81.80	336.10	6,705.4	5,487.4	3,301.3	-642.1	3,327.3	8.49	-6.83	5.08
10,232.0	83.30	333.60	6,713.6	5,495.6	3,357.8	-668.7	3,389.4	4.60	2.38	-3.97
10,295.0	83.80	328.00	6,720.6	5,502.6	3,412.5	-699.2	3,451.1	8.87	0.79	-8.89
10,357.0	85.40	323.70	6,726.5	5,508.5	3,463.5	-733.9	3,510.8	7.37	2.58	-6.94
10,420.0	92.00	320.50	6,727.9	5,509.9	3,513.2	-772.5	3,570.5	11.64	10.48	-5.08
10,483.0	99.90	323.10	6,721.4	5,503.4	3,562.4	-811.2	3,629.7	13.19	12.54	4.13
10,545.0	99.90	326.90	6,710.7	5,492.7	3,612.4	-846.3	3,688.5	6.04	0.00	6.13
10,609.0	95.40	328.20	6,702.2	5,484.2	3,665.9	-880.3	3,750.3	7.31	-7.03	2.03
10,672.0	90.30	329.40	6,699.1	5,481.1	3,719.7	-912.9	3,811.9	8.32	-8.10	1.90
10,735.0	85.70	329.20	6,701.3	5,483.3	3,773.8	-945.0	3,873.6	7.31	-7.30	-0.32
10,798.0	83.20	330.10	6,707.4	5,489.4	3,828.0	-976.7	3,935.1	4.22	-3.97	1.43
10,861.0	83.00	330.40	6,714.9	5,496.9	3,882.3	-1,007.7	3,996.7	0.57	-0.32	0.48

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513140
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513140	**North Reference:**	Grid
Well:	Well #513140	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	513140 ST01		
Design:	513140 ST01 As Drilled Surveys		

Survey

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)
10,924.0	83.40	334.50	6,722.4	5,504.4	3,937.7	-1,036.7	4,058.6	6.49	0.63	6.51
10,987.0	82.80	334.50	6,730.0	5,512.0	3,994.2	-1,063.6	4,120.8	0.95	-0.95	0.00
11,050.0	84.10	333.80	6,737.1	5,519.1	4,050.5	-1,090.9	4,182.9	2.34	2.06	-1.11
11,112.0	88.10	335.40	6,741.4	5,523.4	4,106.3	-1,117.4	4,244.4	6.95	6.45	2.58
11,175.0	90.90	335.90	6,741.9	5,523.9	4,163.7	-1,143.4	4,307.2	4.51	4.44	0.79
11,238.0	91.40	336.20	6,740.6	5,522.6	4,221.3	-1,168.9	4,370.0	0.93	0.79	0.48
11,301.0	91.90	336.50	6,738.8	5,520.8	4,279.0	-1,194.2	4,432.8	0.93	0.79	0.48
11,364.0	90.00	337.00	6,737.8	5,519.8	4,336.9	-1,219.1	4,495.6	3.12	-3.02	0.79
11,427.0	89.20	336.10	6,738.2	5,520.2	4,394.6	-1,244.1	4,558.5	1.91	-1.27	-1.43
11,490.0	88.60	336.10	6,739.4	5,521.4	4,452.2	-1,269.6	4,621.3	0.95	-0.95	0.00
11,552.0	88.00	335.70	6,741.3	5,523.3	4,508.8	-1,295.0	4,683.0	1.16	-0.97	-0.65
11,615.0	88.00	336.50	6,743.5	5,525.5	4,566.4	-1,320.5	4,745.8	1.27	0.00	1.27
11,678.0	88.70	335.90	6,745.3	5,527.3	4,624.0	-1,345.9	4,808.6	1.46	1.11	-0.95
11,709.0	90.60	334.70	6,745.5	5,527.5	4,652.1	-1,358.8	4,839.4	7.25	6.13	-3.87
11,741.0	90.00	333.20	6,745.3	5,527.3	4,680.9	-1,372.9	4,871.2	5.05	-1.88	-4.69
11,804.0	92.10	332.10	6,744.2	5,526.2	4,736.8	-1,401.8	4,933.6	3.76	3.33	-1.75
11,867.0	91.70	332.30	6,742.1	5,524.1	4,792.5	-1,431.2	4,995.9	0.71	-0.63	0.32
11,930.0	90.10	329.60	6,741.1	5,523.1	4,847.6	-1,461.8	5,058.0	4.98	-2.54	-4.29
11,994.0	91.50	330.10	6,740.2	5,522.2	4,902.9	-1,493.9	5,120.8	2.32	2.19	0.78
12,056.0	91.90	329.40	6,738.3	5,520.3	4,956.5	-1,525.1	5,181.7	1.30	0.65	-1.13
12,119.0	89.90	326.70	6,737.4	5,519.4	5,009.9	-1,558.5	5,243.2	5.33	-3.17	-4.29
12,182.0	90.70	326.70	6,737.0	5,519.0	5,062.6	-1,593.0	5,304.3	1.27	1.27	0.00
12,245.0	91.40	327.20	6,735.9	5,517.9	5,115.4	-1,627.4	5,365.5	1.37	1.11	0.79
12,308.0	91.20	326.00	6,734.4	5,516.4	5,167.9	-1,662.1	5,426.6	1.93	-0.32	-1.90
12,371.0	92.70	330.40	6,732.3	5,514.3	5,221.4	-1,695.2	5,488.1	7.37	2.38	6.98
12,434.0	92.70	330.50	6,729.3	5,511.3	5,276.2	-1,726.3	5,550.1	0.16	0.00	0.16
12,497.0	94.40	333.20	6,725.4	5,507.4	5,331.6	-1,755.9	5,612.2	5.06	2.70	4.29
12,560.0	93.90	337.20	6,720.9	5,502.9	5,388.6	-1,782.3	5,674.7	6.38	-0.79	6.35
12,623.0	91.70	339.30	6,717.8	5,499.8	5,447.1	-1,805.6	5,737.6	4.82	-3.49	3.33
12,686.0	91.30	338.20	6,716.1	5,498.1	5,505.8	-1,828.4	5,800.5	1.86	-0.63	-1.75
12,749.0	91.30	338.10	6,714.7	5,496.7	5,564.2	-1,851.9	5,863.5	0.16	0.00	-0.16
12,812.0	92.00	339.40	6,712.9	5,494.9	5,622.9	-1,874.7	5,926.4	2.34	1.11	2.06
12,875.0	92.00	340.30	6,710.7	5,492.7	5,682.0	-1,896.4	5,989.4	1.43	0.00	1.43
12,939.0	90.70	338.70	6,709.2	5,491.2	5,742.0	-1,918.8	6,053.3	3.22	-2.03	-2.50
13,002.0	90.20	337.80	6,708.7	5,490.7	5,800.5	-1,942.1	6,116.3	1.63	-0.79	-1.43
13,065.0	90.60	338.60	6,708.3	5,490.3	5,859.0	-1,965.5	6,179.2	1.42	0.63	1.27
13,128.0	90.90	340.70	6,707.4	5,489.4	5,918.0	-1,987.4	6,242.2	3.37	0.48	3.33
13,191.0	90.70	341.20	6,706.6	5,488.6	5,977.6	-2,008.0	6,305.2	0.85	-0.32	0.79
13,253.0	90.50	341.90	6,705.9	5,487.9	6,036.4	-2,027.6	6,367.2	1.17	-0.32	1.13
13,316.0	89.90	341.10	6,705.7	5,487.7	6,096.1	-2,047.6	6,430.2	1.59	-0.95	-1.27
13,379.0	90.70	340.60	6,705.4	5,487.4	6,155.6	-2,068.3	6,493.2	1.50	1.27	-0.79
13,442.0	92.50	341.00	6,703.6	5,485.6	6,215.1	-2,089.0	6,556.1	2.93	2.86	0.63
13,505.0	92.40	340.50	6,700.9	5,482.9	6,274.5	-2,109.7	6,619.1	0.81	-0.16	-0.79

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513140
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513140	**North Reference:**	Grid
Well:	Well #513140	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	513140 ST01		
Design:	513140 ST01 As Drilled Surveys		

Survey

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)
13,568.0	92.30	340.70	6,698.3	5,480.3	6,333.9	-2,130.6	6,682.0	0.35	-0.16	0.32
13,631.0	92.00	341.00	6,696.0	5,478.0	6,393.4	-2,151.3	6,745.0	0.67	-0.48	0.48
13,694.0	91.70	340.20	6,693.9	5,475.9	6,452.8	-2,172.2	6,807.9	1.36	-0.48	-1.27
13,757.0	91.50	340.40	6,692.2	5,474.2	6,512.1	-2,193.4	6,870.9	0.45	-0.32	0.32
13,820.0	91.60	340.80	6,690.5	5,472.5	6,571.5	-2,214.4	6,933.9	0.65	0.16	0.63
13,883.0	91.10	341.00	6,689.0	5,471.0	6,631.0	-2,235.0	6,996.9	0.85	-0.79	0.32
13,946.0	90.60	340.50	6,688.0	5,470.0	6,690.4	-2,255.7	7,059.9	1.12	-0.79	-0.79
14,010.0	90.70	339.20	6,687.3	5,469.3	6,750.5	-2,277.8	7,123.9	2.04	0.16	-2.03
14,073.0	90.60	338.40	6,686.6	5,468.6	6,809.2	-2,300.6	7,186.8	1.28	-0.16	-1.27
14,136.0	89.80	337.30	6,686.4	5,468.4	6,867.6	-2,324.3	7,249.7	2.16	-1.27	-1.75
14,199.0	89.30	335.90	6,686.9	5,468.9	6,925.4	-2,349.3	7,312.6	2.36	-0.79	-2.22
14,262.0	89.70	336.50	6,687.4	5,469.4	6,983.1	-2,374.7	7,375.4	1.14	0.63	0.95
14,325.0	90.00	337.90	6,687.6	5,469.6	7,041.1	-2,399.2	7,438.3	2.27	0.48	2.22
14,389.0	89.60	337.00	6,687.8	5,469.8	7,100.2	-2,423.7	7,502.2	1.54	-0.63	-1.41
14,452.0	91.30	336.50	6,687.3	5,469.3	7,158.1	-2,448.6	7,565.0	2.81	2.70	-0.79
14,515.0	90.80	337.10	6,686.2	5,468.2	7,216.0	-2,473.4	7,627.9	1.24	-0.79	0.95
14,578.0	90.20	336.90	6,685.6	5,467.6	7,274.0	-2,498.0	7,690.8	1.00	-0.95	-0.32
14,641.0	89.10	335.70	6,686.0	5,468.0	7,331.7	-2,523.3	7,753.6	2.58	-1.75	-1.90
14,704.0	88.60	334.90	6,687.3	5,469.3	7,388.9	-2,549.6	7,816.3	1.50	-0.79	-1.27
14,768.0	88.10	335.10	6,689.1	5,471.1	7,446.9	-2,576.7	7,880.0	0.84	-0.78	0.31
14,831.0	87.60	333.70	6,691.5	5,473.5	7,503.7	-2,603.9	7,942.5	2.36	-0.79	-2.22
14,894.0	91.10	334.30	6,692.2	5,474.2	7,560.3	-2,631.5	8,005.1	5.64	5.56	0.95
14,957.0	90.80	334.40	6,691.1	5,473.1	7,617.1	-2,658.8	8,067.7	0.50	-0.48	0.16
15,020.0	90.20	333.00	6,690.6	5,472.6	7,673.5	-2,686.7	8,130.3	2.42	-0.95	-2.22
15,082.0	90.00	332.60	6,690.5	5,472.5	7,728.7	-2,715.0	8,191.7	0.72	-0.32	-0.65
15,145.0	89.60	332.70	6,690.7	5,472.7	7,784.6	-2,744.0	8,254.1	0.65	-0.63	0.16
15,207.0	89.60	333.00	6,691.1	5,473.1	7,839.8	-2,772.2	8,315.5	0.48	0.00	0.48
Last Survey=15270' MD/ 6692' TVD										
15,270.0	88.90	332.60	6,692.0	5,474.0	7,895.8	-2,801.0	8,377.9	1.28	-1.11	-0.63
Projection to TD=15344' MD/ 6693' TVD										
15,344.0	88.90	332.60	6,693.4	5,475.4	7,961.5	-2,835.1	8,451.2	0.00	0.00	0.00

Design Annotations

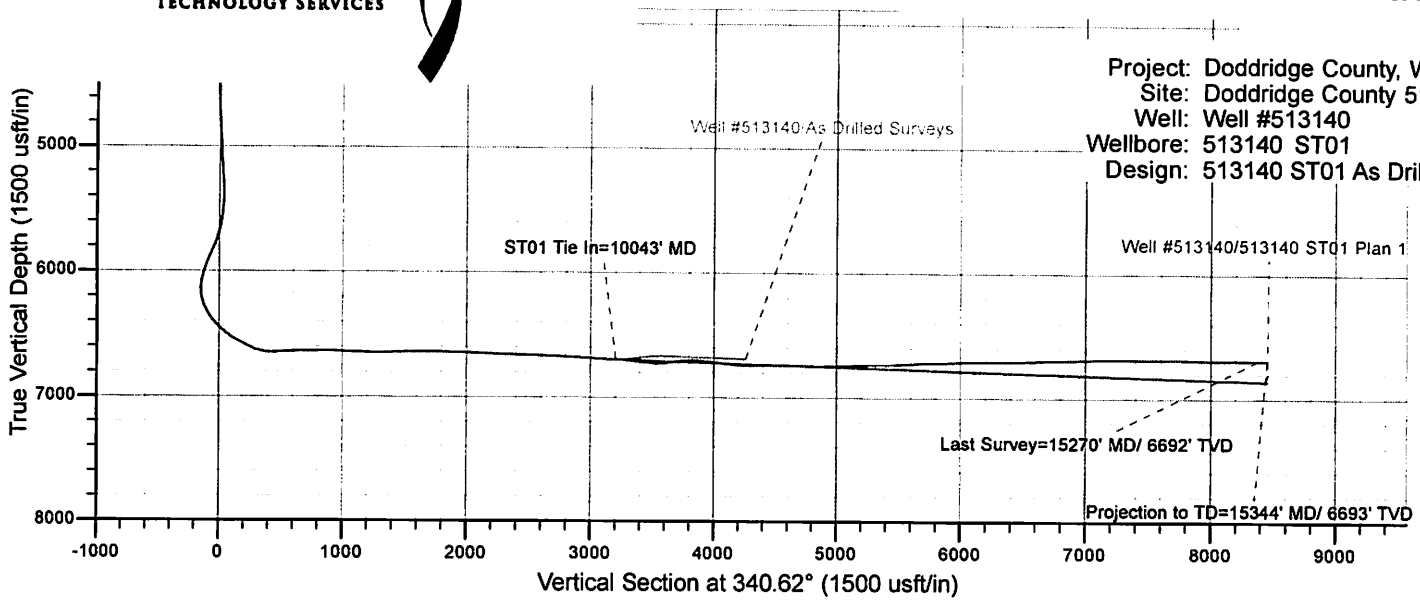
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
10,043.0	6,695.7	3,189.3	-585.4	ST01 Tie In=10043' MD
15,270.0	6,692.0	7,895.8	-2,801.0	Last Survey=15270' MD/ 6692' TVD
15,344.0	6,693.4	7,961.5	-2,835.1	Projection to TD=15344' MD/ 6693' TVD

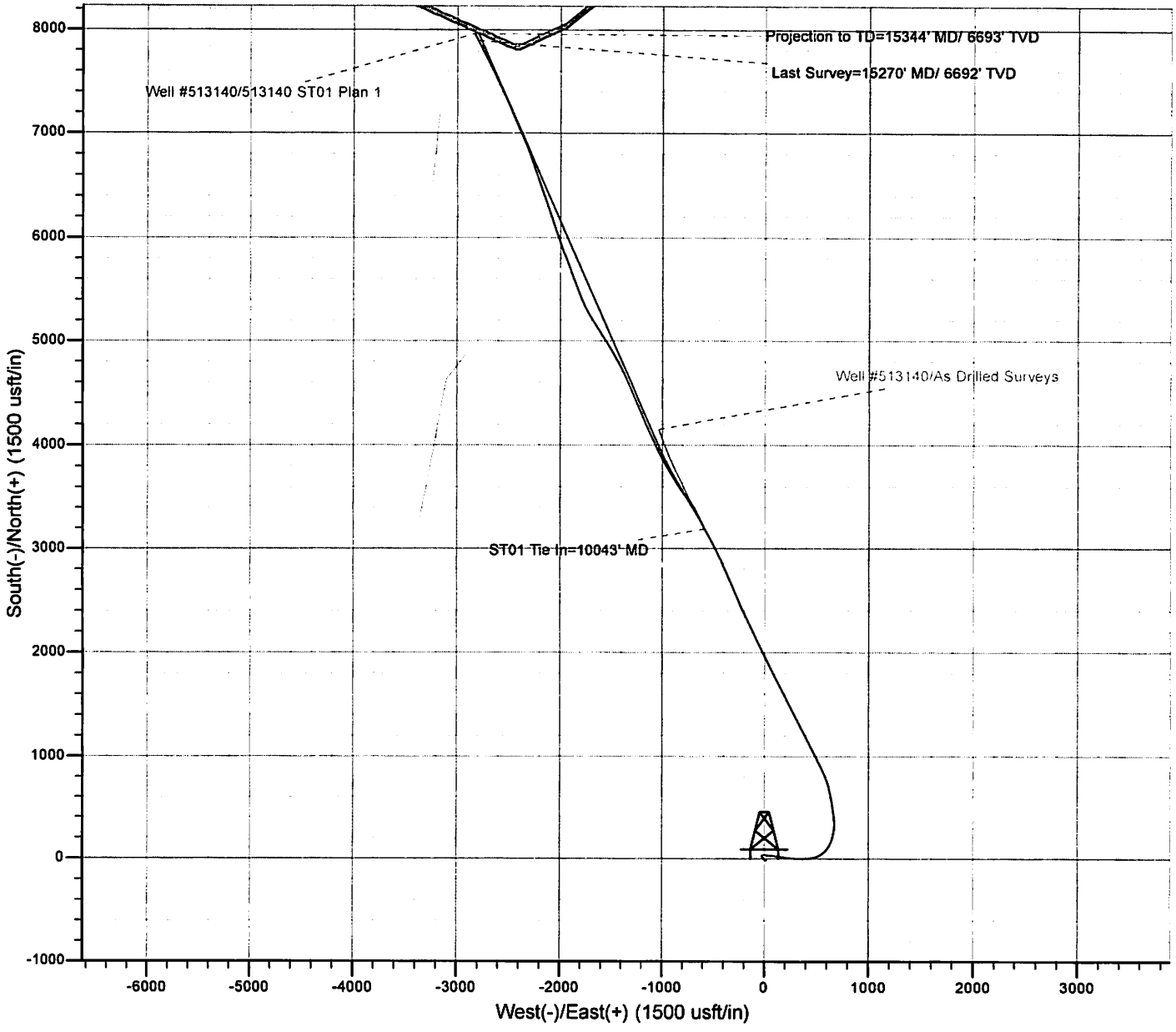
Checked By: _____ Approved By: _____ Date: _____

PHOENIX
TECHNOLOGY SERVICES

EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513140
Well: Well #513140
Wellbore: 513140 ST01
Design: 513140 ST01 As Drilled Surveys





513140 - 47-017-06329-0000 - Perforations					
Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	12/26/2014	15,317.00	15,320.00	10	MARCELLUS
1	1/1/2015	15,197.00	15,289.00	32	MARCELLUS
2	1/1/2015	15,045.00	15,169.00	40	MARCELLUS
3	1/2/2015	14,897.00	15,019.00	40	MARCELLUS
4	1/2/2015	14,747.00	14,869.00	40	MARCELLUS
5	1/2/2015	14,597.00	14,719.00	40	MARCELLUS
6	1/3/2015	14,447.00	14,568.00	40	MARCELLUS
7	1/3/2015	14,297.00	14,419.00	40	MARCELLUS
8	1/4/2015	14,147.00	14,269.00	40	MARCELLUS
9	1/4/2015	13,997.00	14,119.00	40	MARCELLUS
10	1/4/2015	13,847.00	13,969.00	40	MARCELLUS
11	1/5/2015	13,697.00	13,817.00	40	MARCELLUS
12	1/5/2015	13,547.00	13,669.00	40	MARCELLUS
13	1/5/2015	13,397.00	13,519.00	40	MARCELLUS
14	1/5/2015	13,247.00	13,369.00	40	MARCELLUS
15	1/6/2015	13,097.00	13,219.00	40	MARCELLUS
16	1/6/2015	12,947.00	13,069.00	40	MARCELLUS
17	1/6/2015	12,797.00	12,919.00	40	MARCELLUS
18	1/7/2015	12,647.00	12,769.00	40	MARCELLUS
19	1/7/2015	12,497.00	12,619.00	40	MARCELLUS
20	1/8/2015	12,347.00	12,469.00	40	MARCELLUS
21	1/9/2015	12,197.00	12,319.00	40	MARCELLUS
22	1/9/2015	12,047.00	12,169.00	40	MARCELLUS
23	1/10/2015	11,897.00	12,019.00	40	MARCELLUS
24	1/10/2015	11,747.00	11,869.00	40	MARCELLUS
25	1/10/2015	11,597.00	11,719.00	40	MARCELLUS
26	1/10/2015	11,447.00	11,566.00	40	MARCELLUS
27	1/11/2015	11,289.00	11,395.00	40	MARCELLUS
28	1/11/2015	11,147.00	11,267.00	40	MARCELLUS
29	1/11/2015	10,997.00	11,119.00	40	MARCELLUS
30	1/12/2015	10,847.00	10,967.00	40	MARCELLUS
31	1/12/2015	10,699.00	10,819.00	40	MARCELLUS
32	1/12/2015	10,547.00	10,669.00	40	MARCELLUS
33	1/12/2015	10,397.00	10,519.00	40	MARCELLUS
34	1/12/2015	10,247.00	10,369.00	40	MARCELLUS
35	1/13/2015	10,097.00	10,219.00	40	MARCELLUS
36	1/13/2015	9,947.00	10,067.00	40	MARCELLUS
37	1/13/2015	9,797.00	9,919.00	40	MARCELLUS
38	1/13/2015	9,647.00	9,765.00	40	MARCELLUS
39	1/14/2015	9,497.00	9,619.00	40	MARCELLUS
40	1/14/2015	9,350.00	9,469.00	40	MARCELLUS
41	1/14/2015	9,197.00	9,319.00	40	MARCELLUS
42	1/15/2015	9,047.00	9,167.00	40	MARCELLUS
43	1/15/2015	8,897.00	9,017.00	40	MARCELLUS
44	1/15/2015	8,747.00	8,869.00	40	MARCELLUS
45	1/15/2015	8,596.00	8,717.00	40	MARCELLUS
46	1/15/2015	8,447.00	8,569.00	40	MARCELLUS
47	1/16/2015	8,297.00	8,419.00	40	MARCELLUS
48	1/16/2015	8,147.00	8,269.00	40	MARCELLUS
49	1/16/2015	7,997.00	8,119.00	40	MARCELLUS
50	1/17/2015	7,847.00	7,967.00	40	MARCELLUS
51	1/17/2015	7,697.00	7,817.00	40	MARCELLUS
52	1/17/2015	7,547.00	7,667.00	40	MARCELLUS
53	1/17/2015	7,397.00	7,519.00	40	MARCELLUS
54	1/18/2015	7,247.00	7,368.00	40	MARCELLUS

513140 - 47-017-06329-0000 - Stimulated Stages								
Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	1/1/2015	14.7	8,211.00	9,258.00	6,159.00	0.00	1883	0
1	1/1/2015	81.1	8,481.00	8,843.00	3,866.00	250,752.00	6820	0
2	1/1/2015	81.8	8,482.00	8,747.00	4,773.00	250,839.00	6324	0
3	1/2/2015	84.9	8,655.00	8,892.00	4,382.00	250,907.00	6280	0
4	1/2/2015	83.1	8,551.00	8,756.00	4,224.00	253,125.00	6225	0
5	1/2/2015	83.5	8,603.00	8,749.00	4,436.00	235,854.00	6776	0
5.01	1/3/2015	6.9	6,004.00	8,691.00	5,009.00	0.00	2124	0
6	1/3/2015	85.7	8,375.00	8,561.00	4,273.00	252,298.00	6201	0
7	1/3/2015	80.8	8,671.00	9,041.00	5,709.00	249,628.00	9694	0
8	1/4/2015	84.3	8,398.00	8,783.00	4,452.00	225,102.00	6267	0
9	1/4/2015	82.9	8,515.00	9,044.00	4,828.00	231,856.00	5925	0
10	1/4/2015	81.7	8,599.00	9,117.00	5,311.00	190,251.00	5581	0
11	1/5/2015	81.7	8,565.00	9,137.00	4,393.00	185,978.00	5891	0
12	1/5/2015	86.5	8,386.00	8,883.00	4,965.00	228,720.00	6201	0
13	1/5/2015	84.9	8,343.00	8,668.00	5,153.00	234,309.00	6001	0
14	1/6/2015	86.5	8,425.00	9,279.00	4,647.00	250,890.00	5974	0
15	1/6/2015	83.3	8,580.00	9,394.00	5,767.00	220,920.00	6083	0
15.01	1/6/2015	9.1	5,102.00	7,153.00	5,302.00	0.00	1632	0
16	1/7/2015	92.5	8,209.00	8,522.00	4,902.00	252,987.00	6655	0
17	1/7/2015	96.6	8,592.00	8,949.00	4,944.00	249,801.00	6411	0
18	1/7/2015	92.1	8,575.00	9,035.00	5,167.00	252,528.00	6095	0
19	1/8/2015	96.5	8,730.00	8,868.00	5,143.00	250,872.00	6326	0
20	1/9/2015	92.5	8,332.00	8,683.00	5,157.00	250,126.00	7060	0
21	1/9/2015	94.2	8,503.00	8,910.00	5,401.00	250,998.00	5723	0
22	1/9/2015	96.2	8,503.00	8,656.00	5,274.00	249,477.00	5609	0
23	1/10/2015	90.6	8,366.00	8,613.00	5,197.00	250,718.00	6069	0
24	1/10/2015	92	8,539.00	9,035.00	5,211.00	249,801.00	6059	0
25	1/10/2015	93.1	8,452.00	8,843.00	5,385.00	249,463.00	5524	0
26	1/11/2015	91.5	8,436.00	8,954.00	4,193.00	241,209.00	5592	0
27	1/11/2015	87.6	8,331.00	9,341.00	5,526.00	244,346.00	6710	0
28	1/11/2015	84.8	8,050.00	8,916.00	5,276.00	250,166.00	6082	0
29	1/11/2015	91.7	8,344.00	8,667.00	5,426.00	250,003.00	5698	0
30	1/12/2015	93.4	8,208.00	8,531.00	4,764.00	250,581.00	5633	0
31	1/12/2015	91.9	7,914.00	8,410.00	4,987.00	250,869.00	6028	0
32	1/12/2015	93.6	7,785.00	8,463.00	4,636.00	251,245.00	6078	0
33	1/12/2015	100.6	8,150.00	8,574.00	4,607.00	250,150.00	5741	0
34	1/13/2015	99.9	8,267.00	8,561.00	5,119.00	250,463.00	5535	0
35	1/13/2015	101.1	7,869.00	8,229.00	4,801.00	248,901.00	5867	0
36	1/13/2015	95.6	7,754.00	8,024.00	4,925.00	248,806.00	5962	0
37	1/13/2015	95.6	8,076.00	8,300.00	4,676.00	251,749.00	6011	0
38	1/13/2015	99.5	8,177.00	8,756.00	5,464.00	250,652.00	5475	0
39	1/14/2015	100.1	7,729.00	8,188.00	4,366.00	251,704.00	6215	0
40	1/14/2015	93.7	8,269.00	9,138.00	4,305.00	250,456.00	6411	0
41	1/15/2015	99.4	7,928.00	8,103.00	4,643.00	250,770.00	5442	0
42	1/15/2015	98.4	8,090.00	8,722.00	4,855.00	248,021.00	5270	0
43	1/15/2015	100.2	8,027.00	8,234.00	4,492.00	249,692.00	5753	0
44	1/15/2015	100.4	8,106.00	8,749.00	5,047.00	249,217.00	6095	0
45	1/15/2015	100.5	8,020.00	8,635.00	4,495.00	248,741.00	5390	0
46	1/15/2015	100.3	7,889.00	8,521.00	4,574.00	250,709.00	5302	0
47	1/16/2015	99.5	7,759.00	7,890.00	4,662.00	250,700.00	5476	0
48	1/16/2015	100.3	7,826.00	8,124.00	4,987.00	250,481.00	5783	0
49	1/17/2015	90.5	9,026.00	9,376.00	5,241.00	250,711.00	6888	0
50	1/17/2015	96	8,013.00	8,050.00	5,257.00	251,219.00	5767	0
51	1/17/2015	92.3	8,776.00	9,037.00	5,281.00	249,670.00	5695	0
52	1/17/2015	99.2	8,055.00	8,684.00	5,342.00	249,704.00	5395	0
53	1/17/2015	100.2	7,971.00	8,364.00	5,356.00	250,407.00	5280	0
54	1/18/2015	100.8	7,426.00	7,980.00	4,901.00	251,781.00	5320	0

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/1/2015
Job End Date:	1/18/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06329-00-00
Operator Name:	EQT Production
Well Name and Number:	513140
Longitude:	-80.78762700
Latitude:	39.22842400
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,598
Total Base Water Volume (gal):	14,669,298
Total Base Non Water Volume:	0

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	FTS International	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	89.91274	None
Sand (Proppant)	FTS International	Proppant					
			Crystalline Silica	14808-60-7	100.00000	9.74030	None
Hydrochloric Acid (15%)	FTS International	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.02951	None
FRW-600	FTS International	Friction reducer					
			Hydrotreated light distillate	64742-47-8	30.00000	0.02171	None
			Ammonium acetate	631-61-8	6.00000	0.00434	None
B-10	FTS International	High pH buffer					
			Potassium carbonate	584-08-7	48.00000	0.01263	None
			Potassium hydroxide	1310-58-3	20.00000	0.00526	None
HVG-1	FTS International	Gelling agent					
			Petroleum distillate	64742-47-8	55.00000	0.00435	None
			Guar gum	9000-30-0	50.00000	0.00395	None
			Surfactant	68439-51-0	2.00000	0.00016	None
			Clay	14808-60-7	2.00000	0.00016	None
ICI-3240	FTS International	Biocide					
			Dazomet	533-74-4	24.00000	0.00243	None

			Sodium hydroxide	1310-73-2	4.00000	0.00041	None
CS-500-SI	FTS International	Scale inhibitor					
			Ethylene glycol	107-21-1	10.00000	0.00246	None
FRW-900	FTS International	Friction reducer					
			Hydrotreated light distillate	64742-47-8	30.00000	0.00096	None
			Alkyl Alcohol	Proprietary	10.00000	0.00032	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00016	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Isopropanol	67-63-0	30.00000	0.00011	None
			Organic amine resin salt	Proprietary	30.00000	0.00011	None
			Ethylene glycol	107-21-1	30.00000	0.00011	None
			Aromatic aldehyde	Proprietary	10.00000	0.00004	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00004	None
			Dimethylformamide	68-12-2	10.00000	0.00004	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	0.00011	None
NE-100	FTS International	Non-emulsifier					
			2-Propanol	67-63-0	10.00000	0.00003	None
			2-Butoxyethanol	111-76-2	10.00000	0.00003	None
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00002	None
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00005	None
Chlorine Dioxide Solution - SVP-Pure	Neptune	Disinfectant and/or oxidizer					
			Chlorine dioxide	10049-04-4	0.30000	0.00001	None

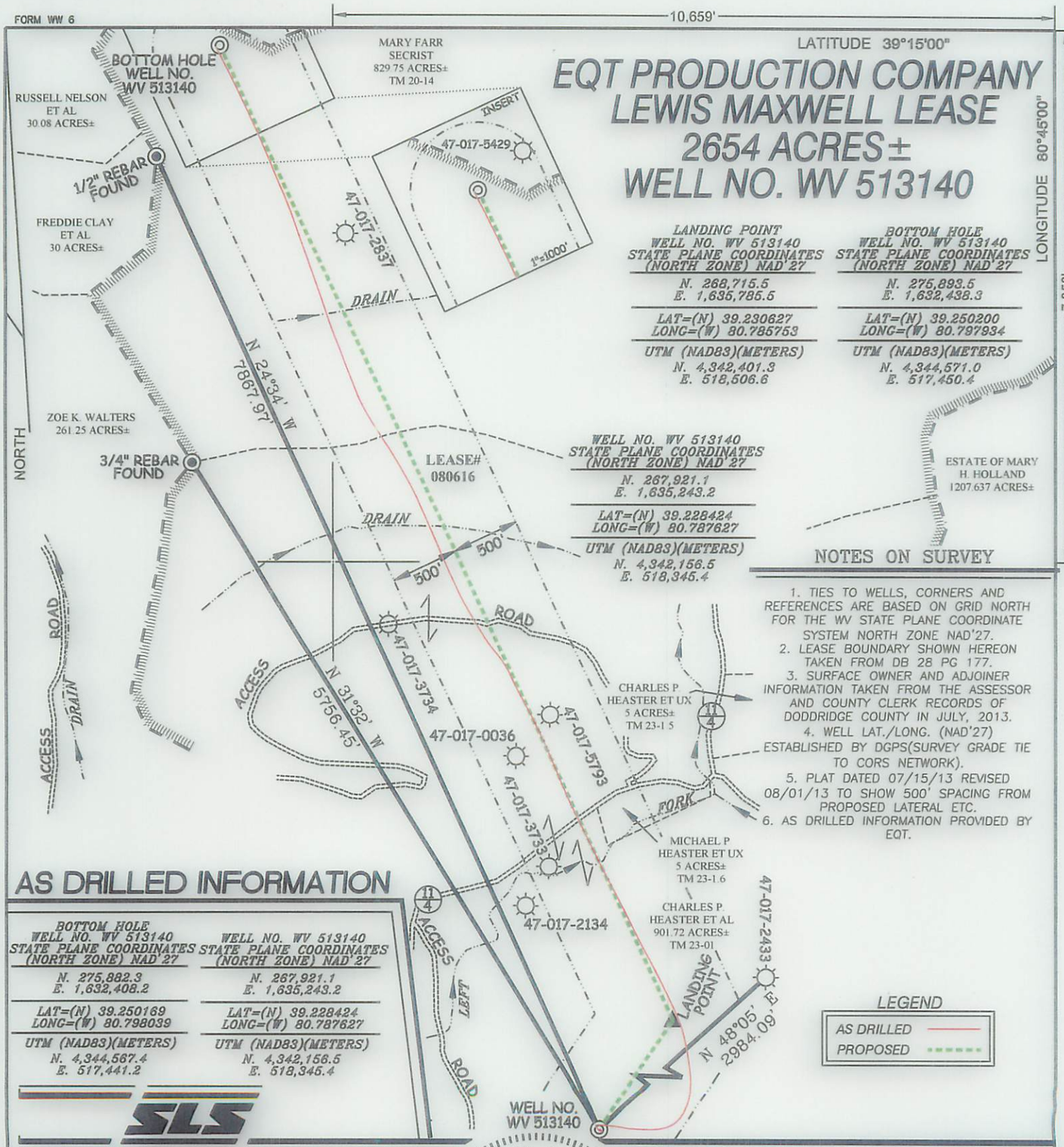
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

FORM WW 6

EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
2654 ACRES ±
WELL NO. WV 513140



LANDING POINT WELL NO. WV 513140 STATE PLANE COORDINATES (NORTH ZONE) NAD'27	BOTTOM HOLE WELL NO. WV 513140 STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 268,715.5 E. 1,635,785.5	N. 275,893.5 E. 1,632,438.3
LAT=(N) 39.230627 LONG=(W) 80.785753	LAT=(N) 39.250200 LONG=(W) 80.797934
UTM (NAD83)(METERS) N. 4,342,401.3 E. 518,506.6	UTM (NAD83)(METERS) N. 4,344,571.0 E. 517,450.4

WELL NO. WV 513140 STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 267,921.1
E. 1,635,243.2
LAT=(N) 39.228424
LONG=(W) 80.787627
UTM (NAD83)(METERS)
N. 4,342,156.5
E. 518,345.4

NOTES ON SURVEY

1. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD'27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DB 28 PG 177.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2013.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE TIE TO CORS NETWORK).
5. PLAT DATED 07/15/13 REVISED 08/01/13 TO SHOW 500' SPACING FROM PROPOSED LATERAL ETC.
6. AS DRILLED INFORMATION PROVIDED BY EQT.

AS DRILLED INFORMATION

BOTTOM HOLE WELL NO. WV 513140 STATE PLANE COORDINATES (NORTH ZONE) NAD'27	WELL NO. WV 513140 STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 275,882.3 E. 1,632,408.2	N. 267,921.1 E. 1,635,243.2
LAT=(N) 39.250169 LONG=(W) 80.798039	LAT=(N) 39.228424 LONG=(W) 80.787627
UTM (NAD83)(METERS) N. 4,344,567.4 E. 517,441.2	UTM (NAD83)(METERS) N. 4,342,156.5 E. 518,345.4

SLS

LEGEND
AS DRILLED
PROPOSED

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677 Gregory A. Smith

GREGORY A. SMITH LICENSED No. 677 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE AUGUST 1, 20 13
REVISED DATE AUGUST 27, 20 14
OPERATORS WELL NO. WV 513140
API WELL NO. 47 — —
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200
FILE NO. 6980ASDRILLED513140
SCALE 1" = 1000'
PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE: OIL ____ GAS X LIQUID INJECTION ____ WASTE DISPOSAL ____ IF "GAS" PRODUCTION X STORAGE ____ DEEP ____ SHALLOW X

LOCATION:
ELEVATION 1,244'(GROUND) 1,202'(PROPOSED) WATERSHED LEFT FORK ARNOLDS CREEK
DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'
SURFACE OWNER CHARLES P. HEASTER ET AL ACREAGE 901.72 ±
ROYALTY OWNER LEWIS MAXWELL HRS ACREAGE 2654 ±
PROPOSED WORK: LEASE NO. 080616
DRILL X CONVERT ____ DRILL DEEPER ____ REDRILL ____ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ____ PERFORATE NEW FORMATION ____ PLUG AND ABANDON ____ CLEAN OUT AND REPLUG ____ OTHER ____
PHYSICAL CHANGE IN WELL (SPECIFY) ____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH ____

COUNTY NAME
PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

SLS
124693

WR-35
Rev. 8/23/13

Page ___ of ___

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 170 - 06331 County DODDRIDGE District WEST UNION
Quad OXFORD 7.5' Pad Name OXF156 Field/Pool Name
Farm name HEASTER, CHARLES P., ET AL Well Number 513142
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing	4,342,148	Easting	518,347
Landing Point of Curve	Northing	4,342,212	Easting	518,735
Bottom Hole	Northing	4,341,138	Easting	519,258

Elevation (ft) 1,202 GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep □ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other ___

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine ■Gas ■ NGL □ Oil □ Other ___
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air ■ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
SBM 11.9ppg – powdered hydrocarbon resin, calcium carbonate, ground almond hulls, barium sulfate, calcium chloride, lecithin liquid, organophilic clay, polyaminated fatty acid, calcium hydroxide, polyimide surfactant, modified fatty acid, dimer.trimer fatty acid, ground walnut hulls, refined base oil.

Date permit issued 11/20/2013 Date drilling commenced 5/7/2014 Date drilling ceased 7/29/2014
Date completion activities began 1/18/2015 Date completion activities ceased 1/31/2015
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 169,216,320,386,462,600,1084 Open mine(s) (Y/N) depths ___
Salt water depth(s) ft 1456 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1272,1312 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
AL. 5/26/15 ✓
W.S. 6/02/15

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API 47- 170 - 06331 Farm name HEASTER, CHARLES P., ET AL Well number 513142

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	94lb/ft	N/A	Y
Surface	17-1/2"	13-3/8"	1,192'	New	54.5lb/ft	320	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	5,270'	New	40lb/ft	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	11,937'	New	20lb/ft	N/A	N
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	38	15.6	1.18	44.84	0	8
Surface	Class A	930	15.6	1.18	970	0	8
Coal							
Intermediate 1	Class A 5050 POZ/Class A/Class A	380/310/1115	14.2/15.6/15.6	1.28/1.18/1.18	2168	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	430/590	14.2/15.2	1.26/1.97	1704	5,260'	72
Tubing							

Drillers TD (ft) 11,940' Loggers TD (ft) _____
Deepest formation penetrated Marcellus Plug back to (ft) _____
Plug back procedure _____

Kick off depth (ft) 5,645'

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ■ temperature ☐sonic

Well cored ☐ Yes ■ No ☐ Conventional ☐ Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Conductor- N/A
Surface-Bowspring centralizer on shoe track and every 300' to surface
Intermediate-Bowspring centralizer on shoe track and every 500' to surface
Production- Composite bodied centralizers on every joint from Shoe track up to 4,145'

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS _____

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED _____

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API 47- 170 - 06331 Farm name HEASTER, CHARLES P., ET AL Well number 513142

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					PLEASE SEE ATTACHED

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
						PLEASE	SEE	ATTACHED

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Please insert additional pages as applicable.

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API 47- 170 - 06331 Farm name HEASTER, CHARLES P., ET AL Well number 513142

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6,272.6'	TVD	6,598.0'	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 1,644 psi Bottom Hole N/A psi DURATION OF TEST 220.5 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	5,690 mcfpd	0 bpd	55 bpd	1,163.5 bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

Please insert additional pages as applicable.

Drilling Contractor Savanna Drilling
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company Vaughn Energy Services
Address P.O. Box 261021 City Corpus Christi State TX Zip 78426

Cementing Company Nabors Completion & Production Services Co.
Address PO BOX 975682 City Dallas State TX Zip 75397

Stimulating Company FTSI
Address 301 E 18th Street City Cisco State TX Zip 76437

Please insert additional pages as applicable.

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Completed by Jim Helmick Telephone 412-395-5518
Signature Title VP Completions Date 4/21/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

47-017-06331

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1	1	1,084.00	1,084.00
SAND/SHALE	1,084.00	1,084.00	1,272.00	1,272.00
COAL	1,272.00	1,272.00	1,277.00	1,277.00
SAND/SHALE	1,277.00	1,277.00	1,312.00	1,312.00
COAL	1,312.00	1,312.00	1,318.00	1,318.00
SAND/SHALE	1,318.00	1,318.00	1,513.00	1,513.00
MAXTON	1,513.00	1,513.00	1,865.00	1,865.00
BIG LIME	1,865.00	1,865.00	1,923.00	1,923.00
KEENER	1,923.00	1,923.00	2,163.00	2,162.90
WEIR	2,163.00	2,162.90	2,358.00	2,357.90
BEREA	2,358.00	2,357.90	2,367.00	2,366.90
GANTZ	2,367.00	2,366.90	2,442.00	2,441.90
50F	2,442.00	2,441.90	2,563.00	2,562.90
30F	2,563.00	2,562.90	2,612.00	2,611.90
GORDON	2,612.00	2,611.90	2,710.00	2,709.90
4TH	2,710.00	2,709.90	2,918.00	2,917.90
BAYARD	2,918.00	2,917.90	3,207.00	3,206.90
WARREN	3,207.00	3,206.90	3,293.00	3,292.90
SPEECHLEY	3,293.00	3,292.90	3,796.00	3,795.90
BALLTOWN A	3,796.00	3,795.90	4,023.00	4,022.90
BALLTOWN B	4,023.00	4,022.90	4,183.00	4,182.90
BRADFORD	4,183.00	4,182.90	4,424.00	4,423.80
RILEY	4,424.00	4,423.80	4,871.00	4,870.70
BENSON	4,871.00	4,870.70	5,122.00	5,121.60
ALEXANDER	5,122.00	5,121.60	6,397.00	6,209.70
MIDDLESEX	6,397.00	6,209.70	6,454.00	6,227.10
GENESEE	6,454.00	6,227.10	6,518.00	6,246.70
GENESEO	6,518.00	6,246.70	6,559.00	6,259.60
TULLY	6,559.00	6,259.60	6,584.00	6,267.80
HAMILTON	6,584.00	6,267.80	6,598.00	6,272.60
MARCELLUS	6,598.00	6,272.60	11,940.00	6,597.00

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Well Operator's Report of Well Work

EQT

Where energy meets innovation.

Well Number: 513142

API: 47 - 017 - 06331

Submission: ☑ Initial ☐ Amended

Notes:

Add'l inj test [1.01, 1.02, 1.03]

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PHOENIX
TECHNOLOGY SERVICES

EQT Production - Marcellus

Doddridge County, WV Grid
Doddridge County 513142
Well #513142

Main Wellbore

Design: As Drilled Surveys

Standard Survey Report

29 July, 2014

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Phoenix Technology Services

Survey Report

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513142
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513142	**North Reference:**	Grid
Well:	Well #513142	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Project — Doddridge County, WV Grid

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		Using geodetic scale factor

Site — Doddridge County 513142

Site Position:		**Northing:**	267,891.60 usft	**Latitude:**	39.23
From:	Map	**Easting:**	1,635,248.80 usft	**Longitude:**	-80.79
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.82 °

Well — Well #513142

Well Position	**+N/-S**	0.0 usft	**Northing:**	267,891.60 usft	**Latitude:**	39° 13' 42.038 N
	+E/-W	0.0 usft	**Easting:**	1,635,248.80 usft	**Longitude:**	80° 47' 15.381 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,202.0 usft

Wellbore — Main Wellbore

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	7/3/2014	-8.46	66.76	52,257

Design — As Drilled Surveys

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	138.89

Survey Program — **Date** 7/29/2014

From ()	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,500.0	513142 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop
0.00	11,940.0	513142 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3:standard declination

Survey

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	-1,218.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.13	348.47	100.0	-1,118.0	0.1	0.0	-0.1	0.13	0.13	0.00
200.0	0.09	321.45	200.0	-1,018.0	0.3	-0.1	-0.3	0.05	-0.04	-27.02
300.0	0.10	300.21	300.0	-918.0	0.4	-0.2	-0.4	0.04	0.01	-21.24
400.0	0.04	1.43	400.0	-818.0	0.5	-0.3	-0.5	0.09	-0.06	61.22
500.0	0.04	16.74	500.0	-718.0	0.5	-0.3	-0.6	0.01	0.00	15.31
600.0	0.07	50.43	600.0	-618.0	0.6	-0.2	-0.6	0.04	0.03	33.69
700.0	0.17	35.44	700.0	-518.0	0.8	-0.1	-0.6	0.10	0.10	-14.99

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Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513142
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513142	**North Reference:**	Grid
Well:	Well #513142	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
800.0	0.14	35.25	800.0	-418.0	1.0	0.1	-0.7	0.03	-0.03	-0.19
900.0	0.15	25.22	900.0	-318.0	1.2	0.2	-0.8	0.03	0.01	-10.03
1,000.0	0.11	40.32	1,000.0	-218.0	1.4	0.3	-0.9	0.05	-0.04	15.10
1,100.0	0.16	79.87	1,100.0	-118.0	1.5	0.5	-0.8	0.10	0.05	39.55
1,200.0	0.17	88.90	1,200.0	-18.0	1.5	0.8	-0.6	0.03	0.01	9.03
1,300.0	0.39	111.13	1,300.0	82.0	1.4	1.3	-0.2	0.24	0.22	22.23
1,400.0	0.64	101.75	1,400.0	182.0	1.2	2.1	0.5	0.26	0.25	-9.38
1,500.0	0.73	101.79	1,500.0	282.0	0.9	3.3	1.5	0.09	0.09	0.04
1,600.0	0.71	107.76	1,600.0	382.0	0.6	4.5	2.5	0.08	-0.02	5.97
1,700.0	0.63	114.08	1,700.0	482.0	0.2	5.6	3.5	0.11	-0.08	6.32
1,800.0	0.68	118.32	1,800.0	582.0	-0.3	6.6	4.6	0.07	0.05	4.24
1,900.0	0.50	126.64	1,900.0	682.0	-0.9	7.5	5.6	0.20	-0.18	8.32
2,000.0	0.48	138.17	2,000.0	782.0	-1.4	8.1	6.4	0.10	-0.02	11.53
2,100.0	0.45	147.50	2,100.0	882.0	-2.1	8.6	7.2	0.08	-0.03	9.33
2,200.0	0.44	156.84	2,199.9	981.9	-2.8	9.0	8.0	0.07	-0.01	9.34
2,300.0	0.43	157.48	2,299.9	1,081.9	-3.5	9.3	8.7	0.01	-0.01	0.64
2,400.0	0.38	163.19	2,399.9	1,181.9	-4.1	9.5	9.4	0.06	-0.05	5.71
2,500.0	0.36	182.01	2,499.9	1,281.9	-4.8	9.6	9.9	0.12	-0.02	18.82
2,600.0	0.37	177.31	2,599.9	1,381.9	-5.4	9.6	10.4	0.03	0.01	-4.70
2,700.0	0.42	203.82	2,699.9	1,481.9	-6.0	9.5	10.8	0.19	0.05	26.51
2,800.0	0.34	203.75	2,799.9	1,581.9	-6.7	9.2	11.1	0.08	-0.08	-0.07
2,900.0	0.34	198.86	2,899.9	1,681.9	-7.2	9.0	11.3	0.03	0.00	-4.89
3,000.0	0.34	199.34	2,999.9	1,781.9	-7.8	8.8	11.6	0.00	0.00	0.48
3,100.0	0.34	196.67	3,099.9	1,881.9	-8.3	8.6	11.9	0.02	0.00	-2.67
3,200.0	0.34	208.41	3,199.9	1,981.9	-8.9	8.4	12.2	0.07	0.00	11.74
3,300.0	0.34	211.71	3,299.9	2,081.9	-9.4	8.1	12.4	0.02	0.00	3.30
3,400.0	0.28	223.20	3,399.9	2,181.9	-9.8	7.8	12.5	0.09	-0.06	11.49
3,500.0	0.21	229.48	3,499.9	2,281.9	-10.1	7.5	12.5	0.07	-0.07	6.28
3,600.0	0.20	242.70	3,599.9	2,381.9	-10.3	7.2	12.5	0.05	-0.01	13.22
3,700.0	0.13	243.52	3,699.9	2,481.9	-10.4	6.9	12.4	0.07	-0.07	0.82
3,800.0	0.46	289.09	3,799.9	2,581.9	-10.4	6.4	12.0	0.38	0.33	45.57
3,900.0	0.72	292.82	3,899.9	2,681.9	-10.0	5.5	11.1	0.26	0.26	3.73
4,000.0	0.87	294.94	3,999.9	2,781.9	-9.4	4.2	9.9	0.15	0.15	2.12
4,100.0	1.13	299.96	4,099.9	2,881.9	-8.6	2.7	8.2	0.27	0.26	5.02
4,200.0	1.28	303.80	4,199.9	2,981.9	-7.5	0.9	6.2	0.17	0.15	3.84
4,300.0	1.51	307.53	4,299.8	3,081.8	-6.1	-1.1	3.9	0.25	0.23	3.73
4,400.0	1.57	311.81	4,399.8	3,181.8	-4.4	-3.2	1.2	0.13	0.06	4.28
4,500.0	1.55	313.51	4,499.8	3,281.8	-2.5	-5.2	-1.5	0.05	-0.02	1.70
4,600.0	1.45	315.88	4,599.7	3,381.7	-0.7	-7.0	-4.1	0.12	-0.10	2.37
4,700.0	1.53	313.19	4,699.7	3,481.7	1.1	-8.9	-6.7	0.11	0.08	-2.69
4,800.0	1.25	317.43	4,799.7	3,581.7	2.9	-10.6	-9.1	0.30	-0.28	4.24
4,900.0	1.17	318.19	4,899.6	3,681.6	4.4	-12.0	-11.2	0.08	-0.08	0.76

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513142
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513142	**North Reference:**	Grid
Well:	Well #513142	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
5,000.0	1.01	319.71	4,999.6	3,781.6	5.9	-13.3	-13.1	0.16	-0.16	1.52
5,100.0	0.89	318.62	5,099.6	3,881.6	7.1	-14.3	-14.8	0.12	-0.12	-1.09
5,200.0	0.88	319.56	5,199.6	3,981.6	8.3	-15.4	-16.3	0.02	-0.01	0.94
5,300.0	0.89	320.62	5,299.6	4,081.6	9.5	-16.4	-17.9	0.02	0.01	1.06
5,400.0	1.82	330.21	5,399.6	4,181.6	11.4	-17.6	-20.2	0.95	0.93	9.59
Gyro Tie In=5500' MD										
5,500.0	2.53	344.21	5,499.5	4,281.5	14.9	-19.0	-23.8	0.88	0.71	14.00
5,632.0	2.60	349.80	5,631.4	4,413.4	20.7	-20.3	-29.0	0.20	0.05	4.23
KOP=5664' MD										
5,664.0	3.00	342.40	5,663.3	4,445.3	22.2	-20.7	-30.4	1.68	1.25	-23.13
5,695.0	6.00	9.00	5,694.2	4,476.2	24.6	-20.7	-32.1	11.54	9.68	85.81
5,727.0	9.30	18.70	5,725.9	4,507.9	28.7	-19.6	-34.5	11.04	10.31	30.31
5,758.0	10.90	24.40	5,756.5	4,538.5	33.7	-17.6	-37.0	6.08	5.16	18.39
5,790.0	12.70	26.90	5,787.8	4,569.8	39.6	-14.8	-39.6	5.85	5.63	7.81
5,822.0	15.40	30.40	5,818.8	4,600.8	46.4	-11.0	-42.2	8.84	8.44	10.94
5,853.0	18.80	30.70	5,848.4	4,630.4	54.3	-6.4	-45.1	10.97	10.97	0.97
5,884.0	21.70	30.50	5,877.5	4,659.5	63.5	-0.9	-48.5	9.36	9.35	-0.65
5,916.0	24.10	28.60	5,907.0	4,689.0	74.3	5.2	-52.6	7.85	7.50	-5.94
5,947.0	25.80	29.90	5,935.1	4,717.1	85.7	11.6	-57.0	5.76	5.48	4.19
5,979.0	28.60	31.00	5,963.6	4,745.6	98.4	19.0	-61.6	8.89	8.75	3.44
6,010.0	32.20	29.90	5,990.3	4,772.3	111.9	26.9	-66.6	11.75	11.61	-3.55
6,042.0	36.00	29.50	6,016.8	4,798.8	127.5	35.8	-72.5	11.90	11.88	-1.25
6,073.0	39.30	28.90	6,041.3	4,823.3	144.0	45.1	-78.9	10.71	10.65	-1.94
6,105.0	42.90	28.00	6,065.4	4,847.4	162.5	55.1	-86.2	11.40	11.25	-2.81
6,136.0	47.40	28.00	6,087.3	4,869.3	181.9	65.4	-94.0	14.52	14.52	0.00
6,168.0	51.60	26.50	6,108.1	4,890.1	203.5	76.5	-103.0	13.60	13.13	-4.69
6,199.0	55.10	25.90	6,126.6	4,908.6	225.8	87.5	-112.6	11.40	11.29	-1.94
6,231.0	59.30	25.90	6,143.9	4,925.9	250.0	99.2	-123.1	13.13	13.13	0.00
6,263.0	61.30	28.40	6,159.8	4,941.8	274.7	111.9	-133.4	9.23	6.25	7.81
6,294.0	64.80	29.20	6,173.8	4,955.8	299.0	125.2	-142.9	11.52	11.29	2.58
6,326.0	68.40	29.10	6,186.5	4,968.5	324.6	139.6	-152.8	11.25	11.25	-0.31
6,357.0	71.30	28.10	6,197.2	4,979.2	350.2	153.5	-162.9	9.83	9.35	-3.23
6,389.0	72.20	26.30	6,207.2	4,989.2	377.2	167.4	-174.1	6.04	2.81	-5.63
6,421.0	72.30	26.00	6,217.0	4,999.0	404.5	180.8	-185.9	0.95	0.31	-0.94
6,452.0	72.10	26.50	6,226.5	5,008.5	431.0	193.9	-197.3	1.67	-0.65	1.61
6,484.0	72.20	26.70	6,236.3	5,018.3	458.2	207.5	-208.8	0.67	0.31	0.63
6,514.0	72.10	27.20	6,245.5	5,027.5	483.7	220.4	-219.5	1.62	-0.33	1.67
6,546.0	71.60	28.70	6,255.4	5,037.4	510.6	234.7	-230.4	4.72	-1.56	4.69
6,577.0	70.60	34.00	6,265.5	5,047.5	535.6	249.9	-239.2	16.49	-3.23	17.10
6,609.0	69.50	38.30	6,276.4	5,058.4	559.9	267.7	-245.9	13.09	-3.44	13.44
6,640.0	68.60	42.90	6,287.5	5,069.5	581.9	286.5	-250.0	14.16	-2.90	14.84
6,672.0	67.30	46.00	6,299.5	5,081.5	603.0	307.3	-252.3	9.65	-4.06	9.69
6,703.0	65.90	48.50	6,311.8	5,093.8	622.3	328.2	-253.2	8.67	-4.52	8.06

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Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513142
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513142	**North Reference:**	Grid
Well:	Well #513142	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
6,735.0	65.10	51.40	6,325.1	5,107.1	641.1	350.4	-252.6	8.62	-2.50	9.06
6,766.0	65.20	55.40	6,338.1	5,120.1	657.8	373.0	-250.4	11.71	0.32	12.90
6,798.0	65.60	58.50	6,351.4	5,133.4	673.7	397.4	-246.3	8.90	1.25	9.69
6,829.0	65.80	61.90	6,364.2	5,146.2	687.7	421.9	-240.8	10.02	0.65	10.97
6,861.0	65.40	65.00	6,377.4	5,159.4	700.8	448.0	-233.5	8.91	-1.25	9.69
6,892.0	65.20	68.20	6,390.4	5,172.4	712.0	473.8	-224.9	9.40	-0.65	10.32
6,924.0	64.40	71.50	6,404.0	5,186.0	721.9	501.0	-214.5	9.66	-2.50	10.31
6,955.0	63.30	73.70	6,417.7	5,199.7	730.3	527.5	-203.4	7.29	-3.55	7.10
6,987.0	63.10	76.80	6,432.1	5,214.1	737.5	555.2	-190.7	8.67	-0.63	9.69
7,018.0	63.30	80.50	6,446.1	5,228.1	743.0	582.3	-177.0	10.67	0.65	11.94
7,050.0	64.30	85.30	6,460.2	5,242.2	746.5	610.8	-160.9	13.82	3.13	15.00
7,081.0	64.30	88.00	6,473.7	5,255.7	748.1	638.6	-143.8	7.85	0.00	8.71
7,113.0	64.50	91.20	6,487.5	5,269.5	748.3	667.5	-125.0	9.04	0.63	10.00
7,144.0	65.50	94.90	6,500.6	5,282.6	746.8	695.5	-105.4	11.29	3.23	11.94
7,176.0	66.80	97.80	6,513.5	5,295.5	743.6	724.6	-83.8	9.23	4.06	9.06
7,207.0	68.10	101.00	6,525.4	5,307.4	738.9	752.9	-61.7	10.41	4.19	10.32
7,239.0	69.00	103.70	6,537.1	5,319.1	732.6	782.0	-37.8	8.34	2.81	8.44
7,270.0	70.20	107.10	6,547.9	5,329.9	724.8	810.0	-13.6	10.98	3.87	10.97
7,302.0	71.60	110.60	6,558.4	5,340.4	715.1	838.6	12.6	11.22	4.38	10.94
7,333.0	73.40	114.00	6,567.7	5,349.7	703.8	865.9	39.0	11.96	5.81	10.97
7,365.0	74.00	116.10	6,576.7	5,358.7	690.8	893.7	67.1	6.57	1.88	6.56
7,396.0	74.80	117.40	6,585.1	5,367.1	677.4	920.4	94.8	4.79	2.58	4.19
7,428.0	75.30	120.80	6,593.3	5,375.3	662.4	947.4	123.9	10.38	1.56	10.63
7,459.0	77.10	124.90	6,600.7	5,382.7	646.0	972.7	152.8	14.09	5.81	13.23
7,491.0	77.60	128.50	6,607.7	5,389.7	627.4	997.7	183.3	11.09	1.56	11.25
7,522.0	77.50	131.40	6,614.4	5,396.4	607.9	1,020.9	213.2	9.14	-0.32	9.35
7,553.0	78.60	134.30	6,620.8	5,402.8	587.3	1,043.2	243.3	9.82	3.55	9.35
7,585.0	80.70	136.90	6,626.6	5,408.6	564.8	1,065.2	274.8	10.34	6.56	8.13
7,616.0	83.30	139.50	6,630.9	5,412.9	541.9	1,085.6	305.5	11.80	8.39	8.39
7,648.0	86.20	142.70	6,633.8	5,415.8	517.2	1,105.6	337.3	13.46	9.06	10.00
LP=7711' MD/ 6636' TVD										
7,711.0	89.70	147.00	6,636.1	5,418.1	465.7	1,141.9	399.9	8.80	5.56	6.83
7,775.0	89.80	147.70	6,636.4	5,418.4	411.8	1,176.4	463.2	1.10	0.16	1.09
7,838.0	90.60	149.20	6,636.1	5,418.1	358.1	1,209.4	525.3	2.70	1.27	2.38
7,900.0	90.30	151.10	6,635.6	5,417.6	304.4	1,240.2	586.1	3.10	-0.48	3.06
7,964.0	90.20	151.30	6,635.4	5,417.4	248.3	1,271.0	648.6	0.35	-0.16	0.31
8,026.0	90.50	151.60	6,635.0	5,417.0	193.8	1,300.7	709.2	0.68	0.48	0.48
8,090.0	91.30	154.70	6,634.0	5,416.0	136.7	1,329.6	771.2	5.00	1.25	4.84
8,153.0	91.30	155.70	6,632.6	5,414.6	79.5	1,356.0	831.6	1.59	0.00	1.59
8,216.0	91.10	156.50	6,631.2	5,413.2	22.0	1,381.5	891.8	1.31	-0.32	1.27
8,278.0	90.20	156.10	6,630.5	5,412.5	-34.8	1,406.4	950.9	1.59	-1.46	-0.65
8,341.0	90.30	157.10	6,630.3	5,412.3	-92.6	1,431.5	1,011.0	1.60	0.16	1.59
8,403.0	90.70	156.70	6,629.7	5,411.7	-149.6	1,455.8	1,069.9	0.91	0.65	-0.65

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Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513142
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513142	**North Reference:**	Grid
Well:	Well #513142	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
8,467.0	90.30	157.20	6,629.2	5,411.2	-208.5	1,480.8	1,130.8	1.00	-0.63	0.78
8,529.0	89.50	157.70	6,629.3	5,411.3	-265.8	1,504.6	1,189.5	1.52	-1.29	0.81
8,592.0	89.10	157.50	6,630.0	5,412.0	-324.0	1,528.6	1,249.2	0.71	-0.63	-0.32
8,655.0	88.70	157.60	6,631.2	5,413.2	-382.3	1,552.7	1,308.9	0.65	-0.63	0.16
8,719.0	89.00	157.50	6,632.5	5,414.5	-441.4	1,577.1	1,369.5	0.49	0.47	-0.16
8,782.0	89.00	157.20	6,633.6	5,415.6	-499.5	1,601.4	1,429.3	0.48	0.00	-0.48
8,843.0	89.10	156.70	6,634.6	5,416.6	-555.6	1,625.2	1,487.2	0.84	0.16	-0.82
8,906.0	89.30	155.50	6,635.5	5,417.5	-613.2	1,650.8	1,547.4	1.93	0.32	-1.90
8,969.0	89.50	154.90	6,636.2	5,418.2	-670.4	1,677.2	1,607.9	1.00	0.32	-0.95
9,033.0	89.80	154.30	6,636.6	5,418.6	-728.2	1,704.6	1,669.5	1.05	0.47	-0.94
9,095.0	89.90	153.80	6,636.7	5,418.7	-784.0	1,731.8	1,729.3	0.82	0.16	-0.81
9,158.0	90.50	155.60	6,636.5	5,418.5	-840.9	1,758.7	1,789.9	3.01	0.95	2.86
9,221.0	90.20	154.20	6,636.1	5,418.1	-898.0	1,785.4	1,850.5	2.27	-0.48	-2.22
9,285.0	88.30	155.00	6,637.0	5,419.0	-955.8	1,812.9	1,912.1	3.22	-2.97	1.25
9,347.0	88.10	154.70	6,638.9	5,420.9	-1,011.9	1,839.2	1,971.7	0.58	-0.32	-0.48
9,410.0	87.90	154.40	6,641.1	5,423.1	-1,068.7	1,866.3	2,032.3	0.57	-0.32	-0.48
9,473.0	88.70	155.00	6,643.0	5,425.0	-1,125.7	1,893.2	2,092.9	1.59	1.27	0.95
9,536.0	88.70	154.50	6,644.4	5,426.4	-1,182.6	1,920.0	2,153.5	0.79	0.00	-0.79
9,599.0	87.70	153.00	6,646.4	5,428.4	-1,239.1	1,947.9	2,214.3	2.86	-1.59	-2.38
9,662.0	89.70	154.00	6,647.8	5,429.8	-1,295.5	1,976.0	2,275.3	3.55	3.17	1.59
9,725.0	89.90	155.10	6,648.0	5,430.0	-1,352.4	2,003.1	2,335.9	1.77	0.32	1.75
9,788.0	90.50	155.10	6,647.8	5,429.8	-1,409.5	2,029.6	2,396.4	0.95	0.95	0.00
9,851.0	90.80	154.60	6,647.1	5,429.1	-1,466.5	2,056.4	2,457.0	0.93	0.48	-0.79
9,914.0	92.00	153.30	6,645.6	5,427.6	-1,523.1	2,084.0	2,517.8	2.81	1.90	-2.06
9,977.0	91.10	150.60	6,643.9	5,425.9	-1,578.7	2,113.6	2,579.2	4.52	-1.43	-4.29
10,040.0	91.60	149.90	6,642.4	5,424.4	-1,633.4	2,144.9	2,640.9	1.37	0.79	-1.11
10,104.0	91.60	150.60	6,640.6	5,422.6	-1,688.9	2,176.6	2,703.6	1.09	0.00	1.09
10,167.0	92.80	151.30	6,638.2	5,420.2	-1,743.9	2,207.2	2,765.2	2.20	1.90	1.11
10,230.0	94.80	151.50	6,634.0	5,416.0	-1,799.1	2,237.3	2,826.6	3.19	3.17	0.32
10,293.0	94.60	151.00	6,628.8	5,410.8	-1,854.2	2,267.5	2,887.9	0.85	-0.32	-0.79
10,357.0	95.00	151.30	6,623.5	5,405.5	-1,910.0	2,298.3	2,950.2	0.78	0.63	0.47
10,420.0	92.80	153.30	6,619.2	5,401.2	-1,965.7	2,327.5	3,011.3	4.71	-3.49	3.17
10,482.0	92.00	154.20	6,616.6	5,398.6	-2,021.2	2,354.9	3,071.2	1.94	-1.29	1.45
10,545.0	91.00	154.30	6,614.9	5,396.9	-2,078.0	2,382.2	3,131.9	1.60	-1.59	0.16
10,608.0	90.30	156.60	6,614.2	5,396.2	-2,135.2	2,408.4	3,192.3	3.82	-1.11	3.65
10,671.0	90.10	157.00	6,614.0	5,396.0	-2,193.2	2,433.2	3,252.3	0.71	-0.32	0.63
10,734.0	89.80	157.10	6,614.1	5,396.1	-2,251.2	2,457.8	3,312.1	0.50	-0.48	0.16
10,798.0	89.40	156.80	6,614.5	5,396.5	-2,310.1	2,482.8	3,373.0	0.78	-0.63	-0.47
10,861.0	90.10	156.80	6,614.8	5,396.8	-2,368.0	2,507.7	3,432.9	1.11	1.11	0.00
10,924.0	90.20	157.10	6,614.6	5,396.6	-2,425.9	2,532.3	3,492.8	0.50	0.16	0.48
10,987.0	90.10	157.20	6,614.5	5,396.5	-2,484.0	2,556.8	3,552.7	0.22	-0.16	0.16
11,050.0	90.60	157.00	6,614.1	5,396.1	-2,542.0	2,581.3	3,612.5	0.85	0.79	-0.32

PHOENIX TECHNOLOGY SERVICES

Phoenix Technology Services

Survey Report

EQT Where energy meets innovation.

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513142
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 1218.0usft
Site:	Doddridge County 513142	**North Reference:**	Grid
Well:	Well #513142	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Survey

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)
11,113.0	90.90	156.10	6,613.3	5,395.3	-2,599.8	2,606.4	3,672.5	1.51	0.48	-1.43
11,176.0	91.60	155.00	6,611.9	5,393.9	-2,657.1	2,632.4	3,732.9	2.07	1.11	-1.75
11,239.0	92.50	154.30	6,609.6	5,391.6	-2,714.0	2,659.4	3,793.5	1.81	1.43	-1.11
11,302.0	92.70	153.60	6,606.8	5,388.8	-2,770.6	2,687.0	3,854.2	1.15	0.32	-1.11
11,365.0	92.40	154.20	6,604.0	5,386.0	-2,827.1	2,714.7	3,915.0	1.06	-0.48	0.95
11,429.0	91.70	156.40	6,601.7	5,383.7	-2,885.2	2,741.4	3,976.4	3.61	-1.09	3.44
11,492.0	90.90	155.80	6,600.2	5,382.2	-2,942.8	2,767.0	4,036.5	1.59	-1.27	-0.95
11,555.0	90.90	156.50	6,599.3	5,381.3	-3,000.4	2,792.4	4,096.7	1.11	0.00	1.11
11,618.0	90.90	157.10	6,598.3	5,380.3	-3,058.3	2,817.2	4,156.6	0.95	0.00	0.95
11,681.0	90.50	157.30	6,597.5	5,379.5	-3,116.4	2,841.7	4,216.4	0.71	-0.63	0.32
11,744.0	90.50	157.20	6,596.9	5,378.9	-3,174.5	2,866.0	4,276.2	0.16	0.00	-0.16
11,807.0	90.00	156.40	6,596.7	5,378.7	-3,232.4	2,890.8	4,336.2	1.50	-0.79	-1.27
11,870.0	89.80	156.50	6,596.8	5,378.8	-3,290.1	2,916.0	4,396.2	0.35	-0.32	0.16
Last Survey=11881' MD/ 6597' TVD										
11,881.0	89.80	156.40	6,596.8	5,378.8	-3,300.2	2,920.4	4,406.7	0.91	0.00	-0.91
Projection to TD=11940' MD/ 6597' TVD										
11,940.0	89.80	156.40	6,597.0	5,379.0	-3,354.3	2,944.0	4,463.0	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,500.0	5,499.5	14.9	-19.0	Gyro Tie In=5500' MD
5,664.0	5,663.3	22.2	-20.7	KOP=5664' MD
7,711.0	6,636.1	465.7	1,141.9	LP=7711' MD/ 6636' TVD
11,881.0	6,596.8	-3,300.2	2,920.4	Last Survey=11881' MD/ 6597' TVD
11,940.0	6,597.0	-3,354.3	2,944.0	Projection to TD=11940' MD/ 6597' TVD

Checked By: _____ Approved By: _____ Date: _____

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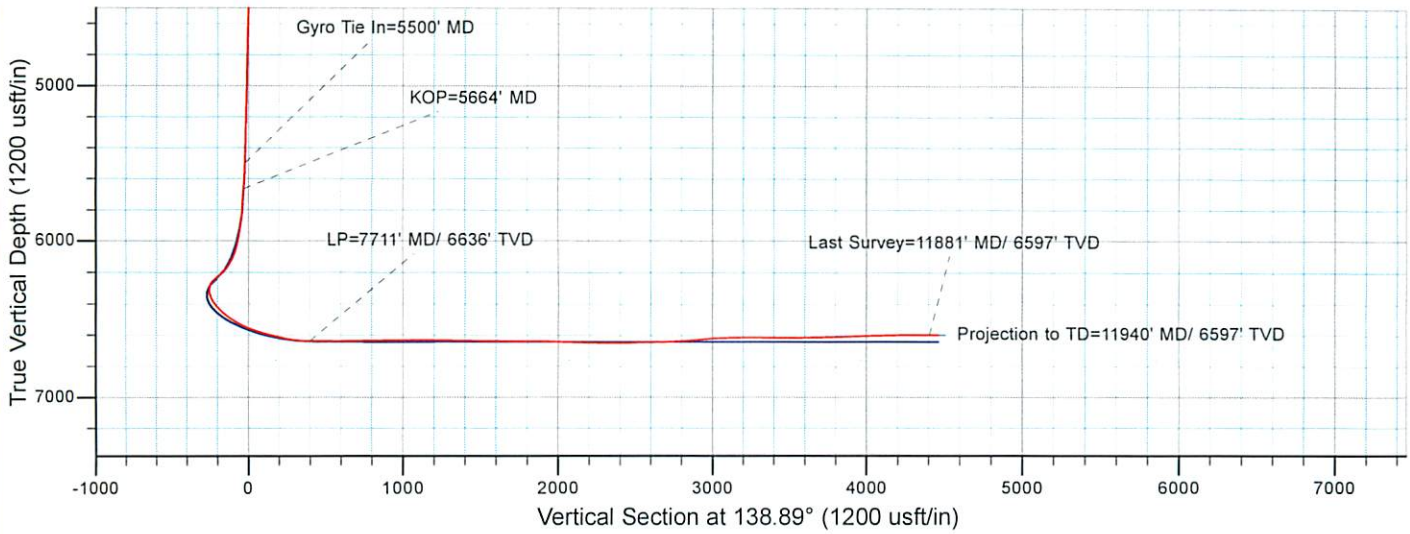
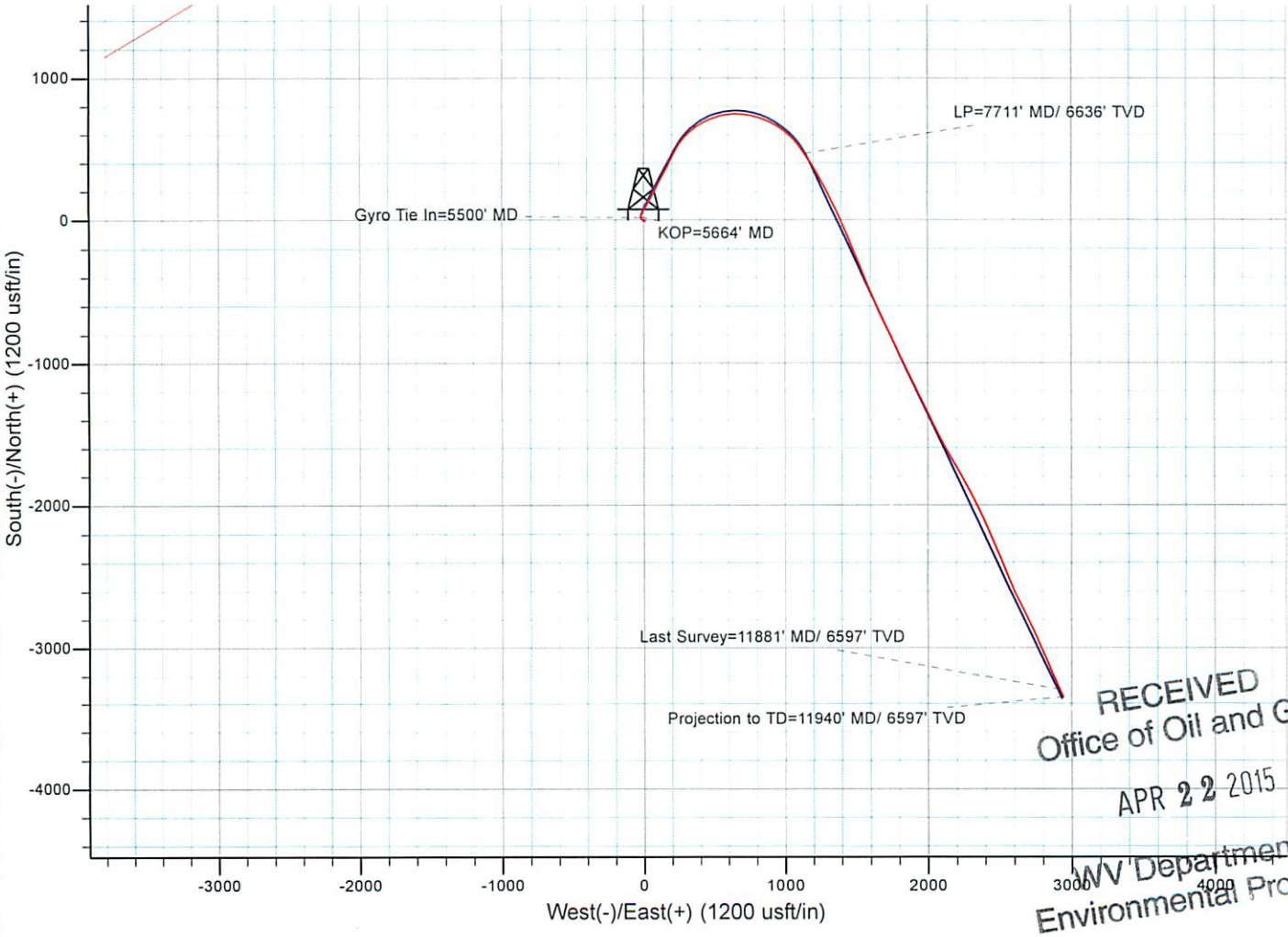
PHOENIX
TECHNOLOGY SERVICES

EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513142
Well: Well #513142
Wellbore: Main Wellbore
Design: As Drilled Surveys





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513139 - 47-017-06328-0000 - Stimulated Stages

Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	1/18/2015	20.7	8,067.00	9,143.00	2,101.00	0	952	0
1	1/19/2015	81.9	8,703.00	9,953.00	8,119.00	250,452	5344	0
1.02	1/19/2015	2.5	7,358.00	8,366.00	9,010.00	0	657	0
1.03	1/22/2015	3.9	6,650.00	9,750.00	8,302.00	0	1064	0
2	1/24/2015	86.8	8,062.00	8,778.00	4,049.00	191,789	6432	0
3	1/24/2015	96.7	8,398.00	8,413.00	4,481.00	231,038	6319	0
4	1/24/2015	96.2	8,098.00	8,679.00	4,730.00	249,302	6768	0
5	1/25/2015	93.5	8,263.00	8,914.00	4,928.00	225,877	6197	0
6	1/25/2015	95.7	8,193.00	8,749.00	5,197.00	229,302	5874	0
7	1/25/2015	95.7	8,179.00	8,657.00	4,946.00	246,187	6140	0
8	1/25/2015	100.3	8,124.00	8,216.00	4,416.00	256,295	5734	0
9	1/26/2015	100.9	7,925.00	8,420.00	4,087.00	250,069	5657	0
10	1/27/2015	96.4	8,064.00	8,834.00	4,586.00	245,418	6724	0
11	1/27/2015	99.3	8,100.00	8,477.00	3,854.00	252,097	5759	0
12	1/27/2015	98.1	7,860.00	8,503.00	4,680.00	253,106	5762	0
13	1/27/2015	98.8	8,158.00	8,957.00	4,835.00	250,482	6063	0
14	1/28/2015	98.8	7,706.00	8,147.00	4,827.00	250,100	5638	0
15	1/28/2015	98.2	7,554.00	8,203.00	4,706.00	250,123	5944	0
16	1/28/2015	98.4	8,167.00	8,782.00	4,671.00	251,646	6399	0
17	1/29/2015	99.8	7,985.00	8,328.00	4,842.00	250,436	5613	0
18	1/29/2015	93.8	8,142.00	8,745.00	4,730.00	249,335	5706	0
19	1/29/2015	98.4	8,127.00	8,514.00	5,377.00	249,306	5643	0
20	1/29/2015	98.2	8,069.00	8,777.00	5,333.00	249,238	5747	0
21	1/29/2015	94.5	7,877.00	8,320.00	5,020.00	251,530	6015	0
22	1/29/2015	100.8	7,864.00	8,058.00	4,375.00	250,532	5694	0
23	1/30/2015	99.8	7,733.00	8,622.00	5,082.00	250,394	5767	0
24	1/30/2015	100.1	7,325.00	7,687.00	5,063.00	250,374	5392	0
25	1/30/2015	100.6	7,271.00	7,952.00	4,946.00	250,891	5739	0
26	1/30/2015	102.2	7,653.00	8,153.00	4,996.00	249,198	5725	0
27	1/30/2015	99.3	7,868.00	8,944.00	5,011.00	251,760	5618	0
28	1/30/2015	99.7	7,717.00	9,000.00	4,855.00	251,109	5411	0
29	1/30/2015	98.6	7,728.00	8,077.00	4,454.00	214,673	5657	0

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513139 - 47-017-06328-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	12/21/2014	11,935.50	11,938.07	10	MARCELLUS
1	1/18/2015 23:08	11,811.00	11,863.00	32	MARCELLUS
2	1/23/2015 7:47	11,661.00	11,763.00	40	MARCELLUS
3	1/24/2015 6:17	11,511.00	11,613.00	40	MARCELLUS
4	1/24/2015 12:06	11,361.00	11,463.00	40	MARCELLUS
5	1/25/2015 3:29	11,211.00	11,313.00	40	MARCELLUS
6	1/25/2015 8:45	11,061.00	11,161.00	40	MARCELLUS
7	1/25/2015 13:30	10,911.00	11,013.00	40	MARCELLUS
8	1/25/2015 18:17	10,611.00	10,713.00	40	MARCELLUS
9	1/25/2015 18:17	10,761.00	10,861.00	40	MARCELLUS
10	1/26/2015 2:19	10,461.00	10,563.00	40	MARCELLUS
11	1/27/2015 10:44	10,311.00	10,413.00	40	MARCELLUS
12	1/27/2015 15:05	10,161.00	10,263.00	40	MARCELLUS
13	1/27/2015 19:32	10,011.00	10,113.00	40	MARCELLUS
14	1/27/2015 23:56	9,861.00	9,963.00	40	MARCELLUS
15	1/28/2015 4:18	9,711.00	9,818.00	40	MARCELLUS
16	1/28/2015 8:48	9,561.00	9,663.00	40	MARCELLUS
17	1/28/2015 22:11	9,411.00	9,513.00	40	MARCELLUS
18	1/29/2015 3:47	9,261.00	9,363.00	40	MARCELLUS
19	1/29/2015 6:00	9,111.00	9,213.00	40	MARCELLUS
20	1/29/2015 11:45	8,961.00	9,063.00	40	MARCELLUS
21	1/29/2015 16:16	8,811.00	8,913.00	40	MARCELLUS
22	1/29/2015 19:00	8,661.00	8,765.00	40	MARCELLUS
23	1/29/2015 22:00	8,511.00	8,613.00	40	MARCELLUS
24	1/30/2015 3:25	8,361.00	8,463.00	40	MARCELLUS
25	1/30/2015 6:47	8,211.00	8,313.00	40	MARCELLUS
26	1/30/2015 10:53	8,063.00	8,163.00	40	MARCELLUS
27	1/30/2015 15:02	7,911.00	8,013.00	40	MARCELLUS
28	1/30/2015 18:00	7,761.00	7,863.00	40	MARCELLUS
29	1/31/2015 4:00	7,611.00	7,718.00	40	MARCELLUS

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/18/2015
Job End Date:	1/31/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06331-00-00
Operator Name:	EQT Production
Well Name and Number:	513142
Longitude:	-80.78760600
Latitude:	39.22834400
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,273
Total Base Water Volume (gal):	7,555,464
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

INTERSTATE Oil & Gas COMPACT COMMISSION

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	FTS International	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	89.56981	None
Sand (Proppant)	FTS International	Proppant					
			Crystalline Silica	14808-60-7	100.00000	10.08924	None
Hydrochloric Acid (15%)	FTS International	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.03044	None
FRW-600	FTS International	Friction reducer					
			Hydrotreated light distillate	64742-47-8	30.00000	0.02162	None
			Ammonium acetate	631-61-8	6.00000	0.00432	None
B-10	FTS International	High pH buffer					
			Potassium carbonate	584-08-7	48.00000	0.00985	None
			Potassium hydroxide	1310-58-3	20.00000	0.00410	None
HVG-1	FTS International	Gelling agent					
			Petroleum distillate	64742-47-8	55.00000	0.00327	None
			Guar gum	9000-30-0	50.00000	0.00297	None
			Clay	14808-60-7	2.00000	0.00012	None
			Surfactant	68439-51-0	2.00000	0.00012	None
CI-3240	FTS International	Biocide					
			Dazomet	533-74-4	24.00000	0.00239	None

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			Sodium hydroxide	1310-73-2	4.00000	0.00040	None
CS-500-SI	FTS International	Scale inhibitor					
			Ethylene glycol	107-21-1	10.00000	0.00244	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Organic amine resin salt	Proprietary	30.00000	0.00012	None
			Isopropanol	67-63-0	30.00000	0.00012	None
			Ethylene glycol	107-21-1	30.00000	0.00012	None
			Aromatic aldehyde	Proprietary	10.00000	0.00004	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00004	None
			Dimethylformamide	68-12-2	10.00000	0.00004	None
NE-100	FTS International	Non-emulsifier					
			2-Butoxyethanol	111-76-2	10.00000	0.00004	None
			2-Propanol	67-63-0	10.00000	0.00004	None
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00002	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	0.00007	None
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00005	None
Chlorine Dioxide Solution - SVP-Pure	Neptune	Disinfectant and/or oxidizer					
			Chlorine dioxide	10049-04-4	0.30000	0.00001	None

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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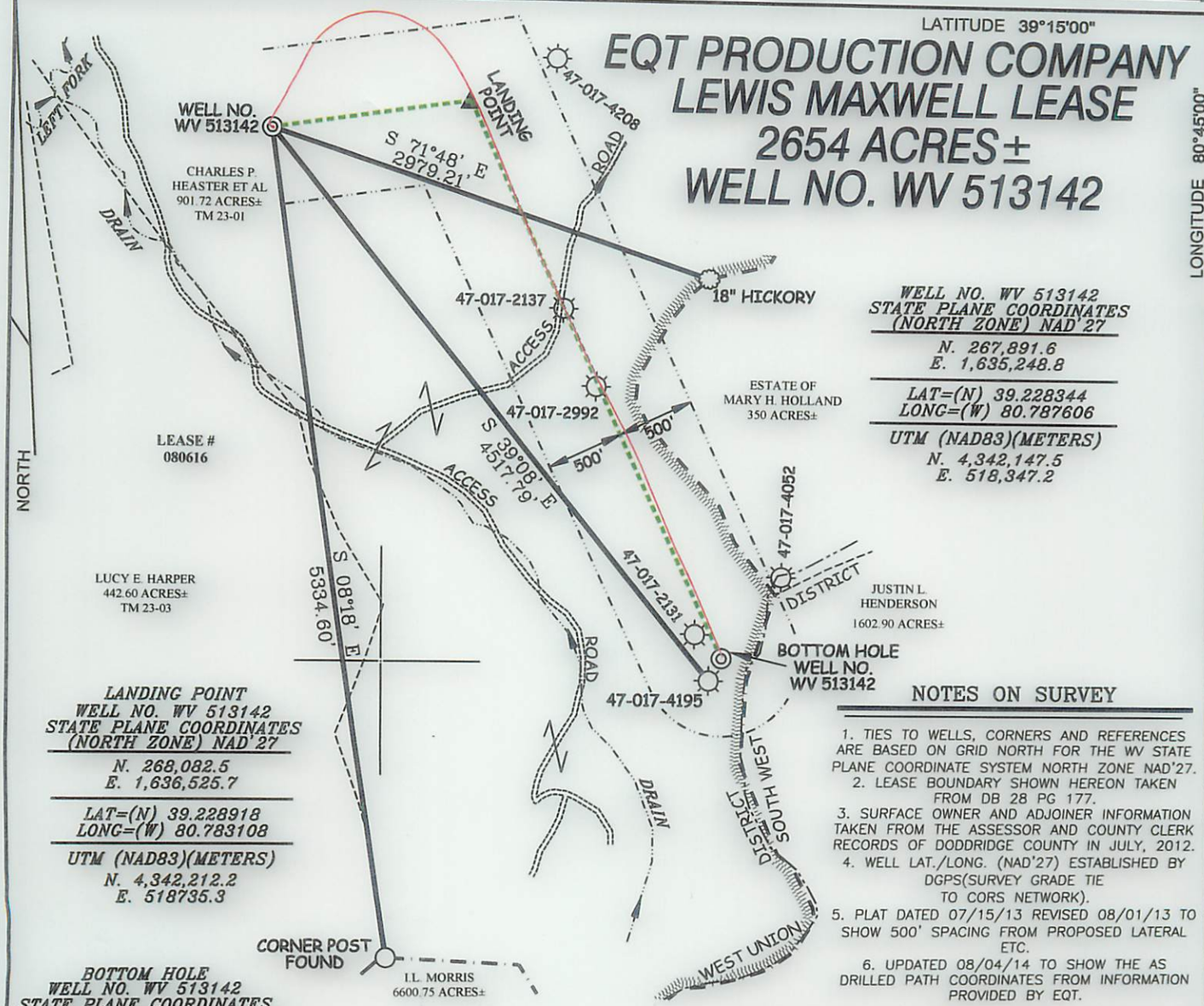
FORM WW 6

EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
2654 ACRES±
WELL NO. WV 513142



WELL NO. WV 513142
STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 267,891.6
E. 1,635,248.8

LAT=(N) 39.228344
LONG=(W) 80.787606

UTM (NAD83)(METERS)
N. 4,342,147.5
E. 518,347.2

LANDING POINT
WELL NO. WV 513142
STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 268,082.5
E. 1,636,525.7

LAT=(N) 39.228918
LONG=(W) 80.783108

UTM (NAD83)(METERS)
N. 4,342,212.2
E. 518735.3

BOTTOM HOLE
WELL NO. WV 513142
STATE PLANE COORDINATES (NORTH ZONE) NAD'27
N. 264,529.8
E. 1,638,182.4

LAT=(N) 39.219230
LONG=(W) 80.777083

UTM (NAD83)(METERS)
N. 4,341,138.3
E. 519,258.0

NOTES ON SURVEY

1. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD'27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DB 28 PG 177.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2012.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE TIE TO CORS NETWORK).
5. PLAT DATED 07/15/13 REVISED 08/01/13 TO SHOW 500' SPACING FROM PROPOSED LATERAL ETC.
6. UPDATED 08/04/14 TO SHOW THE AS DRILLED PATH COORDINATES FROM INFORMATION PROVIDED BY EQT.

LEGEND
AS DRILLED
PROPOSED

AS DRILLED COORDINATES FOR WELL NO. WV 513142

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 267,891.6	E. 1,635,248.8
NAD'27 GEO.	LAT-(N) 39.228344	LONG-(W) 80.787606
NAD'83 UTM (M)	N. 4,342,147.5	E. 518,347.2
BOTTOM HOLE		
NAD'27 S.P.C.(FT)	N. 264,537.4	E. 1,638,192.7
NAD'27 GEO.	LAT-(N) 39.219251	LONG-(W) 80.777047
NAD'83 UTM (M)	N. 4,341,140.7	E. 519,261.2

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
SLS SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.
(304) 462-5634 WWW.SLSSURVEYS.COM

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 2288 Earl N. Thompson

EARL N. THOMPSON LICENSED No. 2288 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE AUGUST 1 , 20 13

REVISED DATE 08/04/04 & 03/09/15

OPERATORS WELL NO. WV 513142

API WELL NO. 47 — 017 — 06331
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 6980ASDRILLED513142R

SCALE 1" = 1000'

PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION:
ELEVATION 1,244'(GROUND) 1,202'(PROPOSED) WATERSHED LEFT FORK ARNOLDS CREEK
DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'
SURFACE OWNER CHARLES P. HEASTER ET AL ACREAGE 901.72 ±
ROYALTY OWNER LEWIS MAXWELL HRS ACREAGE 2654 ±
PROPOSED WORK: LEASE NO. 080616
DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH ___

COUNTY NAME
PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330 BRIDGEPORT, WV 26330

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 033 - 05255 County HARRISON District TEN MILE
Quad WOLF SUMMIT 7.5' Pad Name HIRAM LYNCH Field/Pool Name WOLF SUMMIT
Farm name JUNKINS, EARL & BELVA Well Number 210
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,348,661 M Easting 544,322 M
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing ____ Easting ____

Elevation (ft) 998' GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal □ Horizontal 6A ■ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen □ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM □ Gas □ Oil ■ Secondary Recovery □ Solution Mining □ Storage □ Other ____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine □Gas □ NGL ■ Oil □ Other ____

Drilled with □ Cable ■ Rotary

Drilling Media Surface hole □ Air □ Mud □Fresh Water Intermediate hole □ Air □ Mud □ Fresh Water □ Brine

Production hole □ Air □ Mud □ Fresh Water □ Brine

Mud Type(s) and Additive(s)
N/A

ERIS - 03/15/12

Date permit issued 7/31/13 Date drilling commenced N/A Date drilling ceased N/A
Date completion activities began 3/16/15 Date completion activities ceased 4/1/15
Verbal plugging (Y/N) N Date permission granted ____ Granted by ____

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft None Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Void(s) encountered (Y/N) depths N
Coal depth(s) ft 246'-253' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
AL 5/26/15
W.S. 06/02/15

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API 47- 033 - 05255 Farm name JUNKINS, EARL & BELVA Well number 210

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor							
Surface	8 3/4"	7"	353'	existing	LS	64'	Existing
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2696.4'	existing	J-55		Existing
Tubing		2 3/8"	2562'	existing	J-55		
Packer type and depth set		Baker Lock Set Packer @ 2562'					

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Reg Neat	85	15.6	1.18	100	Existing	Existing
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	150	14.2	1.27	191	Existing	Existing
Tubing							

Drillers TD (ft) 2750' Loggers TD (ft) 2672'
Deepest formation penetrated Fifth Sand Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft)

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction
☐ neutron ☐ resistivity ☐ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ☐ Yes ■ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 033 - 05255 Farm name JUNKINS, EARL & BELVA Well number 210

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	9/29/09	2585'	2596'	44	Fifth Sand

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	3/24/15	10	2015	3418	1864	10,000	202	

Please insert additional pages as applicable.

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API 47- 033 - 05255 Farm name JUNKINS, EARL & BELVA Well number 210

PRODUCING FORMATION(S)	DEPTHS	
Fifth Sand	2581'- 2597' TVD	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ☐ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Sand/Shale	0	246	0		
Pittsburgh Coal	246	253			
Sand/Shale	253	1598			
Big Lime	1598	1690			
Big Injun	1690	1745			
Shale	1745	2168			
Fifty Foot	2168	2182			
Shale	2182	2260			
Sand	2260	2434			
Shale	2434	2581			
Fifth Sand	2581	2597			
Shale	2597	2750			
TD	2750				

Please insert additional pages as applicable.

Drilling Contractor _____
Address _____ City _____ State _____ Zip _____

Logging Company _____
Address _____ City Weston State _____ Zip _____

Cementing Company _____
Address _____ City _____ State _____ Zip _____

Stimulating Company Producers Service Corp.
Address 109 South Graham Street City Zanesville State OH Zip 43701
Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature _____ Title Operations Manager Date _____

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

Prepared for:

H G Energy

Dustin Hendershot

304-481-7342

PRODUCERS SERVICE CORP.

Prepared by:

Producers Service Corp

Daniel L Graham

109 S. Graham St.

Zanesville, OH 43702

740-454-6253

INVOICE #:	17985
WELL NAME:	HIRAM LYNCH #210
COUNTY/STATE:	WV/Harrison
TOWNSHIP/FIELD:	Wolf Summit
DATE of SERVICE:	3/24/2015
CUSTOMER PO#:	

Description	Notes	Amount	Units	Unit Cost	Total Cost
FLUID PUMP CHARGE 0-3000 PSI MIN CHARGE 4 HRS		1	EA		
BLENDER CHARGE 0-10 BPM		1	EA		
MILEAGE CHARGE PER UNIT ONE WAY	2 Units @70 Miles	70	MI		
IC ACID 15%		250	GAL		
PRO HIB II		0.5	GAL		
ACID DELIVERY		3	HR		
PRO CLA LOK (KCL SUBSTITUTE)		20	GAL		
PRO NE-21		10	GAL		
PRO GEL 4		250	LB		
BUFFER I		50	LB		
BUFFER II		50	LB		
BIO CLEAR 750		1	LB		
AP BREAKER		22	LB		
BXL-A		15	GAL		
BXL-10C		15	GAL		
SAND 20/40 OTTAWA		100	CWT		
SAND DELIVERY / TON MILES	5 Ton @ 70 Mile	350	TMILE		
DATA VAN		1	STAGE		
2 INCH FLOW METER		1	EA		

Customer Approval: _____

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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 033 - 05602 County Harrison District Tenmile
Quad Wolf Summit Pad Name Southern Pad Field/Pool Name
Farm name Southern, Edgar Well Number Cottrill Unit 3H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing	4,346,399.076m	Easting	544,925.656m
Landing Point of Curve	Northing	4,346,270.60m	Easting	545,110.59m
Bottom Hole	Northing	4,345,005.425m	Easting	545,506.898m

Elevation (ft) 1,175' GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other ___

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine ■Gas □ NGL □ Oil □ Other ___
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air □ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Air- Foam & 4% KCL
Mud- Polymer

Date permit issued 04/20/2012 Date drilling commenced 07/11/2012 Date drilling ceased 02/16/2013
Date completion activities began 03/13/2013 Date completion activities ceased 03/26/2013
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 202' Open mine(s) (Y/N) depths Y
Salt water depth(s) ft None Available Void(s) encountered (Y/N) depths Y, ~210-220'
Coal depth(s) ft 687' Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) Yes - Sycamore Creek Mine

Reviewed by:
A.L. 5/26/15
W.S. 06/01/15

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API 47- 033 - 05602 Farm name Southern, Edgar Well number Cottrill Unit 3H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30"	26"	70'	New	136#; J-55	N/A	Yes
Surface	17-1/2"	16"	210'	New	65#; H-40	N/A	Yes
Surface	14-3/4"	13-3/8"	440'	New	48#; J-55	N/A	Yes
Intermediate 1	12-1/4"	9-5/8"	2,477'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	11,789'	New	20#; P-110	N/A	Yes
Tubing		2-3/8"	7173'		4.7#, N-80	N/A	
Packer type and depth set		N/A					

Comment Details *Due to unanticipated void, Antero was unable to get surface casing beyond ~210' (GL) and unable to isolate the coal seam at ~210'-220' with cement.
Following proposal submitted to WVDEP on 8/29/12, cemented 16" casing with 1000 sx of Class A cement. Ran Bond Log, drilled out casing and cleaned wellbore to 463' (KB) to run 13-3/8" casing with 2 baskets above and below coal seam, centralizing every 3 joints to surface and cemented with no returns to surface. Notified Inspector, ran Bond Log and set Cement Retainer.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	163 sx	15.6	1.18	67	0'	8 Hrs.
Surface	Class A	1,000 sx	15.6	1.18	146	*See Comments	8 Hrs. +
Surface	Class A	222 sx	15.6	1.18	306	230'	8 Hrs. +
Intermediate 1	Class A	921 sx	15.6	1.18	776	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	963 sx (Lead); 602 sx (Tail)	13.5 (Lead); 15.2 (Tail)	1.44 (Lead); 1.8 (Tail)	2248	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 11,789' MD, 6,952' TVD (BHL); 7,033' TVD (Deepest Point Drilled) Loggers TD (ft) 11,746'
Deepest formation penetrated Marcellus Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 6,379'

Check all wireline logs run ** ■ caliper ■ density ■ deviated/directional □ induction ■ neutron □ resistivity ■ gamma ray ■ temperature □sonic

Well cored □ Yes ■ No Conventional Sidewall Were cuttings collected □ Yes ■ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Conductor- 0
Surface- 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
Surface- 1 above guide shoe, 1 above insert float, 1 every 3rd joint to surface
Intermediate- 1 above float joint, 1 above float collar, 1 every 4th joint to surface
Production- 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE □ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? □ Yes ■ No DETAILS

WERE TRACERS USED ■ Yes □ No TYPE OF TRACER(S) USED Radioactive & Chemical

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API 47- 033 - 05602 Farm name Southern, Edgar Well number Cottrill Unit 3H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

* PLEASE SEE ATTACHED EXHIBIT 1

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

* PLEASE SEE ATTACHED EXHIBIT 2

Please insert additional pages as applicable.

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API 47- 033 - 05602 Farm name Southern, Edgar Well number Cottrill Unit 3H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6965' (TOP) TVD	7196' (TOP) MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface 3,600 psi Bottom Hole 3,600 psi DURATION OF TEST ---------- hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	5,013 mcfpd	---------- bpd	---------- bpd	2,042 bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*** PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling, LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

Logging Company Rush Wellsite Serivces
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Allied Oil & Gas Services, LLC
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarsburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Ashlie Steele Telephone 303-357-7310
Signature Ashlie Steele Title Permitting Supervisor Date 04/07/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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API 47-033-05602 Farm Name Southern, Edgar Well Number Cottrill Unit 3H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	13-Mar-13	11,479	11,735	60	Marcellus
2	14-Mar-13	11,126	11,382	60	Marcellus
3	15-Mar-13	10,772	11,028	60	Marcellus
4	15-Mar-13	10,419	10,675	60	Marcellus
5	15-Mar-13	10,066	10,322	60	Marcellus
6	15-Mar-13	9,712	9,968	60	Marcellus
7	16-Mar-13	9,359	9,615	60	Marcellus
8	16-Mar-13	9,006	9,262	60	Marcellus
9	16-Mar-13	8,652	8,908	60	Marcellus
10	16-Mar-13	8,299	8,555	60	Marcellus
11	16-Mar-13	7,946	8,202	60	Marcellus
12	17-Mar-13	7,592	7,848	60	Marcellus
13	17-Mar-13	7,239	7,495	60	Marcellus

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API 47-033-05602 Farm Name Southern, Edgar Well Number Cottrill Unit 3H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	14-Mar-13	72.0	7,577	6,021	4,670	274,300	7,165	N/A
2	14-Mar-13	72.0	7,048	6,015	4,406	271,812	7,806	N/A
3	15-Mar-13	72.0	7,328	6,015	4,375	275,839	7,509	N/A
4	15-Mar-13	72.0	7,144	6,127	4,786	274,552	8,228	N/A
5	15-Mar-13	69.0	7,339	7,000	4,461	220,991	8,184	N/A
6	15-Mar-13	70.0	7,282	6,277	4,052	277,606	7,361	N/A
7	16-Mar-13	71.0	6,981	6,041	4,607	276,348	7,473	N/A
8	16-Mar-13	73.0	6,887	5,779	4,481	271,810	7,183	N/A
9	16-Mar-13	73.0	691	5,746	4,025	274,988	7,066	N/A
10	16-Mar-13	73.0	6,837	5,673	4,382	278,535	7,153	N/A
11	17-Mar-13	70.0	7,451	6,475	5,013	207,411	7,468	N/A
12	17-Mar-13	72.0	6,845	6,180	5,347	277,024	7,130	N/A
13	17-Mar-13	72.0	6,557	5,100	4,169	274,704	7,002	N/A
	AVG=	**72**	**6,613**	**6,035**	**4,521**	**3,455,920**	**96,728**	TOTAL

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API 47-017-05602 Farm Name Southern, Edgar Well Number Cottrill Unit 3H

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Fresh Water	202	N/A	202	N/A
Siltstone	0	17	0	17
Siltstone w/Trace Coal	est 17	267	est 17	267
Sand/Siltstone	est 267	687	est 267	687
Coal	est 687	747	est 687	747
Siltstone w/Trace Coal	est 747	867	est 747	867
Sandstone	est 867	927	est 867	927
Shale	est 927	1,207	est 927	1,207
Shale/ Siltstone	est 1207	1,417	est 1207	1,417
Shale	est 1417	1,523	est 1417	1,523
Big Lime	1,523	1,604	1,523	1,604
Big Injun	1,604	2,037	1,604	2,037
Gantz Sand	2,037	2,145	2,037	2,145
Fifty Foot Sandstone	2,145	2,253	2,145	2,253
Gordon	2,253	2,557	2,253	2,557
Fifth Sandstone	2,557	2,603	2,557	2,603
Bayard	2,603	2,979	2,603	2,979
Warren	2,979	3,248	2,979	3,249
Speechley	3,248	3,799	3,249	3,799
Baltown	3,799	4,131	3,799	4,131
Bradford	4,131	4,628	4,131	4,629
Benson	4,628	4,921	4,629	4,921
Alexander	4,921	5,116	4,921	5,117
Elk	5,116	5,802	5,117	5,803
Rhinestreet	5,802	6,343	5,803	6,344
Sycamore	6,343	6,573	6,344	6,588
Middlesex	6,573	6,761	6,588	6,830
Burkett	6,761	6,788	6,830	6,869
Tully	6,788	6,965	6,869	7,196
Marcellus	6,965	NA	7,196	NA

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ANTERO RESOURCES

Antero Resources
Cottrill Unit 3H
Harrison West Virginia
Northing: 14259106.85
Easting: 1787759.35
Sidetrack 1

WELL DETAILS: Cottrill Unit 3H

Ground Level: 1175.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14259106.85	1787759.35	39° 15' 56.572 N	80° 28' 45.912 W	

PROJECT DETAILS: Harrison West Virginia

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level

REFERENCE INFORMATION

Coordinate (N/E) Reference: Well Cottrill Unit 3H, Grid North
Vertical (TVD) Reference: Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Calculation Method: Minimum Curvature

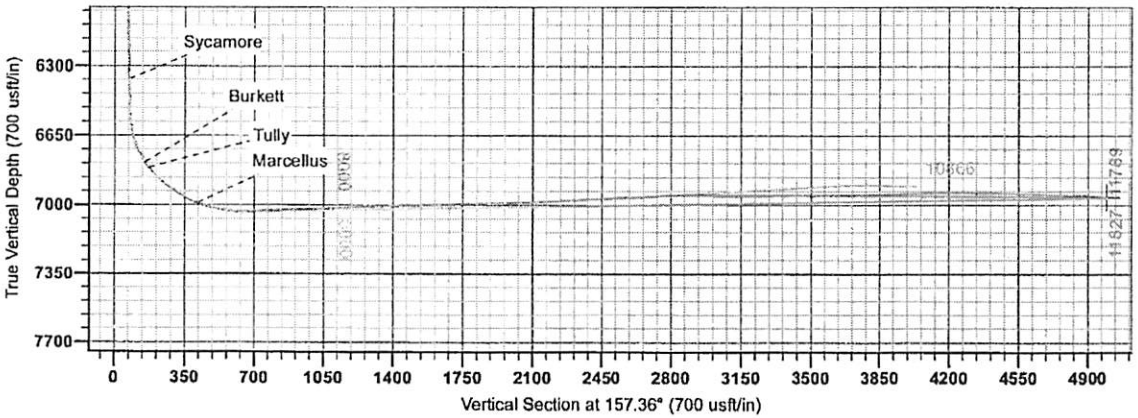
LEGEND

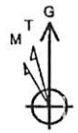
- Cottrill Unit 1HR, Original Wellpath, Original Wellpath V0
- Cottrill Unit 3H, Original Wellpath, Original Wellpath V0
- Cottrill Unit 3H, Original Wellpath, Plan 5 V0
- Cottrill Unit 3H, Sidetrack 1, Plan 1 ST 1 V0
- Sidetrack 1

Genie Lightfoot
16:30, February 22 2013

Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK

Scientific Drilling

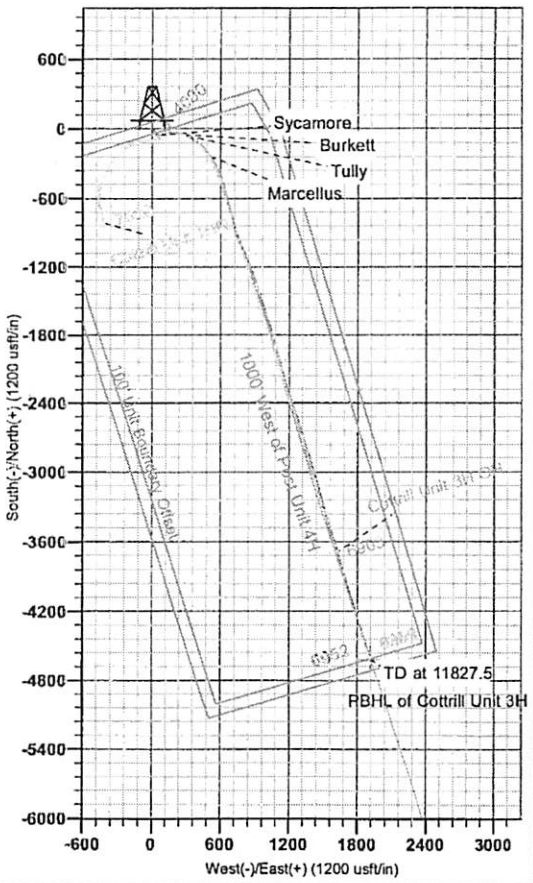




To convert Magnetic North to Grid North, Subtract 8.96°
To convert True North to Grid North, Subtract 0.33°

Azimuths to Grid North
True North: -0.33°
Magnetic North: -8.96°

Magnetic Field
Strength: 52412.1snT
Dip Angle: 66.88°
Date: 2/6/2013
Model: IGRF2010



Antero Resources

Harrison West Virginia
Cottrill Pad
Cottrill Unit 3H
Sidetrack 1

Design: Sidetrack 1

EOW Completion Report

22 February, 2013

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Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cottrill Unit 3H
Project:	Harrison West Virginia	**TVD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Site:	Cottrill Pad	**MD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Well:	Cottrill Unit 3H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack 1	**Database:**	Oklahoma District Db

Project Harrison West Virginia, Harrison County, USA

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Cottrill Pad

Site Position:		**Northing:**	14,259,106.85usft	**Latitude:**	39° 15' 56.572 N
From:	Map	**Easting:**	1,787,759.35usft	**Longitude:**	80° 28' 45.912 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.33 °

Well Cottrill Unit 3H, Marcellus

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,259,106.85 usft	**Latitude:**	39° 15' 56.572 N
	+E/-W	0.0 usft	**Easting:**	1,787,759.35 usft	**Longitude:**	80° 28' 45.912 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,198.0 usft	**Ground Level:**	1,175.0usft

Wellbore Sidetrack 1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	2/6/2013	-8.63	66.88	52,412

Design Sidetrack 1

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	9,631.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	157.36

Survey Program **Date** 2/22/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
110.0	6,273.0	Survey #1 Def Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,280.0	9,631.0	Survey #2 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1
9,664.0	11,789.0	Survey #1 MWD (Sidetrack 1)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey

MD (usft)	**Inc (°)**	**Azi (azimuth) (°)**	**TVD (usft)**	**N/S (usft)**	**E/W (usft)**	**V. Sec (usft)**	**DLeg (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
110.0	0.08	9.99	110.0	0.1	0.0	-0.1	0.07
210.0	0.22	357.48	210.0	0.3	0.0	-0.3	0.14
310.0	0.07	22.01	310.0	0.6	0.0	-0.5	0.16
410.0	0.19	157.88	410.0	0.5	0.1	-0.4	0.25
510.0	0.07	60.40	510.0	0.4	0.2	-0.2	0.21
610.0	0.20	146.47	610.0	0.2	0.4	-0.1	0.21
710.0	0.29	159.42	710.0	-0.1	0.6	0.3	0.11
810.0	0.40	138.21	810.0	-0.6	0.9	0.9	0.17
910.0	0.58	130.81	910.0	-1.2	1.5	1.7	0.19

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cottrill Unit 3H
Project:	Harrison West Virginia	**TVD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Site:	Cottrill Pad	**MD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Well:	Cottrill Unit 3H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack 1	**Database:**	Oklahoma District Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,010.0	0.52	116.26	1,010.0	-1.8	2.3	2.5	0.15
1,110.0	0.38	97.62	1,110.0	-2.0	3.0	3.0	0.20
1,210.0	0.37	135.08	1,210.0	-2.3	3.6	3.5	0.24
1,310.0	0.60	149.91	1,310.0	-3.0	4.1	4.3	0.26
1,410.0	0.34	132.71	1,410.0	-3.6	4.6	5.1	0.29
1,510.0	0.61	130.90	1,510.0	-4.2	5.2	5.8	0.27
1,610.0	0.35	48.35	1,610.0	-4.3	5.8	6.2	0.66
1,710.0	0.33	133.66	1,710.0	-4.3	6.2	6.4	0.46
1,810.0	0.36	129.95	1,810.0	-4.7	6.7	6.9	0.04
1,910.0	0.10	283.91	1,910.0	-4.9	6.9	7.1	0.45
2,010.0	0.31	180.32	2,010.0	-5.1	6.8	7.3	0.35
2,110.0	0.01	307.62	2,110.0	-5.4	6.8	7.6	0.32
2,210.0	0.37	183.40	2,210.0	-5.7	6.7	7.9	0.38
2,310.0	0.22	8.97	2,310.0	-5.8	6.7	8.0	0.59
2,410.0	0.22	234.28	2,410.0	-5.8	6.6	7.9	0.41
2,510.0	0.32	59.35	2,510.0	-5.7	6.7	7.9	0.54
2,610.0	0.38	91.98	2,610.0	-5.6	7.3	8.0	0.20
2,710.0	0.41	110.34	2,710.0	-5.7	7.9	8.4	0.13
2,810.0	0.82	137.02	2,810.0	-6.4	8.8	9.3	0.49
2,910.0	0.66	157.88	2,909.9	-7.4	9.5	10.5	0.31
3,010.0	0.78	119.52	3,009.9	-8.3	10.3	11.6	0.49
3,110.0	0.91	140.56	3,109.9	-9.3	11.4	12.9	0.33
3,210.0	0.68	155.31	3,209.9	-10.4	12.1	14.3	0.31
3,310.0	0.94	130.14	3,309.9	-11.5	13.0	15.6	0.43
3,410.0	0.63	132.46	3,409.9	-12.4	14.0	16.8	0.31
3,510.0	0.81	140.21	3,509.9	-13.3	14.9	18.0	0.20
3,610.0	0.73	128.89	3,609.9	-14.2	15.8	19.2	0.17
3,710.0	0.94	140.06	3,709.9	-15.3	16.9	20.6	0.26
3,810.0	0.96	144.29	3,809.9	-16.6	17.9	22.2	0.07
3,910.0	1.03	129.61	3,909.8	-17.8	19.1	23.8	0.26
4,010.0	0.90	141.07	4,009.8	-19.0	20.2	25.3	0.23
4,110.0	1.12	150.87	4,109.8	-20.5	21.2	27.1	0.28
4,210.0	1.05	139.98	4,209.8	-22.0	22.3	28.9	0.22
4,310.0	1.28	130.00	4,309.8	-23.5	23.7	30.8	0.31
4,410.0	1.30	126.63	4,409.7	-24.9	25.5	32.7	0.08
4,510.0	1.40	140.55	4,509.7	-26.5	27.2	34.9	0.34
4,610.0	1.34	126.80	4,609.7	-28.1	28.9	37.1	0.33
4,710.0	1.58	133.93	4,709.7	-29.8	30.8	39.3	0.30
4,810.0	1.64	132.74	4,809.6	-31.7	32.9	41.9	0.07
4,910.0	1.61	137.51	4,909.6	-33.7	34.9	44.5	0.14
5,010.0	1.34	139.32	5,009.5	-35.6	36.6	47.0	0.27
5,110.0	1.29	134.02	5,109.5	-37.3	38.1	49.1	0.13
5,210.0	1.52	131.76	5,209.5	-39.0	39.9	51.3	0.24
5,310.0	1.49	132.28	5,309.5	-40.7	41.9	53.7	0.03
5,410.0	1.52	130.31	5,409.4	-42.5	43.9	56.1	0.06

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cottrill Unit 3H
Project:	Harrison West Virginia	**TVD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Site:	Cottrill Pad	**MD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Well:	Cottrill Unit 3H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack 1	**Database:**	Oklahoma District Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,510.0	1.56	120.91	5,509.4	-44.0	46.0	58.3	0.26
5,610.0	1.48	131.69	5,609.4	-45.6	48.2	60.6	0.30
5,710.0	1.27	121.45	5,709.3	-47.0	50.1	62.7	0.32
5,810.0	1.07	125.22	5,809.3	-48.1	51.8	64.4	0.21
5,910.0	1.12	130.45	5,909.3	-49.3	53.3	66.0	0.11
6,010.0	1.22	129.65	6,009.3	-50.6	54.9	67.8	0.10
6,110.0	1.24	124.73	6,109.2	-51.9	56.6	69.7	0.11
6,210.0	1.13	122.26	6,209.2	-53.0	58.3	71.4	0.12
6,273.0	1.07	126.24	6,272.2	-53.7	59.3	72.4	0.15
6,283.0	1.04	122.34	6,282.2	-53.8	59.4	72.6	0.78
6,315.0	0.94	131.08	6,314.2	-54.2	59.9	73.0	0.57
6,347.0	1.32	114.00	6,346.2	-54.5	60.4	73.5	1.57
6,379.0	4.47	83.67	6,378.1	-54.5	62.0	74.2	10.61
6,410.0	9.23	75.77	6,408.9	-53.7	65.6	74.9	15.62
6,441.0	13.63	69.53	6,439.3	-51.9	71.5	75.4	14.72
6,472.0	17.30	70.09	6,469.2	-49.0	79.2	75.7	11.85
6,504.0	20.53	71.72	6,499.4	-45.6	89.0	76.4	10.23
6,535.0	23.11	74.06	6,528.2	-42.3	100.0	77.5	8.78
6,567.0	25.42	78.03	6,557.4	-39.1	112.8	79.5	8.83
6,599.0	28.20	82.29	6,586.0	-36.7	127.0	82.7	10.56
6,631.0	31.24	84.27	6,613.7	-34.8	142.8	87.1	9.98
6,663.0	34.59	84.87	6,640.6	-33.2	160.1	92.2	10.52
6,694.0	37.09	86.30	6,665.7	-31.8	178.2	97.9	8.50
6,726.0	40.17	90.56	6,690.7	-31.3	198.1	105.1	12.71
6,758.0	42.18	96.81	6,714.8	-32.6	219.1	114.5	14.30
6,790.0	42.84	102.83	6,738.4	-36.3	240.4	126.1	12.87
6,821.0	43.83	107.18	6,761.0	-41.8	260.9	139.1	10.14
6,853.0	44.65	108.85	6,783.9	-48.8	282.2	153.6	4.45
6,885.0	45.82	112.05	6,806.4	-56.7	303.4	169.1	7.99
6,916.0	47.88	116.42	6,827.6	-66.0	324.1	185.6	12.24
6,947.0	50.24	120.45	6,848.0	-77.1	344.6	203.9	12.42
6,979.0	52.17	123.41	6,868.0	-90.3	365.8	224.2	9.40
7,011.0	54.31	124.52	6,887.2	-104.7	387.0	245.6	7.24
7,043.0	56.84	129.81	6,905.3	-120.6	408.1	268.4	15.76
7,074.0	58.30	135.01	6,921.9	-138.3	427.4	292.1	14.92
7,106.0	59.36	138.09	6,938.5	-158.1	446.2	317.7	8.88
7,137.0	60.64	138.88	6,954.0	-178.2	464.0	343.1	4.68
7,169.0	63.78	140.62	6,968.9	-199.8	482.3	370.1	10.93
7,200.0	67.72	142.50	6,981.6	-222.0	499.8	397.3	13.86
7,232.0	70.91	145.51	6,992.9	-246.2	517.4	426.4	13.30
7,263.0	72.70	146.89	7,002.6	-270.7	533.8	455.3	7.16
7,295.0	75.00	149.10	7,011.5	-296.7	550.1	485.6	9.78
7,327.0	78.03	153.18	7,019.0	-324.0	565.1	516.5	15.60
7,359.0	81.18	156.29	7,024.7	-352.4	578.5	548.0	13.72

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cottrill Unit 3H
Project:	Harrison West Virginia	**TVD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Site:	Cottrill Pad	**MD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Well:	Cottrill Unit 3H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack 1	**Database:**	Oklahoma District Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,391.0	83.31	158.42	7,029.0	-381.7	590.7	579.7	9.37
7,422.0	86.44	160.32	7,031.8	-410.6	601.6	610.5	11.80
7,447.0	89.97	162.01	7,032.6	-434.2	609.6	635.4	15.65
7,541.0	92.65	164.62	7,030.4	-524.2	636.6	728.9	3.98
7,637.0	92.79	166.73	7,025.9	-617.1	660.3	823.8	2.20
7,732.0	91.74	165.12	7,022.1	-709.2	683.4	917.6	2.02
7,828.0	91.11	165.86	7,019.8	-802.1	707.5	1,012.6	1.01
7,922.0	92.99	164.58	7,016.4	-893.0	731.4	1,105.7	2.42
8,018.0	91.91	156.69	7,012.3	-983.4	763.2	1,201.4	8.29
8,113.0	92.15	155.83	7,008.9	-1,070.3	801.4	1,296.3	0.94
8,209.0	92.92	157.74	7,004.7	-1,158.4	839.2	1,392.2	2.14
8,301.0	90.64	158.42	7,001.8	-1,243.7	873.6	1,484.1	2.59
8,396.0	90.74	161.20	7,000.7	-1,332.9	906.4	1,579.0	2.93
8,491.0	92.89	163.98	6,997.7	-1,423.4	934.8	1,673.6	3.70
8,586.0	92.82	163.10	6,992.9	-1,514.4	961.6	1,767.9	0.93
8,682.0	90.71	161.98	6,990.0	-1,606.0	990.4	1,863.5	2.49
8,777.0	90.27	160.46	6,989.2	-1,695.9	1,021.0	1,958.2	1.67
8,872.0	92.05	163.90	6,987.2	-1,786.3	1,050.1	2,052.9	4.08
8,967.0	93.39	165.33	6,982.7	-1,877.8	1,075.3	2,147.0	2.06
9,063.0	93.06	165.09	6,977.3	-1,970.5	1,099.7	2,241.9	0.42
9,157.0	93.39	164.39	6,972.0	-2,061.0	1,124.4	2,335.0	0.82
9,251.0	93.29	164.51	6,966.6	-2,151.4	1,149.6	2,428.1	0.17
9,346.0	91.36	162.26	6,962.7	-2,242.4	1,176.7	2,522.5	3.12
9,441.0	92.35	161.77	6,959.6	-2,332.7	1,206.0	2,617.2	1.16
9,536.0	92.99	161.45	6,955.2	-2,422.7	1,236.0	2,711.8	0.75
9,631.0	93.66	161.08	6,949.7	-2,512.5	1,266.4	2,806.4	0.81
9,664.0	89.80	161.90	6,948.7	-2,543.8	1,276.9	2,839.3	11.96
9,695.0	88.46	162.21	6,949.2	-2,573.3	1,286.5	2,870.2	4.44
9,727.0	88.12	162.40	6,950.1	-2,603.8	1,296.2	2,902.1	1.22
9,822.0	88.89	162.49	6,952.6	-2,694.3	1,324.8	2,996.7	0.82
9,917.0	88.83	161.88	6,954.5	-2,784.7	1,353.9	3,091.3	0.65
10,011.0	90.84	162.99	6,954.8	-2,874.3	1,382.2	3,184.9	2.44
10,105.0	92.25	163.85	6,952.2	-2,964.4	1,409.1	3,278.4	1.76
10,200.0	89.66	164.41	6,950.6	-3,055.8	1,435.0	3,372.7	2.79
10,295.0	91.51	164.15	6,949.7	-3,147.2	1,460.8	3,467.0	1.97
10,391.0	90.91	165.12	6,947.6	-3,239.7	1,486.2	3,562.2	1.19
10,485.0	89.63	162.67	6,947.2	-3,330.0	1,512.3	3,655.6	2.94
10,581.0	91.48	162.90	6,946.3	-3,421.7	1,540.7	3,751.1	1.94
10,676.0	91.38	162.54	6,943.9	-3,512.4	1,568.9	3,845.7	0.39
10,772.0	91.11	162.99	6,941.8	-3,604.1	1,597.3	3,941.2	0.55
10,866.0	92.35	162.31	6,939.0	-3,693.8	1,625.3	4,034.8	1.50
10,962.0	91.85	163.44	6,935.5	-3,785.4	1,653.6	4,130.3	1.29
11,056.0	89.50	163.11	6,934.4	-3,875.5	1,680.6	4,223.8	2.52
11,151.0	88.32	163.12	6,936.2	-3,966.3	1,708.2	4,318.3	1.24

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cottrill Unit 3H
Project:	Harrison West Virginia	**TVD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Site:	Cottrill Pad	**MD Reference:**	Cottrill Unit 3H 1175 GL + 23 KB @ 1198.0usft
Well:	Cottrill Unit 3H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack 1	**Database:**	Oklahoma District Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,246.0	89.09	162.26	6,938.3	-4,057.0	1,736.5	4,412.8	1.21
11,340.0	89.73	162.26	6,939.3	-4,146.5	1,765.1	4,506.5	0.68
11,435.0	87.69	161.62	6,941.4	-4,236.8	1,794.6	4,601.2	2.25
11,529.0	87.82	162.03	6,945.1	-4,326.1	1,823.9	4,694.8	0.46
11,622.0	87.95	161.07	6,948.5	-4,414.2	1,853.3	4,787.5	1.04
11,716.0	88.93	161.25	6,951.1	-4,503.2	1,883.6	4,881.2	1.06
11,740.0	89.23	161.06	6,951.5	-4,525.9	1,891.4	4,905.2	1.48
11,789.0	89.43	161.85	6,952.0	-4,572.3	1,907.0	4,954.1	1.66

PBHL of Cottrill Unit 3H

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/14/2013
Job End Date:	3/17/2013
State:	West Virginia
County:	Harrison
API Number:	47-033-05602-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Cottrill Unit 3H
Longitude:	-80.47941940
Latitude:	39.26571390
Datum:	NAD27
Federal/Tribal Well:	NO
Total Base Water Volume (gal):	4,055,898
Total Base Non Water Volume:	170,765

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

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Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Operator	Carrier					
			Water	7732-18-5	100.00000	90.36293	
Sand, White, 40/70	Baker Hughes	Proppant					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	4.83317	
Sand, White, 20/40	Baker Hughes	Proppant					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	3.11641	
Sand, White, 100 mesh	Baker Hughes	Proppant					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	1.28579	
HCl, 10.1 - 15%	Baker Hughes	Acidizing					
			Water	7732-18-5	85.00000	0.15370	
			Hydrochloric Acid	7647-01-0	15.00000	0.02712	
GW-3LDF	Baker Hughes	Gelling Agent					
			Guar Gum	9000-30-0	60.00000	0.04503	SmartCare Product
			Petroleum Distillates	64742-47-8	30.00000	0.02252	SmartCare Product
			Paraffinic Petroleum Distillate	64742-55-8	30.00000	0.02252	SmartCare Product
			Cyrstalline Silica, Quartz (SiO2)	14808-60-7	5.00000	0.00375	SmartCare Product
			1-Butoxy-2-Propanol	5131-66-8	5.00000	0.00375	SmartCare Product
			Isotridecanol, ethoxylated	9043-30-5	5.00000	0.00375	SmartCare Product
FRW-18	Baker Hughes	Friction Reducer					
			Petroleum Distillates	64742-47-8	30.00000	0.01578	SmartCare Product

Enzyme G-NE	Baker Hughes	Breaker					
			Water	7732-18-5	95.00000	0.01196	
			Hemicellulase Enzyme Concentrate	9025-56-3	5.00000	0.00063	
Alpha 1427	Baker Hughes	Biocide					
			Glutaraldehyde	111-30-8	30.00000	0.00673	SmartCare Product
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	10.00000	0.00224	SmartCare Product
			Ethanol	64-17-5	5.00000	0.00112	SmartCare Product
			Quaternary Ammonium Compound	68424-85-1	5.00000	0.00112	SmartCare Product
Scaletrol 720	Baker Hughes	Scale Inhibitor					
			Ethylene Glycol	107-21-1	30.00000	0.00469	
			Calcium Chloride	10043-52-4	5.00000	0.00078	
Ferrotrol 300L	Baker Hughes	Iron Control					
			Citric Acid	77-92-9	60.00000	0.00071	SmartCare Product
CI-14	Baker Hughes	Corrosion Inhibitor					
			Polyoxyalkylenes	Trade Secret	30.00000	0.00008	
			Fatty Acids	Trade Secret	10.00000	0.00003	
			Propargyl Alcohol	107-19-7	5.00000	0.00001	
			Olefin	Trade Secret	5.00000	0.00001	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS							
		Other Chemicals					
			Water	7732-18-5		0.04806	
			Poly (acrylamide-co-acrylic acid)	Trade Secret		0.01578	
			Polyacrylate	Trade Secret		0.00313	
			Salt	Trade Secret		0.00263	
			Sorbitan Monooleate	Trade Secret		0.00263	
			Ethoxylated Alcohol	Trade Secret		0.00105	
			Methanol	67-56-1		0.00027	
			2-Butoxy-1-Propanol	15821-83-7		0.00006	
			Modified Thiorea Polymer	68527-49-1		0.00002	
			Potassium Chloride	7447-40-7		0.00001	
			Sodium Chloride	7647-14-5		0.00000	
			Hydrochloric Acid	7647-01-0		0.00000	
			Formaldehyde	50-00-0		0.00000	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only Information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 033 - 05698 County Harrison District Tenmile
Quad Salem Pad Name Hubert Pad Field/Pool Name
Farm name Bland, Hubert Jr. and Lorena Well Number Ruth Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing	4,345,008.146m	Easting	537,940.485m
Landing Point of Curve	Northing	4,344,463.28m	Easting	537,778.56m
Bottom Hole	Northing	4,342,891.654m	Easting	539,554.563m

Elevation (ft) 1376' GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine ■Gas □ NGL □ Oil □ Other
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air □ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine

Mud Type(s) and Additive(s)
Air - Foam & 4% KCL
Mud - Polymer

Date permit issued 12/19/2012 Date drilling commenced 5/11/2013 Date drilling ceased 6/24/2013
Date completion activities began 10/6/2013 Date completion activities ceased 12/31/2013
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 367' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1760' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
AL 5/26/15 ✓
W.S. 6/02/15

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CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30"	20"	40'	New	94#/H-40	N/A	Y
Surface	17-1/2"	13-3/8"	476'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2583'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15,936'	New	20#/P-110	N/A	Y
Tubing		2-3/8"	7869'	New	4.7#/N-80	N/A	N/A
Packer type and depth set		N/A					

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	200 sx	15.6	1.18	38 Cu. Ft.	0'	8 hrs
Surface	Class A	226 sx	15.6	1.18	311 Cu. Ft.	0'	8 hrs
Coal							
Intermediate 1	Class A	951 sx	15.6	1.18	809 Cu. Ft.	0'	8 hrs
Intermediate 2							
Intermediate 3							
Production	Class H	1103 sx (Lead), 1245 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.60 (Tail)	3174 Cu. Ft.	~500' into Intermediate Casing	8 hrs
Tubing							

Drillers TD (ft) 15,954' MD, 7386' TVD (BHL), 7472' TVD (Deepest Point Drilled) Loggers TD (ft) 15,954' MD
Deepest formation penetrated Marcellus Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 7320'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Nellie Unit 2H API# 47-033-05687). Please reference the wireline logs submitted with Form WR-35 for the Nellie Unit 2H. A Cement Bond Log has been included with this submittal.

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction ☐ neutron ☐ resistivity ☐ gamma ray ☐ temperature

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ☐ Yes ■ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING
Conductor - 0
Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface
Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

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WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ■ Yes ☐ No TYPE OF TRACER(S) USED Radioactive & Chemical

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API 47- 033 - 05698 Farm name Bland, Hubert Jr. and Lorena Well number Ruth Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*PLEASE SEE ATTACHED EXHIBIT 1

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

*PLEASE SEE ATTACHED EXHIBIT 2

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API 47- 033 - 05698 Farm name Bland, Hubert Jr. and Lorena Well number Ruth Unit 2H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	7425' (Top)	TVD	7953' (Top)	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole ---- psi DURATION OF TEST --- hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3804 mcfpd	---- bpd	---- bpd	---- bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*PLEASE SEE ATTACHED EXHIBIT 3

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Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company, LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Allied Oil & Gas Services, LLC
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Natalie Komp Telephone 303-357-6820
Signature Natalie Komp Title Permitting Agent Date 4/23/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-033-05698 Farm Name Bland, Hubert Jr. and Lorena Well Number Ruth Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6-Oct-13	15711'	15882'	60	Marcellus
2	11-Oct-13	15508 '	15679'	60	Marcellus
3	11-Oct-13	15305 '	15476'	60	Marcellus
4	11-Oct-13	15102'	15273'	60	Marcellus
5	12-Oct-13	14899'	15070'	60	Marcellus
6	12-Oct-13	14696'	14867'	60	Marcellus
7	12-Oct-13	14493'	14664'	60	Marcellus
8	12-Oct-13	14290'	14461'	60	Marcellus
9	13-Oct-13	14087'	14258'	60	Marcellus
10	13-Oct-13	13884'	14055'	60	Marcellus
11	13-Oct-13	13681'	13852'	60	Marcellus
12	13-Oct-13	13478'	13649'	60	Marcellus
13	13-Oct-13	13275'	13446'	60	Marcellus
14	14-Oct-13	13072'	13243'	60	Marcellus
15	14-Oct-13	12869'	13040'	60	Marcellus
16	14-Oct-13	12666'	12837'	60	Marcellus
17	14-Oct-13	12463'	12634'	60	Marcellus
18	14-Oct-13	12260'	12431'	60	Marcellus
19	15-Oct-13	12057'	12228'	60	Marcellus
20	15-Oct-13	11854'	12025'	60	Marcellus
21	16-Oct-13	11651'	11822'	60	Marcellus
22	16-Oct-13	11448'	11619'	60	Marcellus
23	16-Oct-13	11245'	11416'	60	Marcellus
24	16-Oct-13	11042'	11213'	60	Marcellus
25	16-Oct-13	10839'	11010'	60	Marcellus
26	17-Oct-13	10636'	10807'	60	Marcellus
27	17-Oct-13	10433'	10604'	60	Marcellus
28	17-Oct-13	10230'	10401'	60	Marcellus
29	17-Oct-13	10027'	10198'	60	Marcellus
30	17-Oct-13	9824'	9995'	60	Marcellus
31	18-Oct-13	9621'	9792'	60	Marcellus
32	18-Oct-13	9418'	9589'	60	Marcellus
33	18-Oct-13	9215'	9386'	60	Marcellus
34	18-Oct-13	9011'	9183'	60	Marcellus
35	18-Oct-13	8808'	8980'	60	Marcellus
36	19-Oct-13	8605'	8777'	60	Marcellus
37	19-Oct-13	8402'	8574'	60	Marcellus
38	19-Oct-13	8199'	8371'	60	Marcellus
39	20-Oct-13	7996'	8168'	60	Marcellus

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WV Department of Environmental Protection

API 47-033-05698 Farm Name Bland, Hubert Jr. and Lorena Well Number Ruth Unit 2H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	10-Oct-13	61.4	8,206	7,818	3,208	167,400	6,748	N/A
2	11-Oct-13	63.8	7,875	6,908	2,988	175,100	6,525	N/A
3	11-Oct-13	77.8	8,085	6,515	3,378	240,100	5,871	N/A
4	11-Oct-13	75.7	8,196	6,507	3,257	230,400	6,081	N/A
5	12-Oct-13	73.0	7,739	6,881	3,062	239,800	6,502	N/A
6	12-Oct-13	75.7	8,053	6,262	3,252	235,800	5,708	N/A
7	12-Oct-13	72.0	7,943	6,178	3,228	210,200	6,067	N/A
8	12-Oct-13	74.0	8,011	6,478	3,356	230,600	6,035	N/A
9	13-Oct-13	75.0	7,999	6,637	3,464	232,400	6,155	N/A
10	13-Oct-13	72.1	8,195	6,130	3,105	234,800	5,679	N/A
11	13-Oct-13	76.1	7,862	7,007	3,245	234,300	6,220	N/A
12	13-Oct-13	74.5	8,019	6,144	3,266	99,300	5,942	N/A
13	13-Oct-13	75.5	7,838	6,449	3,303	230,900	5,965	N/A
14	14-Oct-13	77.7	7,915	6,318	3,230	238,600	6,084	N/A
15	14-Oct-13	79.3	8,062	5,720	3,362	232,100	5,439	N/A
16	14-Oct-13	79.7	7,956	6,021	3,545	17,311	6,442	N/A
17	14-Oct-13	73.3	7,852	6,413	3,582	178,200	6,532	N/A
18	14-Oct-13	71.3	7,846	6,555	3,906	180,200	6,524	N/A
19	15-Oct-13	75.6	7,715	5,246	3,581	228,500	5,833	N/A
20	15-Oct-13	78.2	7,342	5,554	3,659	230,800	5,927	N/A
21	16-Oct-13	78.4	7,322	5,627	3,552	233,200	5,966	N/A
22	16-Oct-13	81.2	7,568	5,552	3,303	232,600	5,947	N/A
23	16-Oct-13	80.2	7,514	5,641	3,552	230,800	5,905	N/A
24	16-Oct-13	77.6	7,663	5,583	3,602	232,900	5,694	N/A
25	16-Oct-13	76.9	7,805	5,834	3,536	213,000	5,548	N/A
26	17-Oct-13	80.6	7,678	5,664	3,354	234,700	5,837	N/A
27	17-Oct-13	80.8	7,542	5,874	3,472	235,600	5,813	N/A
28	17-Oct-13	78.3	7,670	5,924	3,494	231,300	5,825	N/A
29	17-Oct-13	78.8	7,454	5,713	3,510	230,300	5,706	N/A
30	17-Oct-13	77.7	7,541	4,845	3,342	230,900	5,676	N/A
31	18-Oct-13	73.2	7,558	5,817	3,527	232,400	5,855	N/A
32	18-Oct-13	72.5	7,186	5,055	3,578	232,700	5,805	N/A
33	18-Oct-13	76.6	7,506	6,002	3,062	232,900	5,771	N/A
34	18-Oct-13	76.3	7,621	5,975	3,203	138,800	5,903	N/A
35	18-Oct-13	76.6	7,112	4,945	3,484	227,000	5,656	N/A
36	19-Oct-13	76.3	7,793	6,013	3,267	125,900	6,035	N/A
37	19-Oct-13	62.0	7,714	6,412	3,246	111,800	6,207	N/A
38	19-Oct-13	82.0	7,333	5,729	3,391	240,000	5,832	N/A
39	20-Oct-13	79.3	7,636	5,934	3,192	161,200	6,106	N/A
AVG=		75.7	7,816	6,133	3,390	6,372,111	180,196	TOTAL

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API 47-033-05698 Farm Name Hubert Jr. & Lorena Bland Well Number Ruth Unit 2H

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Freshwater	367'	NA	NA	NA
Siltstone	0	97	0	97
Sandy Shale	97	317	97	317
Sandstone	317	507	317	507
Silty Sandstone	507	657	507	657
Sandstone	657	1027	657	1027
Limestone/Dolomite	1,027	1,117	1,027	1,117
Siltstone	1,117	1,297	1,117	1,297
Sandstone	1,297	1,327	1,297	1,327
Limey Siltstone	1,327	1,477	1,327	1,477
Sandstone	1,477	1,597	1,477	1,597
Sandy Siltstone	1,597	1,737	1,597	1,737
Coal	1,737	1757	1,737	1757
Sandstone	1,757	1797	1,757	1797
Siltstone	1,797	1817	1,797	1817
Sandstone	1,817	2097	1,817	2097
Limey Shale	2,097	2280	2,097	2280
Big Lime	2,280	2,470	2,280	2,470
Big Injun	2,470	2,757	2,470	2,757
Gantz Sand	2,757	2,843	2,757	2,843
Fifty Foot Sandstone	2,843	2,966	2,843	2,966
Gordon	2,966	3,294	2,966	3,294
Fifth Sandstone	3,294	3,324	3,294	3,324
Bayard	3,324	3,667	3,324	3,668
Warren	3,667	3,887	3,668	3,891
Speechley	3,887	4,422	3,891	4,458
Baltown	4,422	4,743	4,458	4,811
Bradford	4,743	5,264	4,811	5,389
Benson	5,264	5,539	5,389	5,698
Alexander	5,539	5,753	5,698	5,939
Elk	5,753	6,392	5,939	6,647
Rhinestreet	6,392	6,875	6,647	7,184
Sycamore	6,875	7,103	7,184	7,446
Middlesex	7,103	7,247	7,446	7,615
Burkett	7,247	7,275	7,615	7,650
Tully	7,275	7,425	7,650	7,953
Marcellus	7,425	NA	7,953	NA

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Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

April 24, 2015

West Virginia Department of Environmental Protection
Office of Oil and Gas
Attn: Justin Nottingham
601 57th Street
Charleston, WV 25304

Mr. Nottingham:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report), Discharge Monitoring Report Form WR-34 and corresponding logs for the following wells:

I pulled these.
K

- Rufus Unit 1H (API# 47-085-10046) – Ness Pad
- Deberry Unit 1H (API# 47-085-09999) – Ness Pad
- Ireland Unit 1H (API# 47-085-10005) – Ness Pad
- Norris Unit 1H (API# 47-033-05699) – Hubert Pad
- Norris Unit 2H (API# 47-033-05701) – Hubert Pad
- Ruth Unit 2H (API# 47-033-05698) – Hubert Pad

If you have any questions please feel free to contact me at (303) 357-6820.

Sincerely,

Natalie Komp
Permitting Agent
Antero Resources Corporation

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Enclosures

Antero Resources
Ruth Unit 2H
Harrison County West Virginia
Northing: 14254530.66
Easting: 1764845.07
As Drilled

WELL DETAILS: Ruth Unit 2H

Ground Level: 1376.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14254530.66	1764845.07	39° 15' 12.526 N	80° 33' 37.638 W	

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Ruth Unit 2H, Grid North
Vertical (TVD) Reference: Ruth 2H 1376.0L + 24 KB @ 1400.0usft (Original Well Elev)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Ruth 2H 1376.0L + 24 KB @ 1400.0usft (Original Well Elev)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Harrison County West Virginia

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level

Scientific Drilling

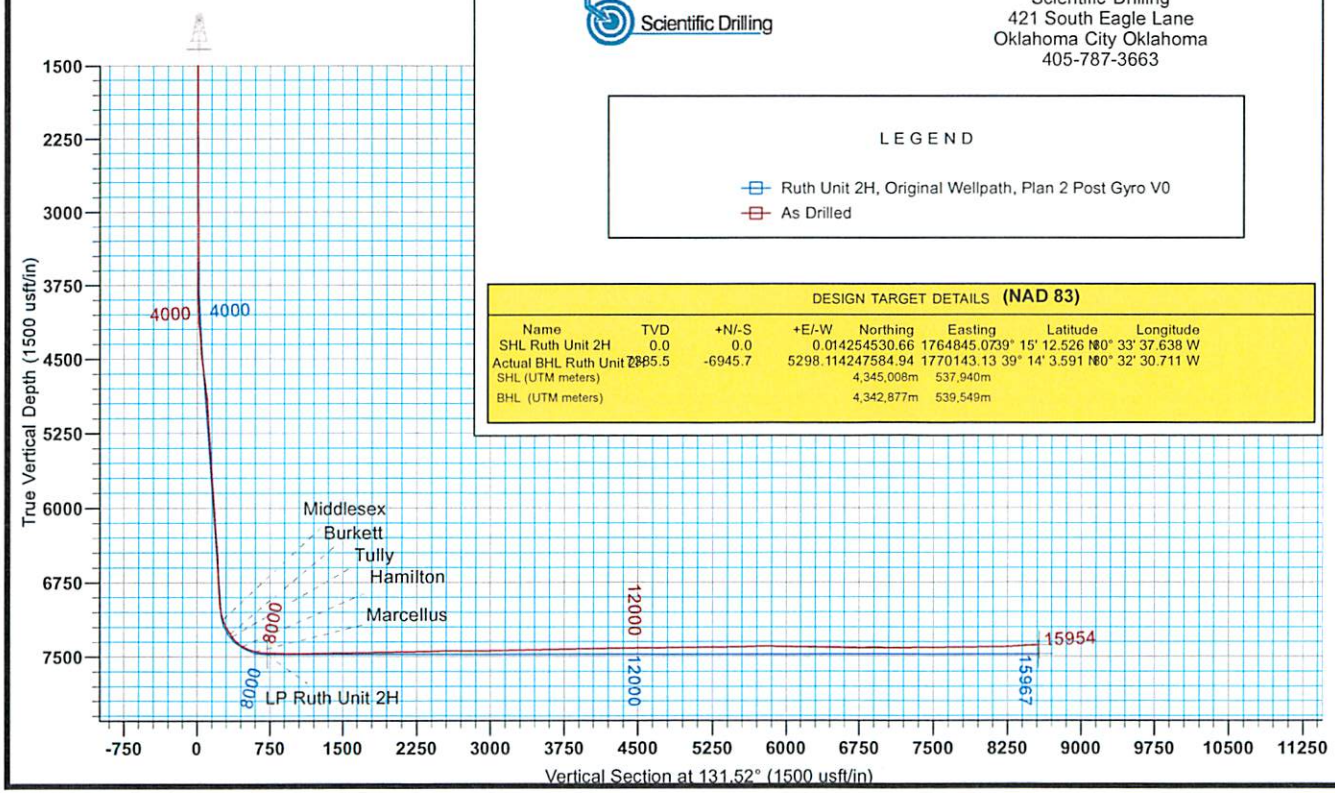
Genie Lightfoot
Scientific Drilling
421 South Eagle Lane
Oklahoma City Oklahoma
405-787-3663

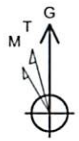
LEGEND

Ruth Unit 2H, Original Wellpath, Plan 2 Post Gyro V0
As Drilled

DESIGN TARGET DETAILS **(NAD 83)**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Ruth Unit 2H	0.0	0.0	0.0	14254530.66	1764845.07	39° 15' 12.526 N	80° 33' 37.638 W
Actual BHL Ruth Unit 2H	7385.5	-6945.7	5298.1	14247584.94	1770143.13	39° 14' 3.591 N	80° 32' 30.711 W
SHL (UTM meters)				4,345,008m	537,940m		
BHL (UTM meters)				4,342,877m	539,549m		

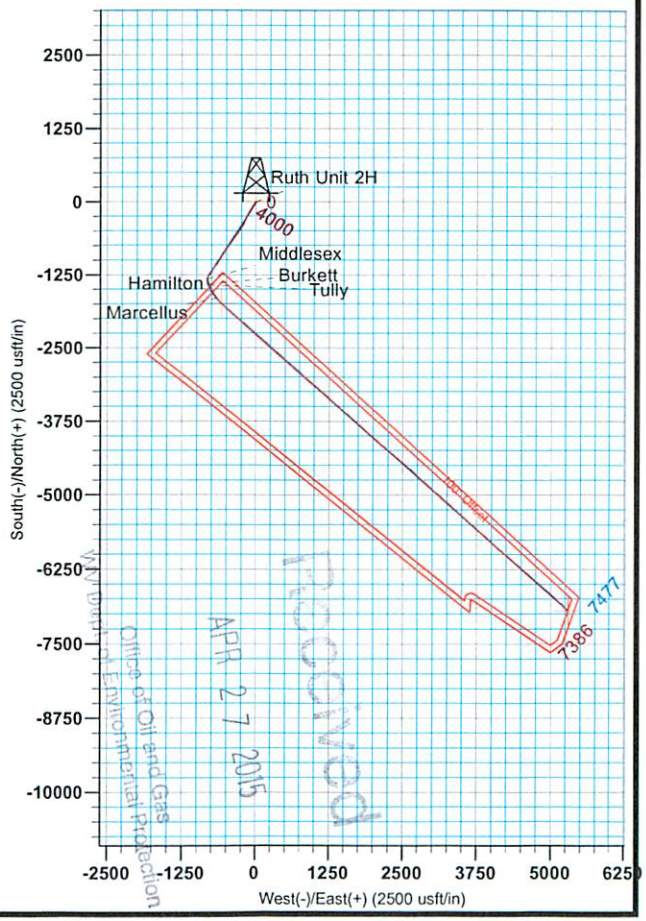




To convert Magnetic North to Grid, Subtract 8.86°
To convert True North to Grid, Subtract 0.28°

Azimuths to Grid North
True North: -0.28°
Magnetic North: -8.86°

Magnetic Field
Strength: 52378.9snT
Dip Angle: 66.86°
Date: 5/21/2013
Model: IGRF2010



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Antero Resources

Harrison County West Virginia
Ruth/Norris/Nellie/Ford Pad
Ruth Unit 2H
Original Wellpath

Design: Original Wellpath

EOW Completion Report

01 July, 2013

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Scientific Drilling

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WV Dept. of Environmental Protection

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Ruth Unit 2H
Project:	Harrison County West Virginia	**TVD Reference:**	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Well:	Ruth Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	Original Wellpath	**Database:**	Oklahoma District

Project Harrison County West Virginia, Harrison County, USA

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Ruth/Norris/Nellie/Ford Pad

Site Position:		**Northing:**	14,254,530.66 usft	**Latitude:**	39° 15' 12.526 N
From:	Map	**Easting:**	1,764,845.07 usft	**Longitude:**	80° 33' 37.638 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.28 °

Well Ruth Unit 2H, Marcellus

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,254,530.66 usft	**Latitude:**	39° 15' 12.526 N
	+E/-W	0.0 usft	**Easting:**	1,764,845.07 usft	**Longitude:**	80° 33' 37.638 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,400.0 usft	**Ground Level:**	1,376.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/21/2013	-8.58	66.86	52,379

Design Original Wellpath

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	131.52

Survey Program **Date** 7/1/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	3,427.0	Survey #1 Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
3,523.0	15,954.0	Survey #2 MWD (Original Wellpath)	SRG-GYRO-MS	surface readout gyro multishot

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.29	155.33	100.0	-0.2	0.1	0.2	0.29
200.0	0.27	166.84	200.0	-0.7	0.3	0.7	0.06
300.0	0.19	134.09	300.0	-1.0	0.4	1.0	0.15
400.0	0.19	177.93	400.0	-1.3	0.6	1.3	0.14
500.0	0.07	125.81	500.0	-1.5	0.6	1.5	0.16
600.0	0.23	191.03	600.0	-1.7	0.6	1.6	0.21
700.0	0.37	154.79	700.0	-2.2	0.7	2.0	0.23
800.0	0.31	105.30	800.0	-2.6	1.1	2.6	0.29
900.0	0.15	194.85	900.0	-2.8	1.4	2.9	0.34
1,000.0	0.15	151.61	1,000.0	-3.0	1.4	3.1	0.11

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Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Well:	Ruth Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	Original Wellpath	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,100.0	0.12	183.90	1,100.0	-3.3	1.4	3.2	0.08
1,200.0	0.06	96.33	1,200.0	-3.4	1.5	3.3	0.13
1,300.0	0.02	276.66	1,300.0	-3.4	1.5	3.4	0.08
1,400.0	0.15	184.22	1,400.0	-3.5	1.5	3.4	0.15
1,500.0	0.27	164.40	1,500.0	-3.9	1.5	3.7	0.14
1,600.0	0.18	184.48	1,600.0	-4.2	1.6	4.0	0.12
1,700.0	0.04	228.58	1,700.0	-4.4	1.6	4.1	0.15
1,800.0	0.48	175.83	1,800.0	-4.9	1.6	4.4	0.46
1,900.0	0.24	187.02	1,900.0	-5.5	1.6	4.8	0.25
2,000.0	0.38	188.81	2,000.0	-6.0	1.5	5.1	0.14
2,100.0	0.37	194.20	2,100.0	-6.7	1.4	5.4	0.04
2,200.0	0.18	181.74	2,200.0	-7.1	1.3	5.7	0.20
2,300.0	0.26	193.17	2,300.0	-7.5	1.2	5.9	0.09
2,400.0	0.26	170.44	2,400.0	-8.0	1.2	6.2	0.10
2,500.0	0.22	149.99	2,500.0	-8.3	1.3	6.5	0.09
2,600.0	0.19	158.09	2,600.0	-8.7	1.5	6.9	0.04
2,700.0	0.39	132.51	2,700.0	-9.1	1.8	7.4	0.23
2,800.0	0.31	140.52	2,800.0	-9.5	2.2	8.0	0.09
2,900.0	0.41	134.65	2,900.0	-10.0	2.7	8.6	0.11
3,000.0	0.55	133.69	3,000.0	-10.5	3.3	9.4	0.14
3,100.0	0.53	97.94	3,100.0	-10.9	4.1	10.3	0.33
3,200.0	0.46	105.03	3,200.0	-11.1	4.9	11.0	0.09
3,300.0	0.20	125.27	3,300.0	-11.3	5.4	11.6	0.28
3,400.0	0.12	98.48	3,400.0	-11.4	5.7	11.8	0.11
3,427.0	0.18	51.20	3,427.0	-11.4	5.7	11.9	0.49
3,523.0	2.27	250.72	3,522.9	-11.9	4.1	11.0	2.54
3,617.0	5.57	241.40	3,616.7	-14.7	-1.7	8.5	3.56
3,711.0	8.37	233.16	3,710.0	-21.0	-11.2	5.6	3.16
3,834.0	10.46	213.80	3,831.4	-35.7	-24.6	5.3	3.06
3,928.0	12.62	212.97	3,923.5	-51.4	-34.9	7.9	2.30
4,022.0	15.27	211.62	4,014.7	-70.5	-47.0	11.6	2.84
4,116.0	18.15	210.79	4,104.7	-93.7	-61.0	16.4	3.07
4,211.0	21.15	208.51	4,194.2	-121.4	-76.7	23.1	3.26
4,304.0	23.01	212.32	4,280.3	-151.5	-94.4	29.7	2.52
4,494.0	22.19	208.69	4,455.8	-214.4	-131.5	43.6	0.85
4,587.0	23.60	206.95	4,541.4	-246.4	-148.4	52.2	1.68
4,682.0	25.30	202.53	4,627.9	-282.1	-164.8	63.6	2.63
4,776.0	27.00	205.39	4,712.3	-319.9	-181.6	76.1	2.25
4,870.0	27.85	206.77	4,795.7	-358.8	-200.7	87.6	1.13
4,965.0	24.86	206.56	4,880.9	-396.5	-219.6	98.4	3.15
5,059.0	23.94	212.56	4,966.5	-430.3	-238.7	106.5	2.81
5,153.0	25.52	215.73	5,051.8	-462.8	-260.8	111.5	2.19
5,247.0	26.09	213.32	5,136.5	-496.5	-284.0	116.5	1.27
5,341.0	26.27	214.94	5,220.8	-530.8	-307.3	121.8	0.78

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Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	Original Wellpath	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,436.0	26.46	213.65	5,306.0	-565.7	-331.0	127.1	0.64
5,530.0	27.16	213.37	5,389.8	-601.0	-354.4	133.0	0.76
5,624.0	27.82	215.20	5,473.2	-636.9	-378.9	138.5	1.14
5,718.0	27.18	215.34	5,556.6	-672.3	-403.9	143.2	0.68
5,812.0	27.23	215.00	5,640.2	-707.4	-428.7	148.0	0.17
5,906.0	27.10	214.19	5,723.8	-742.8	-453.1	153.1	0.42
6,000.0	26.74	213.84	5,807.7	-778.0	-476.9	158.7	0.42
6,094.0	26.00	210.39	5,891.9	-813.4	-499.1	165.5	1.81
6,189.0	25.83	213.08	5,977.3	-848.7	-520.9	172.6	1.25
6,283.0	26.00	213.16	6,061.9	-883.1	-543.3	178.6	0.18
6,377.0	25.38	213.28	6,146.6	-917.2	-565.7	184.4	0.66
6,471.0	25.29	214.60	6,231.6	-950.5	-588.1	189.8	0.61
6,565.0	24.32	210.38	6,316.9	-983.8	-609.3	195.9	2.15
6,692.0	20.82	207.81	6,434.1	-1,026.3	-633.1	206.3	2.86
6,787.0	23.54	216.33	6,522.1	-1,056.5	-652.2	212.0	4.43
6,881.0	23.21	219.44	6,608.4	-1,086.0	-675.1	214.4	1.36
6,975.0	27.39	216.38	6,693.4	-1,117.7	-699.7	217.0	4.66
7,069.0	28.42	215.41	6,776.5	-1,153.3	-725.5	221.3	1.20
7,163.0	28.14	216.29	6,859.2	-1,189.4	-751.6	225.7	0.53
7,257.0	30.36	215.12	6,941.2	-1,226.7	-778.3	230.4	2.44
7,288.0	29.57	215.52	6,968.1	-1,239.4	-787.3	232.1	2.63
7,320.0	28.75	207.89	6,996.1	-1,252.6	-795.5	234.7	11.89
7,348.0	29.38	202.98	7,020.5	-1,264.9	-801.3	238.5	8.81
7,383.0	29.64	201.60	7,051.0	-1,280.8	-807.9	244.2	2.08
7,414.0	29.14	195.11	7,078.0	-1,295.2	-812.7	250.1	10.40
7,443.0	28.93	187.99	7,103.4	-1,309.0	-815.5	257.2	11.93
7,469.0	29.23	181.40	7,126.1	-1,321.6	-816.5	264.7	12.38
Middlesex							
7,477.0	29.39	179.40	7,133.1	-1,325.5	-816.5	267.3	12.38
7,508.0	29.90	171.23	7,160.0	-1,340.8	-815.3	278.4	13.13
7,537.0	31.12	161.98	7,185.0	-1,355.0	-811.8	290.4	16.72
7,571.0	32.15	157.23	7,214.0	-1,371.7	-805.6	306.1	7.93
7,602.0	32.62	160.59	7,240.2	-1,387.2	-799.7	320.8	6.00
7,631.0	35.02	160.77	7,264.3	-1,402.5	-794.3	334.9	8.28
7,638.0	35.68	160.23	7,270.0	-1,406.3	-793.0	338.5	10.43
Burkett							
7,665.0	38.25	158.31	7,291.5	-1,421.5	-787.2	352.8	10.43
7,673.0	39.39	158.03	7,297.8	-1,426.1	-785.3	357.3	14.44
Tully							
7,696.0	42.68	157.31	7,315.1	-1,440.1	-779.6	370.9	14.44
7,725.0	47.35	157.86	7,335.6	-1,459.0	-771.8	389.3	16.16
7,759.0	52.32	157.34	7,357.5	-1,483.0	-761.9	412.6	14.66
7,790.0	56.01	155.67	7,375.7	-1,506.1	-751.9	435.4	12.68
7,819.0	58.67	152.15	7,391.3	-1,528.0	-741.1	458.0	13.73

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Survey

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7,828.0	59.89	151.14	7,395.9	-1,534.8	-737.4	465.2	16.62
Hamilton							
7,853.0	63.31	148.46	7,407.8	-1,553.8	-726.4	486.1	16.62
7,884.0	68.50	146.97	7,420.5	-1,577.7	-711.3	513.3	17.31
7,913.0	71.22	146.57	7,430.5	-1,600.5	-696.3	539.6	9.47
7,947.0	73.24	145.18	7,440.8	-1,627.3	-678.2	570.9	7.10
7,976.0	76.08	141.73	7,448.5	-1,649.7	-661.5	598.3	15.09
Marcellus							
7,979.0	76.38	141.38	7,449.2	-1,652.0	-659.7	601.2	15.09
8,007.0	80.05	137.38	7,454.9	-1,672.8	-641.9	628.3	19.16
8,042.0	82.20	136.08	7,460.3	-1,698.0	-618.2	662.7	7.16
8,073.0	83.98	136.24	7,464.1	-1,720.2	-596.9	693.4	5.76
8,167.0	90.44	134.72	7,468.6	-1,787.1	-531.1	787.0	7.06
8,260.0	88.31	132.99	7,469.7	-1,851.5	-464.0	879.9	2.95
8,354.0	89.46	130.95	7,471.5	-1,914.4	-394.1	973.9	2.49
8,449.0	89.80	130.89	7,472.1	-1,976.6	-322.4	1,068.9	0.36
8,543.0	91.04	132.36	7,471.4	-2,039.0	-252.1	1,162.9	2.05
8,637.0	90.67	132.82	7,470.0	-2,102.6	-182.9	1,256.9	0.63
8,731.0	90.40	133.71	7,469.1	-2,167.0	-114.5	1,350.8	0.99
8,823.0	92.18	131.71	7,467.1	-2,229.4	-46.9	1,442.8	2.91
8,915.0	92.80	130.81	7,463.1	-2,290.0	22.2	1,534.7	1.19
9,006.0	91.18	130.96	7,459.9	-2,349.6	91.0	1,625.6	1.79
9,097.0	91.15	131.05	7,458.0	-2,409.3	159.6	1,716.6	0.10
9,188.0	90.70	131.37	7,456.6	-2,469.2	228.1	1,807.6	0.61
9,280.0	90.94	131.09	7,455.3	-2,529.8	297.3	1,899.6	0.40
9,372.0	90.94	132.04	7,453.8	-2,590.9	366.1	1,991.5	1.03
9,462.0	90.53	131.27	7,452.6	-2,650.7	433.3	2,081.5	0.97
9,551.0	90.84	131.14	7,451.5	-2,709.3	500.3	2,170.5	0.38
9,644.0	90.60	131.27	7,450.4	-2,770.6	570.2	2,263.5	0.29
9,734.0	91.11	131.13	7,449.0	-2,829.8	638.0	2,353.5	0.59
9,825.0	91.31	130.61	7,447.1	-2,889.4	706.8	2,444.5	0.61
9,919.0	90.71	130.29	7,445.4	-2,950.3	778.3	2,538.4	0.72
10,013.0	89.90	129.27	7,444.9	-3,010.5	850.5	2,632.4	1.39
10,107.0	90.37	129.70	7,444.7	-3,070.3	923.1	2,726.3	0.68
10,201.0	89.83	131.30	7,444.6	-3,131.3	994.5	2,820.3	1.80
10,295.0	90.67	131.46	7,444.1	-3,193.4	1,065.1	2,914.3	0.91
10,389.0	90.37	131.65	7,443.3	-3,255.8	1,135.4	3,008.3	0.38
10,483.0	92.52	133.14	7,440.9	-3,319.2	1,204.8	3,102.3	2.78
10,578.0	90.84	131.82	7,438.1	-3,383.3	1,274.8	3,197.2	2.25
10,672.0	91.21	131.78	7,436.5	-3,445.9	1,344.9	3,291.2	0.40
10,766.0	90.90	130.66	7,434.7	-3,507.9	1,415.6	3,385.2	1.24
10,861.0	90.70	129.02	7,433.4	-3,568.7	1,488.5	3,480.1	1.74
10,954.0	90.90	131.61	7,432.1	-3,628.9	1,559.4	3,573.1	2.79
11,049.0	90.23	129.83	7,431.2	-3,690.8	1,631.4	3,668.1	2.00
11,143.0	91.48	132.37	7,429.8	-3,752.6	1,702.2	3,762.0	3.01

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Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Well:	Ruth Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	Original Wellpath	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,237.0	91.28	132.56	7,427.5	-3,816.1	1,771.6	3,856.0	0.29
11,331.0	91.31	132.71	7,425.4	-3,879.7	1,840.7	3,950.0	0.16
11,425.0	91.41	133.64	7,423.1	-3,944.0	1,909.2	4,043.9	0.99
11,520.0	90.91	132.24	7,421.2	-4,008.7	1,978.8	4,138.8	1.56
11,614.0	90.47	131.66	7,420.1	-4,071.5	2,048.7	4,232.8	0.77
11,708.0	91.65	131.74	7,418.3	-4,134.1	2,118.8	4,326.8	1.26
11,802.0	91.55	130.87	7,415.7	-4,196.1	2,189.4	4,420.8	0.93
11,897.0	90.97	130.93	7,413.6	-4,258.3	2,261.2	4,515.7	0.61
11,991.0	90.10	130.81	7,412.8	-4,319.8	2,332.3	4,609.7	0.93
12,085.0	90.57	129.97	7,412.2	-4,380.7	2,403.9	4,703.7	1.02
12,179.0	90.98	129.51	7,410.9	-4,440.8	2,476.1	4,797.7	0.66
12,273.0	90.27	129.05	7,409.9	-4,500.3	2,548.9	4,891.6	0.90
12,367.0	89.77	131.53	7,409.9	-4,561.1	2,620.6	4,985.5	2.69
12,461.0	89.90	132.69	7,410.1	-4,624.1	2,690.3	5,079.5	1.24
12,555.0	90.47	132.85	7,409.8	-4,687.9	2,759.3	5,173.5	0.63
12,649.0	90.60	133.17	7,409.0	-4,752.0	2,828.1	5,267.5	0.37
12,743.0	90.67	132.79	7,407.9	-4,816.1	2,896.8	5,361.4	0.41
12,838.0	90.24	132.72	7,407.2	-4,880.6	2,966.6	5,456.4	0.46
12,932.0	92.02	131.25	7,405.3	-4,943.5	3,036.4	5,550.4	2.46
13,026.0	91.91	131.21	7,402.1	-5,005.4	3,107.1	5,644.3	0.12
13,120.0	91.91	131.01	7,399.0	-5,067.2	3,177.9	5,738.3	0.21
13,214.0	88.65	130.82	7,398.5	-5,128.7	3,248.9	5,832.3	3.47
13,308.0	87.79	130.65	7,401.4	-5,190.0	3,320.1	5,926.2	0.93
13,402.0	90.13	132.09	7,403.1	-5,252.1	3,390.6	6,020.2	2.92
13,496.0	89.12	132.71	7,403.7	-5,315.5	3,460.0	6,114.2	1.26
13,590.0	89.36	133.01	7,405.0	-5,379.5	3,528.9	6,208.1	0.41
13,684.0	88.33	132.06	7,406.9	-5,443.0	3,598.2	6,302.1	1.49
13,779.0	88.09	132.15	7,409.9	-5,506.7	3,668.6	6,397.0	0.27
13,873.0	89.30	131.24	7,412.0	-5,569.2	3,738.8	6,491.0	1.61
13,967.0	89.40	130.98	7,413.1	-5,631.0	3,809.6	6,585.0	0.30
14,061.0	89.40	130.72	7,414.0	-5,692.4	3,880.7	6,679.0	0.28
14,155.0	89.90	131.86	7,414.6	-5,754.5	3,951.3	6,773.0	1.32
14,249.0	90.54	132.22	7,414.3	-5,817.4	4,021.2	6,867.0	0.78
14,344.0	89.70	131.97	7,414.1	-5,881.1	4,091.6	6,962.0	0.92
14,438.0	88.99	130.70	7,415.1	-5,943.2	4,162.2	7,056.0	1.55
14,532.0	89.77	130.00	7,416.2	-6,004.0	4,233.9	7,149.9	1.11
14,626.0	91.21	131.49	7,415.3	-6,065.4	4,305.1	7,243.9	2.20
14,720.0	90.71	131.59	7,413.8	-6,127.7	4,375.4	7,337.9	0.54
14,815.0	90.00	130.78	7,413.2	-6,190.3	4,446.9	7,432.9	1.13
14,909.0	90.77	131.97	7,412.6	-6,252.4	4,517.4	7,526.9	1.51
15,004.0	90.94	129.62	7,411.1	-6,314.4	4,589.3	7,621.9	2.48
15,098.0	90.78	130.50	7,409.7	-6,374.9	4,661.3	7,715.8	0.95
15,192.0	90.84	132.19	7,408.4	-6,437.0	4,731.8	7,809.8	1.80
15,286.0	90.23	131.11	7,407.5	-6,499.5	4,802.1	7,903.8	1.32

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Ruth Unit 2H
Project:	Harrison County West Virginia	**TVD Reference:**	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Ruth 2H 1376 GL + 24 KB @ 1400.0usft (Original
Well:	Ruth Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	Original Wellpath	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
15,380.0	90.47	130.76	7,406.9	-6,561.1	4,873.1	7,997.8	0.45
15,475.0	89.87	129.39	7,406.7	-6,622.2	4,945.8	8,092.8	1.57
15,569.0	91.24	131.03	7,405.7	-6,682.9	5,017.6	8,186.7	2.27
15,663.0	93.91	133.98	7,401.5	-6,746.3	5,086.8	8,280.6	4.23
15,757.0	94.16	134.05	7,394.9	-6,811.5	5,154.2	8,374.3	0.28
15,852.0	92.43	133.11	7,389.5	-6,876.9	5,222.9	8,469.1	2.07
15,904.0	92.12	132.28	7,387.4	-6,912.1	5,261.1	8,521.0	1.70
15,954.0	92.12	132.28	7,385.5	-6,945.7	5,298.1	8,571.0	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
7,469.0	7,126.1	-1,321.6	-816.5	Middlesex
7,638.0	7,270.0	-1,406.3	-793.0	Burkett
7,673.0	7,297.8	-1,426.1	-785.3	Tully
7,828.0	7,395.9	-1,534.8	-737.4	Hamilton
7,976.0	7,448.5	-1,649.7	-661.5	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/10/2013
Job End Date:	10/20/2013
State:	West Virginia
County:	Harrison
API Number:	47-033-05698-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Ruth Unit 2H
Longitude:	-80.56045560
Latitude:	39.25348060
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,472
Total Base Water Volume (gal):	12,568,626
Total Base Non Water Volume:	0

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Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	ANTERO RESOURCES	Water					
			Water	7732-18-5	100.00000	92.37590	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	4.32733	
			Aluminum Oxide	1344-28-1	1.10000	0.04765	
			Titanium Oxide	13463-67-7	0.10000	0.00433	
			Iron Oxide	1309-37-1	0.10000	0.00433	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	2.47167	
			Aluminum Oxide	1344-28-1	1.10000	0.02722	
			Titanium Oxide	13463-67-7	0.10000	0.00247	
			Iron Oxide	1309-37-1	0.10000	0.00247	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.50516	
			Aluminum Oxide	1344-28-1	1.10000	0.00556	

			Iron Oxide	1309-37-1	0.10000	0.00051	
			Titanium Oxide	13463-67-7	0.10000	0.00051	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	70.00000	0.03255	
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
			Hydrogen Chloride	7647-01-0	18.00000	0.03195	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8	30.00000	0.01522	
			Ethoxylated alcohols	68002-97-1	15.00000	0.00761	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00254	
Super GREEN SOLV	Nabors Completion and Production Services	Paraffin & Scale Additives					
			BTEX Free Aliphatic Hydrocarbon	64742-96-7	100.00000	0.00917	
KR-153SL	Nabors Completion and Production Services	Biocides					
			Polyethlyene-Glycol	25322-68-3	50.00000	0.00512	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00205	
SUPER TSC-LTS	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Water	7732-18-5	60.00000	0.00682	
OB-2 LT	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	85.00000	0.00533	
			Crystalline Silica (in the form of quartz)	14808-60-7	10.00000	0.00063	
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Propargyl Alcohol	107-19-7	40.00000	0.00013	
			Glycol Ethers	111-46-6	40.00000	0.00013	
			Isopropyl Alcohol	67-63-0	40.00000	0.00013	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00004	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00003	
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000	0.00016	
PH-14	Nabors Completion and Production Services	pH Control Additives					

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			Sodium Carbonate	497-19-8	100.00000	0.00013	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			Water	7732-18-5	87.50000	0.15531	
			guar gum	9000-30-0	50.00000	0.02325	
			Anionic Polyacrylamide	910644-97-2	40.00000	0.02030	
			Water	7732-18-5	40.00000	0.02030	
			Water	7732-18-5	80.00000	0.00819	
			Propylene glycol	57-55-6	15.00000	0.00761	
			Proprietary	Proprietary	15.00000	0.00170	
			Proprietary	Proprietary	15.00000	0.00170	
			Proprietary	Proprietary	15.00000	0.00170	
			Proprietary	Proprietary	2.00000	0.00102	
			Alkali Chloride salt	Proprietary	15.00000	0.00094	
			Surfactant	68439-51-0	2.00000	0.00093	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00093	
			Sugar	57-50-1	100.00000	0.00040	
			Proprietary	Proprietary	100.00000	0.00040	
			Water	7732-18-5	100.00000	0.00020	
			Water	7732-18-5	48.00000	0.00016	
			2-Butoxyethanol	111-76-2	13.00000	0.00004	
			Proprietary	Proprietary	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Dioxane	123-91-1	1.00000	0.00000	
			Organophylic Clay	68953-58-2			

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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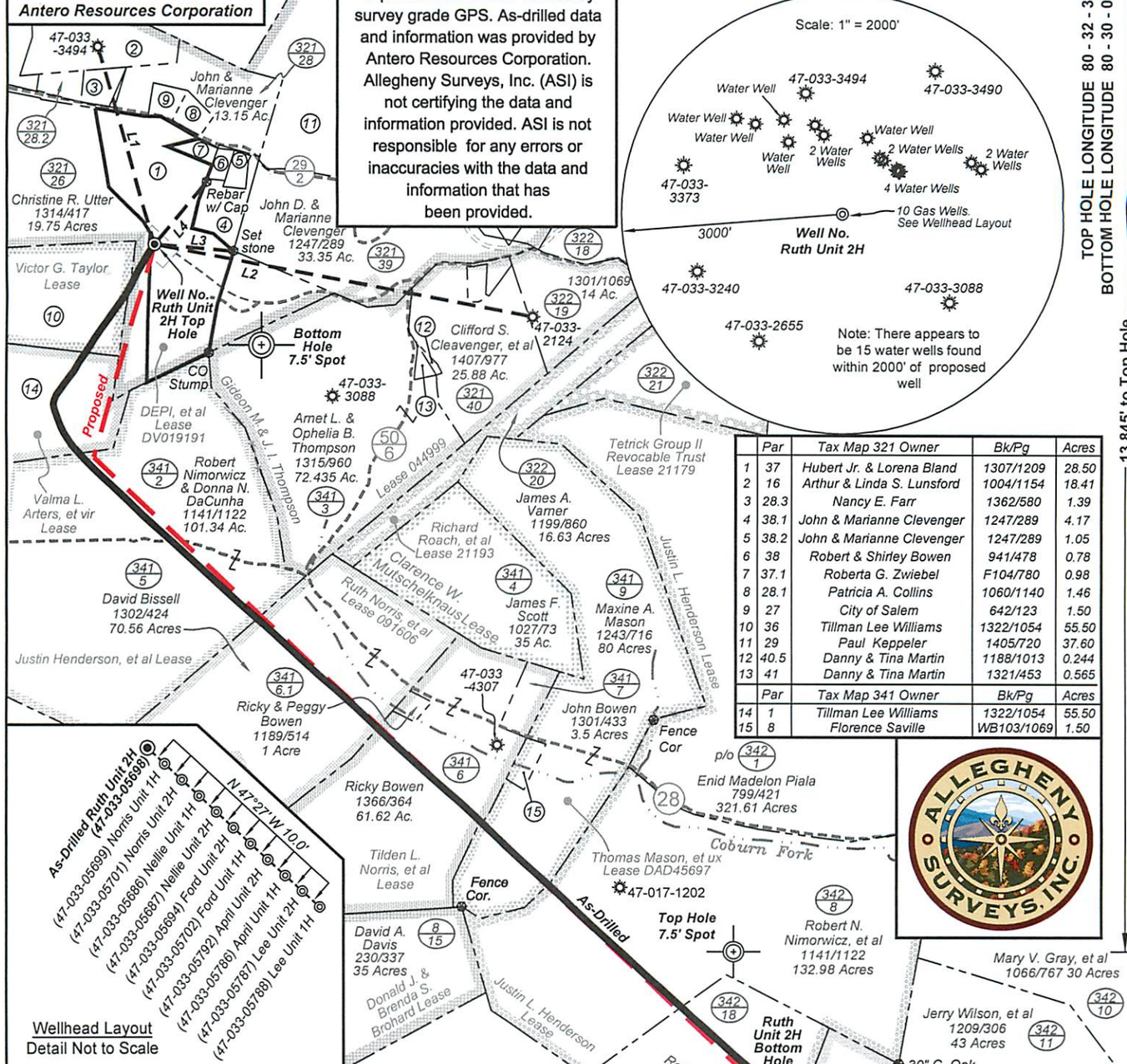
Antero Resources
Well No. Ruth Unit 2H
As-Drilled Plat
Antero Resources Corporation

11,924' to Bottom Hole
5,481' to Top Hole
5,570' to Bottom Hole
13,845' to Top Hole

TOP HOLE LATITUDE 39 - 17 - 30
BOTTOM HOLE LATITUDE 39 - 15 - 00
TOP HOLE LONGITUDE 80 - 32 - 30
BOTTOM HOLE LONGITUDE 80 - 30 - 00

Top Hole coordinates verified by survey grade GPS. As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys, Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.



	Par	Tax Map 321 Owner	Bk/Pg	Acres
1	37	Hubert Jr. & Lorena Bland	1307/1209	28.50
2	16	Arthur & Linda S. Lunsford	1004/1154	18.41
3	28.3	Nancy E. Farr	1362/580	1.39
4	38.1	John & Marianne Clevenger	1247/289	4.17
5	38.2	John & Marianne Clevenger	1247/289	1.05
6	38	Robert & Shirley Bowen	941/478	0.78
7	37.1	Roberta G. Zwiebel	F104/780	0.98
8	28.1	Patricia A. Collins	1060/1140	1.46
9	27	City of Salem	642/123	1.50
10	36	Tillman Lee Williams	1322/1054	55.50
11	29	Paul Keppeler	1405/720	37.60
12	40.5	Danny & Tina Martin	1188/1013	0.244
13	41	Danny & Tina Martin	1321/453	0.565
	Par	**Tax Map 341 Owner**	**Bk/Pg**	**Acres**
14	1	Tillman Lee Williams	1322/1054	55.50
15	8	Florence Saville	WB103/1069	1.50

Wellhead Layout
Detail Not to Scale

As-Drilled Ruth Unit 2H (47-033-05698)
(47-033-05699) Norris Unit 1H
(47-033-05701) Norris Unit 2H
(47-033-05686) Nellie Unit 1H
(47-033-05687) Nellie Unit 2H
(47-033-05694) Ford Unit 1H
(47-033-05702) Ford Unit 2H
(47-033-05792) April Unit 1H
(47-033-05786) April Unit 2H
(47-033-05787) Lee Unit 1H
(47-033-05788) Lee Unit 1H
N 47°27' W 100'

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Ruth Unit 2H Top Hole coordinates are
N: 276,205.44 Latitude: 39°15'12.53"
E: 1,699,700.73 Longitude: 80°33'37.64"
Bottom Hole coordinates are
N: 269,171.78 Latitude: 39°14'03.61"
E: 1,704,881.52 Longitude: 80°32'30.74"
UTM Zone 17, NAD 1983
Top Hole Coordinates: N: 4,345,008.146m E: 537,940.485m
Bottom Hole Coordinates: N: 4,342,891.654m E: 539,554.563m
Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.

Line	Bearing	Distance
L1	S 16°26' E	1675.4'
L2	N 79°09' W	3155.2'
L3	N 85°08' W	650.6'
L4	S 40°15' W	667.5'

(-⊕-) Denotes location of well on United States Topographic Maps

Legend
- Proposed gas well
- Found corner, as noted
- Surface boundary (approx.)
- Existing Road
- Interior surface tracts (approx.)
- Creek or Drain

FILE NO: 243-36-TM-12
DRAWING NO: Ruth 2H As-Drilled Plat
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

DATE: April 14 2015
OPERATOR'S WELL NO. Ruth Unit 2H

API WELL NO:
47 - 033 - 05698
STATE COUNTY PERMIT

WELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL
(IF GAS) PRODUCTION: ☐ STORAGE ☐ DEEP ☒ SHALLOW

LOCATION: ELEVATION: Original Grade - 1402' Existing Grade - 1376' WATERSHED: Tenmile Creek QUADRANGLE: Salem & Big Isaac
DISTRICT: Tenmile COUNTY: Harrison
SURFACE OWNER: Hubert Jr. & Lorena Bland ACREAGE: 28.50
ROYALTY OWNER: DEPI, et al; Valma L. Arters, et vir; Tiden L. Norris, et al LEASE NO: DAD45697; 091606 ACREAGE: 81.5; 283; 55; 66.12
PROPOSED WORK: ☐ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☐ PERFORATE NEW FORMATION ☒ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: TVD 7,386' MD 15,954'

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313

WR-35
Rev. 8/23/13

Page ___ of ___

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 033 - 05699 County Harrison District Tenmile
Quad Salem Pad Name Hubert Pad Field/Pool Name
Farm name Bland, Hubert Jr. and Lorena Well Number Norris Unit 1H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,345,006.117m Easting 537,942.707m
Landing Point of Curve Northing 4,344,583.10m Easting 537,942.55m
Bottom Hole Northing 4,343,108.377m Easting 539,617.030m

Elevation (ft) 1376' GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other ____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine ■Gas □ NGL □ Oil □ Other ____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air □ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Air - Foam & 4% KCL
Mud - Polymer

Date permit issued 12/21/2012 Date drilling commenced 5/11/2013 Date drilling ceased 7/21/2013
Date completion activities began 10/8/2013 Date completion activities ceased 1/12/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 367' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1760' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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WV Dept. of Environmental Protection

Reviewed by:
AL 5/26/15
W.S. 06/02/15

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Rev. 8/23/13

API 47- 033 - 05701 Farm name Bland, Hubert Jr. and Lorena Well number Norris Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30"	20"	40'	New	94#/H-40	N/A	Y
Surface	17-1/2"	13-3/8"	457'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2578'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15,752'	New	20#/P-110	N/A	
Tubing		2-3/8"	7493'	New	4.7#/N-80	N/A	N/A
Packer type and depth set		N/A					

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	200 sx	15.6	1.18	236 Cu. Ft.	0'	8 hrs
Surface	Class A	532 sx	15.6	1.18	628 Cu. Ft.	0'	8 hrs
Coal							
Intermediate 1	Class A	939 sx	15.6	1.18	1108 Cu. Ft.	0'	8 hrs
Intermediate 2							
Intermediate 3							
Production	Class H	781 sx (Lead), 991 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.80 (Tail)	3917 Cu. Ft.	~500' into Intermediate Casing	8 hrs
Tubing							

Drillers TD (ft) 15,765' MD, 7428' TVD (BHL), 7475' TVD (Deepest Point Drilled) Loggers TD (ft) 15,718' MD
Deepest formation penetrated Marcellus Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 6979'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Nellie Unit 2H API# 47-033-05687). Please reference the wireline logs submitted with Form WR-35 for the Nellie Unit 2H. A Cement Bond Log has been included with this submittal.

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction ☐ neutron ☐ resistivity ☐ gamma ray ☐ temperature

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ☐ Yes ■ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING
Conductor - 0
Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface
Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

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WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ■ Yes ☐ No TYPE OF TRACER(S) USED Radioactive and Chemical

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Rev. 8/23/13

Page ___ of ___

API 47- 033 - 05699 Farm name Bland, Hubert Jr. and Lorena Well number Norris Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*PLEASE SEE ATTACHED EXHIBIT 1

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

*PLEASE SEE ATTACHED EXHIBIT 2

Please insert additional pages as applicable.

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API 47- 033 - 05699 Farm name Bland, Hubert Jr. and Lorena Well number Norris Unit 1H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	7430' (Top)	TVD	7874' (Top)	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole ---- psi DURATION OF TEST ---- hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	10,993 mcfpd	---- bpd	---- bpd	140 bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*PLEASE SEE ATTACHED EXHIBIT 3

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Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company, LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Allied Oil & Gas Services, LLC
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Natalie Komp Telephone 303-357-6820
Signature Natalie Komp Title Permitting Agent Date 4/23/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-033-05699 Farm Name Bland, Hubert Jr. and Lorena Well Number Norris Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	8-Oct-13	15171'	15341'	60	Marcellus
2	20-Oct-13	14969'	15139'	60	Marcellus
3	21-Oct-13	14768'	14938'	60	Marcellus
4	21-Oct-13	14566'	14736'	60	Marcellus
5	21-Oct-13	14365'	14535'	60	Marcellus
6	21-Oct-13	14163'	14333'	60	Marcellus
7	22-Oct-13	13962'	14132'	60	Marcellus
8	22-Oct-13	13760'	13930'	60	Marcellus
9	22-Oct-13	13559'	13729'	60	Marcellus
10	22-Oct-13	13357'	13527'	60	Marcellus
11	22-Oct-13	13156'	13326'	60	Marcellus
12	23-Oct-14	12954'	13124'	60	Marcellus
13	23-Oct-13	12753'	12923'	60	Marcellus
14	23-Oct-13	12551'	12721'	60	Marcellus
15	23-Oct-13	12350'	12520'	60	Marcellus
16	23-Oct-13	12148'	12318'	60	Marcellus
17	24-Oct-13	11947'	12117'	60	Marcellus
18	24-Oct-13	11746'	11915'	60	Marcellus
19	24-Oct-13	11544'	11714'	60	Marcellus
20	26-Oct-13	11343'	11512'	60	Marcellus
21	26-Oct-13	11141'	11311'	60	Marcellus
22	26-Oct-13	10940'	11110'	60	Marcellus
23	26-Oct-13	10738'	10908'	60	Marcellus
24	26-Oct-13	10537'	10707'	60	Marcellus
25	27-Oct-13	10335'	10505'	60	Marcellus
26	27-Oct-13	10134'	10304'	60	Marcellus
27	29-Nov-13	9932'	10102'	60	Marcellus
28	29-Nov-13	9731'	9901'	60	Marcellus
29	29-Nov-13	9529'	9699'	60	Marcellus
30	30-Nov-13	9328'	9498'	60	Marcellus
31	30-Nov-13	9126'	9296'	60	Marcellus
32	1-Dec-13	8925'	9095'	60	Marcellus
33	1-Dec-13	8723'	8893'	60	Marcellus
34	1-Dec-13	8522'	8692'	60	Marcellus
35	1-Dec-13	8320'	8490'	60	Marcellus
36	1-Dec-13	8119'	8289'	60	Marcellus
37	2-Dec-13	7917'	8087'	60	Marcellus

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API 47-033-05699 Farm Name Bland, Hubert Jr. and Lorena Well Number Norris Unit 1H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	20-Oct-13	73.9	8,006	6,780	4,458	224,900	6,141	N/A
2	20-Oct-13	67.6	7,959	6,556	4,452	227,200	6,042	N/A
3	21-Oct-13	71.4	7,915	6,507	4,652	230,800	6,242	N/A
4	21-Oct-13	70.0	8,295	6,016	4,420	229,100	6,233	N/A
5	21-Oct-13	73.2	8,161	5,443	4,167	233,000	6,230	N/A
6	21-Oct-13	71.4	7,896	5,738	4,092	231,400	5,912	N/A
7	22-Oct-13	74.8	7,902	5,552	4,221	232,000	5,902	N/A
8	22-Oct-13	77.9	7,670	5,634	4,551	232,700	6,004	N/A
9	22-Oct-13	78.4	7,679	5,844	4,380	230,100	5,555	N/A
10	22-Oct-13	76.9	7,010	5,825	4,545	233,100	5,377	N/A
11	22-Oct-13	81.5	7,687	5,315	4,154	232,300	5,986	N/A
12	23-Oct-14	78.1	7,527	5,815	4,451	230,700	5,920	N/A
13	23-Oct-13	75.9	7,255	5,634	4,345	202,400	5,397	N/A
14	23-Oct-13	77.3	7,467	5,825	4,459	230,600	5,447	N/A
15	23-Oct-13	81.1	7,422	5,032	4,601	231,500	5,344	N/A
16	23-Oct-13	78.1	8,247	5,911	4,603	203,700	6,456	N/A
17	24-Oct-13	81.1	8,014	5,859	4,708	229,700	5,761	N/A
18	24-Oct-13	74.0	7,869	6,079	4,851	228,200	5,377	N/A
19	24-Oct-13	78.9	7,680	5,171	4,573	219,800	5,777	N/A
20	26-Oct-13	78.1	7,251	5,654	4,508	230,100	5,703	N/A
21	26-Oct-13	76.2	7,659	6,205	4,431	228,400	5,474	N/A
22	26-Oct-13	76.4	7,976	5,903	4,721	228,200	5,307	N/A
23	26-Oct-13	79.9	7,639	5,889	4,907	230,600	5,552	N/A
24	26-Oct-13	80.4	7,627	5,662	4,431	230,100	5,606	N/A
25	27-Oct-13	79.5	7,513	5,288	4,765	231,700	5,498	N/A
26	27-Oct-13	58.8	7,986	6,027	8,376	83,800	6,417	N/A
27	29-Nov-13	70.8	7,525	6,115	4,310	172,700	6,154	N/A
28	29-Nov-13	74.9	7,751	6,230	4,783	159,700	6,256	N/A
29	29-Nov-13	77.5	7,653	5,947	4,681	230,900	5,810	N/A
30	30-Nov-13	72.3	7,684	6,021	4,818	167,000	6,292	N/A
31	30-Nov-13	69.7	7,052	6,154	4,470	224,100	5,911	N/A
32	1-Dec-13	78.0	7,305	6,315	4,786	224,800	5,759	N/A
33	1-Dec-13	77.5	7,208	5,496	4,469	231,400	5,864	N/A
34	1-Dec-13	79.3	7,127	5,561	4,657	234,000	5,835	N/A
35	1-Dec-13	71.9	7,266	5,490	4,585	103,300	5,665	N/A
36	1-Dec-13	73.9	7,185	6,108	4,762	191,500	6,189	N/A
37	2-Dec-13	77.8	7,439	6,506	4,719	210,000	5,653	N/A
AVG =		75.5	7,662	5,868	4,645	7,925,500	216,048	= TOTAL

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API 47-033-05699 Farm Name Hubert Jr. & Lorena Bland Well Number Norris Unit 1H

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Freshwater	367'	NA	NA	NA
Siltstone	0	97	0	97
Sandy Shale	est 97	317	est 97	317
Sandstone	est 317	507	est 317	507
Silty Sandstone	est 507	657	est 507	657
Sandstone	est 657	1027	est 657	1027
Limestone/Dolomite	est 1027	1,117	est 1027	1,117
Siltstone	est 1117	1,297	est 1117	1,297
Sandstone	est 1297	1,327	est 1297	1,327
Limey Siltstone	est 1327	1,477	est 1327	1,477
Sandstone	est 1477	1,597	est 1477	1,597
Sandy Siltstone	est 1597	1,737	est 1597	1,737
Coal	est 1737	1757	est 1737	1757
Sandstone	est 1757	1797	est 1757	1797
Siltstone	est 1797	1817	est 1797	1817
Sandstone	est 1817	2097	est 1817	2097
Limey Shale	est 2097	2278	est 2097	2278
Big Lime	2,278	2,403	2,278	2,403
Big Injun	2,403	2,753	2,403	2,753
Gantz Sand	2,753	2,848	2,753	2,848
Fifty Foot Sandstone	2,848	2,966	2,848	2,966
Gordon	2,966	3,292	2,966	3,292
Fifth Sandstone	3,292	3,322	3,292	3,322
Bayard	3,322	3,665	3,322	3,665
Warren	3,665	3,885	3,665	3,886
Speechley	3,885	4,408	3,886	4,409
Baltown	4,408	4,739	4,409	4,739
Bradford	4,739	5,260	4,739	5,265
Benson	5,260	5,545	5,265	5,560
Alexander	5,545	5,759	5,560	5,797
Elk	5,759	6,384	5,797	6,508
Rhinestreet	6,384	6,878	6,508	7,053
Sycamore	6,878	7,108	7,053	7,307
Middlesex	7,108	7,250	7,307	7,491
Burkett	7,250	7,276	7,491	7,530
Tully	7,276	7,430	7,530	7,874
Marcellus	7,430	NA	7,874	NA

*Please note Antero determines formation tops based on mud and wireline logs that are only run on one well on a multi-well pad (Please reference Ruth Unit 2H API# 47-033-05698). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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ANTERO RESOURCES

Antero Resources
Norris Unit 1H
Harrison County West Virginia
Northing: 14254524.03
Easting: 1764852.54
As Drilled

WELL DETAILS: Norris Unit 1H

Ground Level: 1376.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14254524.03	1764852.54	39° 15' 12.460 N	80° 33' 37.543 W	

Scientific Drilling

Genie Lightfoot
10:48, July 31 2013

Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK

REFERENCE INFORMATION

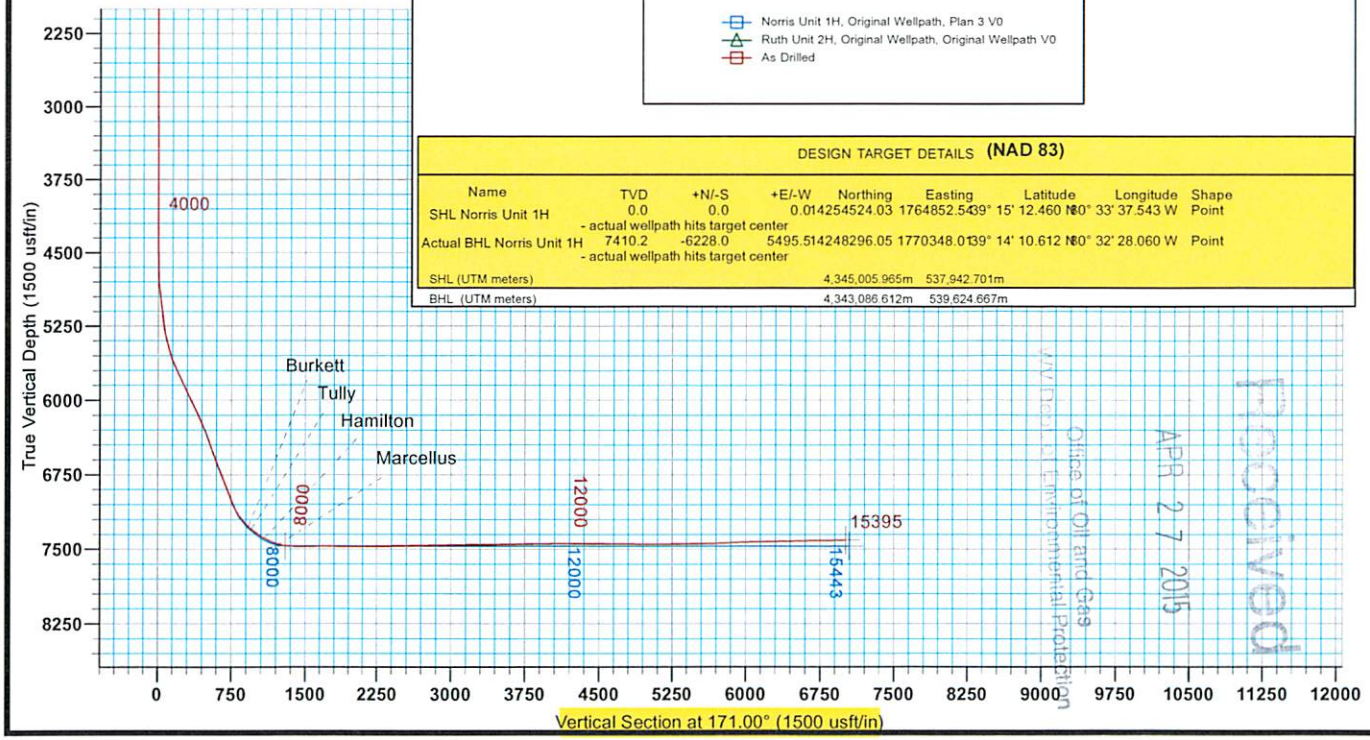
Co-ordinate (N/E) Reference: Well Norris Unit 1H, Grid North
Vertical (TVD) Reference: Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (Original Well Elev)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (Original Well Elev)
Calculation Method: Minimum Curvature

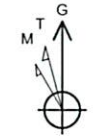
LEGEND

- Norris Unit 1H, Original Wellpath, Plan 3 V0
- Ruth Unit 2H, Original Wellpath, Original Wellpath V0
- As Drilled

DESIGN TARGET DETAILS (NAD 83)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SHL Norris Unit 1H	0.0	0.0	0.0	14254524.03	1764852.54	39° 15' 12.460 N	80° 33' 37.543 W	Point
- actual wellpath hits target center								
Actual BHL Norris Unit 1H	7410.2	-6228.0	5495.5	14248296.05	1770348.01	39° 14' 10.612 N	80° 32' 28.060 W	Point
- actual wellpath hits target center								
SHL (UTM meters)				4,345,005.965m	537,942.701m			
BHL (UTM meters)				4,343,086.612m	539,624.667m			

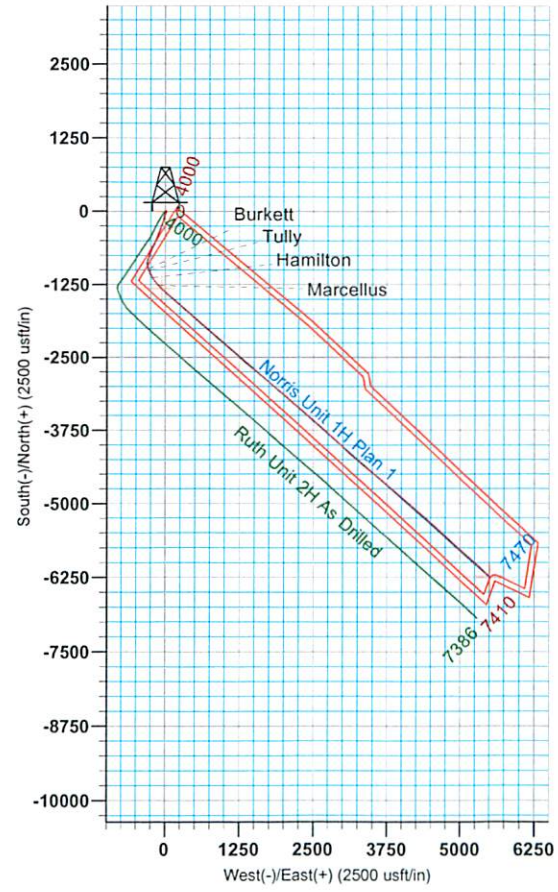




To convert Magnetic North to Grid, Subtract 8.86°
To convert True North to Grid, Subtract 0.28°

Azimuths to Grid North
True North: -0.28°
Magnetic North: -8.86°

Magnetic Field
Strength: 52368.8snT
Dip Angle: 66.85°
Date: 6/20/2013
Model: IGRF2010



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Antero Resources

Harrison County West Virginia
Ruth/Norris/Nellie/Ford Pad
Norris Unit 1H
Original Wellpath

Design: As Drilled

EOW Completion Report

31 July, 2013

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Scientific Drilling

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EOW Completion Report

Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 1H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project Harrison County West Virginia, Harrison County, USA

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Ruth/Norris/Nellie/Ford Pad

Site Position:		**Northing:**	14,254,530.66 usft	**Latitude:**	39° 15' 12.526 N
From:	Map	**Easting:**	1,764,845.07 usft	**Longitude:**	80° 33' 37.638 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.28 °

Well Norris Unit 1H, Marcellus

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,254,524.03 usft	**Latitude:**	39° 15' 12.460 N
	+E/-W	0.0 usft	**Easting:**	1,764,852.54 usft	**Longitude:**	80° 33' 37.543 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,400.0 usft	**Ground Level:**	1,376.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/20/2013	-8.58	66.85	52,369

Design As Drilled

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	171.00

Survey Program **Date** 7/31/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	6,951.2	Survey #4 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
7,071.0	15,395.0	Survey #5 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.63	45.65	100.0	0.4	0.4	-0.3	0.63
200.0	1.08	61.58	200.0	1.2	1.6	-0.9	0.50
300.0	1.61	61.28	300.0	2.3	3.7	-1.7	0.53
400.0	1.62	61.29	399.9	3.7	6.1	-2.7	0.01
500.0	0.88	66.05	499.9	4.7	8.1	-3.4	0.75
600.0	0.42	70.66	599.9	5.1	9.1	-3.6	0.46
700.0	0.25	66.48	699.9	5.3	9.7	-3.7	0.17
800.0	0.22	74.44	799.9	5.5	10.1	-3.8	0.04
900.0	0.09	104.86	899.9	5.5	10.3	-3.8	0.15
1,000.0	0.13	112.17	999.9	5.4	10.5	-3.7	0.04

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 1H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,100.0	0.10	117.41	1,099.9	5.4	10.7	-3.6	0.03
1,200.0	0.11	137.02	1,199.9	5.2	10.8	-3.5	0.04
1,300.0	0.15	123.09	1,299.9	5.1	11.0	-3.3	0.05
1,400.0	0.19	150.71	1,399.9	4.9	11.2	-3.1	0.09
1,500.0	0.21	129.12	1,499.9	4.6	11.4	-2.8	0.08
1,600.0	0.11	187.60	1,599.9	4.4	11.6	-2.6	0.18
1,700.0	0.13	167.14	1,699.9	4.2	11.6	-2.3	0.05
1,800.0	0.17	203.94	1,799.9	4.0	11.5	-2.1	0.10
1,900.0	0.13	174.30	1,899.9	3.7	11.5	-1.9	0.09
2,000.0	0.17	209.88	1,999.9	3.5	11.4	-1.6	0.10
2,100.0	0.29	216.29	2,099.9	3.1	11.2	-1.3	0.12
2,200.0	0.21	183.20	2,199.9	2.8	11.0	-1.0	0.16
2,300.0	0.19	187.08	2,299.9	2.4	11.0	-0.7	0.02
2,400.0	0.09	192.67	2,399.9	2.2	11.0	-0.4	0.10
2,500.0	0.15	113.78	2,499.9	2.0	11.1	-0.3	0.16
2,600.0	0.10	194.97	2,599.9	1.9	11.2	-0.1	0.17
2,700.0	0.19	135.89	2,699.9	1.7	11.3	0.1	0.16
2,800.0	0.29	109.13	2,799.9	1.5	11.6	0.3	0.15
2,900.0	0.33	108.63	2,899.9	1.3	12.1	0.6	0.04
3,000.0	0.86	78.94	2,999.9	1.4	13.1	0.7	0.60
3,100.0	0.36	111.01	3,099.9	1.4	14.2	0.8	0.59
3,200.0	0.41	98.41	3,199.9	1.2	14.8	1.1	0.10
3,300.0	0.30	99.19	3,299.9	1.1	15.4	1.3	0.11
3,400.0	0.33	99.23	3,399.9	1.1	16.0	1.5	0.03
3,500.0	0.21	106.87	3,499.9	1.0	16.4	1.6	0.13
3,600.0	0.15	94.31	3,599.9	0.9	16.7	1.7	0.07
3,700.0	0.25	104.50	3,699.9	0.8	17.1	1.9	0.11
3,800.0	0.27	99.51	3,799.9	0.7	17.5	2.0	0.03
3,900.0	0.24	99.48	3,899.9	0.7	18.0	2.2	0.03
4,000.0	0.21	110.53	3,999.9	0.6	18.3	2.3	0.05
4,100.0	0.19	95.66	4,099.9	0.5	18.7	2.4	0.06
4,200.0	0.15	82.07	4,199.9	0.5	19.0	2.5	0.06
4,300.0	0.23	104.31	4,299.9	0.4	19.3	2.6	0.11
4,400.0	0.24	96.05	4,399.9	0.4	19.7	2.7	0.04
4,500.0	0.33	105.67	4,499.9	0.3	20.2	2.9	0.10
4,600.0	0.37	106.36	4,599.8	0.1	20.8	3.1	0.04
4,700.0	0.72	156.37	4,699.8	-0.6	21.3	3.9	0.56
4,800.0	6.52	209.01	4,799.6	-6.1	18.8	9.0	6.11
4,900.0	8.63	204.23	4,898.7	-17.9	13.0	19.7	2.20
5,000.0	8.59	202.30	4,997.6	-31.7	7.1	32.4	0.29
5,100.0	7.45	198.95	5,096.6	-44.7	2.1	44.5	1.23
5,200.0	6.25	210.16	5,195.9	-55.5	-2.7	54.4	1.79
5,300.0	12.61	203.54	5,294.5	-70.3	-9.8	67.9	6.44
5,400.0	17.32	189.19	5,391.1	-95.0	-16.5	91.2	5.96

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 1H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,500.0	13.59	193.56	5,487.5	-121.1	-21.7	116.2	3.91
5,600.0	21.71	195.84	5,582.7	-150.4	-29.5	143.9	8.15
5,700.0	28.08	193.94	5,673.4	-191.1	-40.2	182.4	6.42
5,800.0	28.14	202.26	5,761.6	-235.7	-54.8	224.3	3.92
5,900.0	28.87	201.87	5,849.5	-280.0	-72.8	265.1	0.75
6,000.0	30.91	203.47	5,936.2	-325.9	-92.0	307.5	2.19
6,100.0	30.59	202.58	6,022.1	-373.0	-112.0	350.9	0.56
6,200.0	30.19	200.96	6,108.4	-420.0	-130.7	394.4	0.91
6,300.0	26.74	201.78	6,196.3	-464.4	-148.1	435.5	3.47
6,400.0	25.25	201.34	6,286.2	-505.1	-164.2	473.2	1.50
6,500.0	24.49	199.99	6,376.9	-544.5	-179.1	509.8	0.95
6,600.0	22.43	206.01	6,468.6	-581.1	-194.5	543.5	3.16
6,700.0	25.07	209.02	6,560.2	-616.8	-213.2	575.8	2.90
6,800.0	25.28	204.05	6,650.7	-654.8	-232.1	610.4	2.12
6,900.0	24.79	201.45	6,741.3	-693.8	-248.5	646.4	1.20
6,951.2	24.86	200.54	6,787.7	-713.9	-256.2	665.0	0.76
7,071.0	24.10	199.09	6,896.8	-760.6	-273.0	708.5	0.81
7,166.0	24.19	199.57	6,983.5	-797.3	-285.9	742.7	0.23
7,197.0	23.75	199.12	7,011.8	-809.1	-290.1	753.8	1.54
7,228.0	23.21	198.82	7,040.2	-820.8	-294.1	764.7	1.78
7,257.0	23.78	195.96	7,066.8	-831.8	-297.5	775.1	4.40
7,291.0	28.12	188.54	7,097.4	-846.4	-300.6	788.9	15.92
7,323.0	31.95	183.47	7,125.1	-862.3	-302.3	804.4	14.35
7,351.0	34.80	179.11	7,148.5	-877.7	-302.6	819.5	13.30
7,385.0	37.44	174.99	7,176.0	-897.7	-301.5	839.5	10.55
7,417.0	38.94	173.02	7,201.1	-917.4	-299.5	859.2	6.04
7,445.0	40.58	170.99	7,222.6	-935.1	-297.0	877.1	7.47
7,480.0	43.60	167.01	7,248.6	-958.1	-292.5	900.5	11.51
7,511.0	45.91	162.89	7,270.6	-979.2	-286.8	922.2	11.96
7,514.0	46.17	162.58	7,272.7	-981.2	-286.1	924.4	11.47
Burkett							
7,540.0	48.46	159.98	7,290.3	-999.3	-280.0	943.2	11.47
7,553.0	49.58	158.93	7,298.9	-1,008.5	-276.6	952.8	10.55
Tully							
7,574.0	51.41	157.31	7,312.2	-1,023.5	-270.5	968.6	10.55
7,606.0	53.26	156.21	7,331.8	-1,046.8	-260.5	993.2	6.39
7,634.0	55.10	155.90	7,348.2	-1,067.6	-251.3	1,015.1	6.63
7,668.0	58.13	154.41	7,366.9	-1,093.3	-239.4	1,042.4	9.63
7,699.0	60.89	152.95	7,382.6	-1,117.3	-227.5	1,067.9	9.78
7,716.0	62.70	151.99	7,390.6	-1,130.5	-220.6	1,082.1	11.78
Hamilton							
7,728.0	63.99	151.33	7,396.0	-1,140.0	-215.5	1,092.2	11.78
7,762.0	67.22	148.02	7,410.1	-1,166.7	-199.9	1,121.1	12.99
7,793.0	68.91	145.45	7,421.6	-1,190.7	-184.1	1,147.3	9.43
7,822.0	70.45	142.86	7,431.7	-1,212.8	-168.2	1,171.5	9.92

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 1H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,856.0	72.69	139.75	7,442.5	-1,237.9	-148.0	1,199.5	10.89
7,887.0	75.60	138.02	7,450.9	-1,260.4	-128.4	1,224.8	10.81
7,897.0	76.47	137.76	7,453.3	-1,267.6	-121.9	1,232.9	9.06
Marcellus							
7,916.0	78.12	137.26	7,457.5	-1,281.3	-109.4	1,248.4	9.06
7,950.0	81.04	136.01	7,463.7	-1,305.6	-86.4	1,276.0	9.32
7,981.0	84.76	134.04	7,467.5	-1,327.3	-64.7	1,300.9	13.56
8,069.0	90.64	132.18	7,471.0	-1,387.4	-0.5	1,370.2	7.01
8,163.0	90.17	131.99	7,470.4	-1,450.4	69.3	1,443.4	0.54
8,257.0	89.70	131.78	7,470.5	-1,513.1	139.2	1,516.3	0.55
8,352.0	90.17	131.11	7,470.6	-1,576.0	210.4	1,589.5	0.86
8,446.0	90.00	131.30	7,470.4	-1,637.9	281.2	1,661.8	0.27
8,540.0	89.83	131.37	7,470.6	-1,700.0	351.8	1,734.1	0.20
8,634.0	89.40	130.79	7,471.2	-1,761.8	422.6	1,806.2	0.77
8,729.0	88.96	130.75	7,472.6	-1,823.8	494.5	1,878.7	0.47
8,823.0	89.87	131.36	7,473.5	-1,885.6	565.4	1,950.8	1.17
8,917.0	89.93	131.38	7,473.7	-1,947.7	636.0	2,023.2	0.07
9,011.0	90.27	132.09	7,473.5	-2,010.3	706.1	2,096.0	0.84
9,105.0	90.91	133.03	7,472.6	-2,073.8	775.3	2,169.6	1.21
9,199.0	90.30	131.60	7,471.6	-2,137.1	844.8	2,243.0	1.65
9,293.0	90.77	132.01	7,470.7	-2,199.8	914.9	2,315.8	0.66
9,387.0	91.51	132.36	7,468.8	-2,262.9	984.6	2,389.0	0.87
9,481.0	90.77	131.11	7,467.0	-2,325.4	1,054.7	2,461.8	1.55
9,575.0	90.37	130.14	7,466.0	-2,386.6	1,126.0	2,533.4	1.12
9,669.0	90.50	131.33	7,465.3	-2,448.0	1,197.2	2,605.1	1.27
9,764.0	90.60	132.59	7,464.4	-2,511.5	1,267.9	2,678.9	1.33
9,858.0	90.07	132.20	7,463.8	-2,574.9	1,337.3	2,752.4	0.70
9,952.0	90.84	130.26	7,463.1	-2,636.8	1,408.0	2,824.6	2.22
10,045.0	90.27	129.47	7,462.2	-2,696.4	1,479.4	2,894.6	1.05
10,136.0	89.90	129.38	7,462.1	-2,754.2	1,549.7	2,962.7	0.42
10,228.0	92.38	131.01	7,460.2	-2,813.6	1,619.9	3,032.3	3.23
10,319.0	91.48	130.95	7,457.2	-2,873.2	1,688.6	3,102.0	0.99
10,410.0	90.97	130.32	7,455.2	-2,932.5	1,757.6	3,171.3	0.89
10,502.0	89.90	129.68	7,454.5	-2,991.6	1,828.1	3,240.7	1.36
10,593.0	90.17	130.32	7,454.5	-3,050.1	1,897.8	3,309.4	0.76
10,684.0	89.93	131.52	7,454.4	-3,109.7	1,966.6	3,379.0	1.34
10,774.0	90.44	133.00	7,454.1	-3,170.2	2,033.2	3,449.2	1.74
10,865.0	90.17	133.35	7,453.6	-3,232.5	2,099.5	3,521.1	0.49
10,956.0	90.77	131.20	7,452.9	-3,293.7	2,166.9	3,592.1	2.45
11,046.0	91.21	130.88	7,451.3	-3,352.8	2,234.7	3,661.1	0.60
11,140.0	91.18	130.93	7,449.3	-3,414.3	2,305.8	3,733.0	0.06
11,234.0	90.77	130.04	7,447.7	-3,475.3	2,377.2	3,804.4	1.04
11,328.0	91.24	130.44	7,446.1	-3,536.0	2,449.0	3,875.6	0.66
11,422.0	91.14	131.12	7,444.1	-3,597.4	2,520.1	3,947.4	0.73

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WV Dept. of Environmental Protection

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 1H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,516.0	90.67	131.13	7,442.7	-3,659.2	2,590.9	4,019.5	0.50
11,610.0	89.09	131.59	7,442.9	-3,721.4	2,661.5	4,091.9	1.75
11,704.0	89.50	132.80	7,444.0	-3,784.5	2,731.1	4,165.1	1.36
11,798.0	88.99	132.39	7,445.3	-3,848.1	2,800.3	4,238.8	0.70
11,892.0	90.07	133.03	7,446.0	-3,911.9	2,869.4	4,312.6	1.34
11,987.0	90.13	133.60	7,445.9	-3,977.0	2,938.5	4,387.7	0.60
12,081.0	89.93	134.66	7,445.8	-4,042.5	3,006.0	4,462.9	1.15
12,175.0	89.66	133.56	7,446.1	-4,107.9	3,073.5	4,538.1	1.20
12,269.0	88.69	130.63	7,447.5	-4,170.9	3,143.2	4,611.3	3.28
12,363.0	89.76	131.00	7,448.8	-4,232.3	3,214.3	4,683.1	1.20
12,457.0	89.53	130.71	7,449.4	-4,293.8	3,285.4	4,754.9	0.39
12,552.0	89.19	130.02	7,450.4	-4,355.3	3,357.8	4,827.0	0.81
12,646.0	90.37	130.35	7,450.8	-4,416.0	3,429.6	4,898.1	1.30
12,740.0	90.34	130.37	7,450.2	-4,476.9	3,501.3	4,969.5	0.04
12,835.0	90.27	130.45	7,449.7	-4,538.5	3,573.6	5,041.6	0.11
12,929.0	89.33	128.50	7,450.0	-4,598.2	3,646.1	5,112.0	2.30
13,023.0	90.30	128.72	7,450.3	-4,656.9	3,719.6	5,181.4	1.06
13,117.0	89.46	131.41	7,450.5	-4,717.4	3,791.5	5,252.4	3.00
13,212.0	90.50	131.36	7,450.5	-4,780.2	3,862.8	5,325.6	1.10
13,306.0	89.80	129.87	7,450.3	-4,841.4	3,934.2	5,397.2	1.75
13,400.0	92.39	132.46	7,448.5	-4,903.2	4,004.9	5,469.3	3.90
13,494.0	91.51	132.36	7,445.3	-4,966.6	4,074.3	5,542.8	0.94
13,589.0	90.07	130.25	7,444.0	-5,029.3	4,145.6	5,615.9	2.69
13,683.0	91.24	129.22	7,442.9	-5,089.3	4,217.9	5,686.5	1.66
13,777.0	92.24	130.18	7,440.1	-5,149.4	4,290.2	5,757.1	1.47
13,871.0	92.42	129.21	7,436.2	-5,209.3	4,362.4	5,827.6	1.05
13,965.0	91.88	133.04	7,432.7	-5,271.1	4,433.2	5,899.7	4.11
14,059.0	91.85	132.34	7,429.7	-5,334.8	4,502.2	5,973.4	0.74
14,153.0	91.17	131.70	7,427.2	-5,397.7	4,572.1	6,046.5	0.99
14,247.0	90.97	132.24	7,425.4	-5,460.6	4,641.9	6,119.5	0.61
14,342.0	90.64	131.37	7,424.1	-5,523.9	4,712.7	6,193.1	0.98
14,436.0	90.87	131.97	7,422.9	-5,586.4	4,782.9	6,265.8	0.68
14,530.0	90.00	131.37	7,422.1	-5,648.9	4,853.2	6,338.5	1.12
14,624.0	90.84	132.55	7,421.5	-5,711.7	4,923.1	6,411.5	1.54
14,718.0	90.03	131.06	7,420.7	-5,774.4	4,993.1	6,484.4	1.80
14,812.0	91.61	132.37	7,419.4	-5,836.9	5,063.3	6,557.1	2.18
14,907.0	91.54	132.38	7,416.8	-5,900.9	5,133.4	6,631.3	0.07
15,000.0	91.10	131.85	7,414.6	-5,963.3	5,202.4	6,703.7	0.74
15,094.0	89.90	130.61	7,413.8	-6,025.2	5,273.1	6,775.9	1.84
15,189.0	91.19	132.55	7,412.9	-6,088.3	5,344.1	6,849.3	2.45
15,282.0	91.14	133.29	7,411.0	-6,151.6	5,412.2	6,922.5	0.80
15,345.0	89.96	132.38	7,410.4	-6,194.4	5,458.4	6,972.0	2.37
15,395.0	90.50	132.00	7,410.2	-6,228.0	5,495.5	7,011.0	1.32

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 1H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 1H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
7,514.0	7,272.7	-981.2	-286.1	Burkett
7,553.0	7,298.9	-1,008.5	-276.6	Tully
7,716.0	7,390.6	-1,130.5	-220.6	Hamilton
7,897.0	7,453.3	-1,267.6	-121.9	Marcellus

Checked By: _____ Approved By: _____ Date: _____

Received

APR 27 2015

Office of Oil and Gas
WV Dept. of Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/20/2013
Job End Date:	12/2/2013
State:	West Virginia
County:	Harrison
API Number:	47-033-05699-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Norris Unit 1H
Longitude:	-80.56037600
Latitude:	39.25342600
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,474
Total Base Water Volume (gal):	9,074,016
Total Base Non Water Volume:	0

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WV Dept. of Environmental Protection
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FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	ANTERO RESOURCES	Water					
			Water	7732-18-5	100.00000	89.93546	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	5.76715	
			Aluminum Oxide	1344-28-1	1.10000	0.06350	
			Iron Oxide	1309-37-1	0.10000	0.00577	
			Titanium Oxide	13463-67-7	0.10000	0.00577	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	3.27352	
			Aluminum Oxide	1344-28-1	1.10000	0.03605	
			Iron Oxide	1309-37-1	0.10000	0.00328	
			Titanium Oxide	13463-67-7	0.10000	0.00328	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.63267	
			Aluminum Oxide	1344-28-1	1.10000	0.00697	

			Titanium Oxide	13463-67-7	0.10000	0.00063	
			Iron Oxide	1309-37-1	0.10000	0.00063	
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
			Hydrogen Chloride	7647-01-0	18.00000	0.04121	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	70.00000	0.03776	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8	30.00000	0.01720	
			Ethoxylated alcohols	68002-97-1	15.00000	0.00860	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00287	
KR-153SL	Nabors Completion and Production Services	Biocides					
			Polyethlyene-Glycol	25322-68-3	50.00000	0.00639	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00256	
OB-2 LT	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	85.00000	0.00611	
			Crystalline Silica (in the form of quartz)	14808-60-7	10.00000	0.00072	
SUPER TSC-LTS	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Water	7732-18-5	60.00000	0.00672	
Super GREEN SOLV	Nabors Completion and Production Services	Paraffin & Scale Additives					
			BTEX Free Aliphatic Hydrocarbon	64742-96-7	100.00000	0.00628	
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Propargyl Alcohol	107-19-7	40.00000	0.00017	
			Isopropyl Alcohol	67-63-0	40.00000	0.00017	
			Glycol Ethers	111-46-6	40.00000	0.00017	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00006	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004	
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000	0.00018	

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

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Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			Water	7732-18-5	87.50000	0.20033	
			guar gum	9000-30-0	50.00000	0.02698	
			Water	7732-18-5	40.00000	0.02294	
			Anionic Polyacrylamide	910644-97-2	40.00000	0.02294	
			Water	7732-18-5	80.00000	0.01023	
			Propylene glycol	57-55-6	15.00000	0.00860	
			Water	7732-18-5	60.00000	0.00176	
			Proprietary	Proprietary	15.00000	0.00168	
			Proprietary	Proprietary	15.00000	0.00168	
			Proprietary	Proprietary	15.00000	0.00168	
			Proprietary	Proprietary	50.00000	0.00147	
			Proprietary	Proprietary	2.00000	0.00115	
			Surfactant	68439-51-0	2.00000	0.00108	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00108	
			Alkali Chloride salt	Proprietary	15.00000	0.00108	
			Sugar	57-50-1	100.00000	0.00046	
			Proprietary	Proprietary	100.00000	0.00046	
			Proprietary	Proprietary	15.00000	0.00044	
			Proprietary	Proprietary	15.00000	0.00044	
			Proprietary	Proprietary	15.00000	0.00044	
			Water	7732-18-5	100.00000	0.00023	
			Water	7732-18-5	48.00000	0.00021	
			2-Butoxyethanol	111-76-2	13.00000	0.00006	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Dioxane	123-91-1	1.00000	0.00000	
			Organophylic Clay	68953-58-2			

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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ntero Resources
No. Norris Unit 1H
As-Drilled Plat
Resources Corporation

Top Hole coordinates verified by survey grade GPS. As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys, Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

11,707' to Bottom Hole

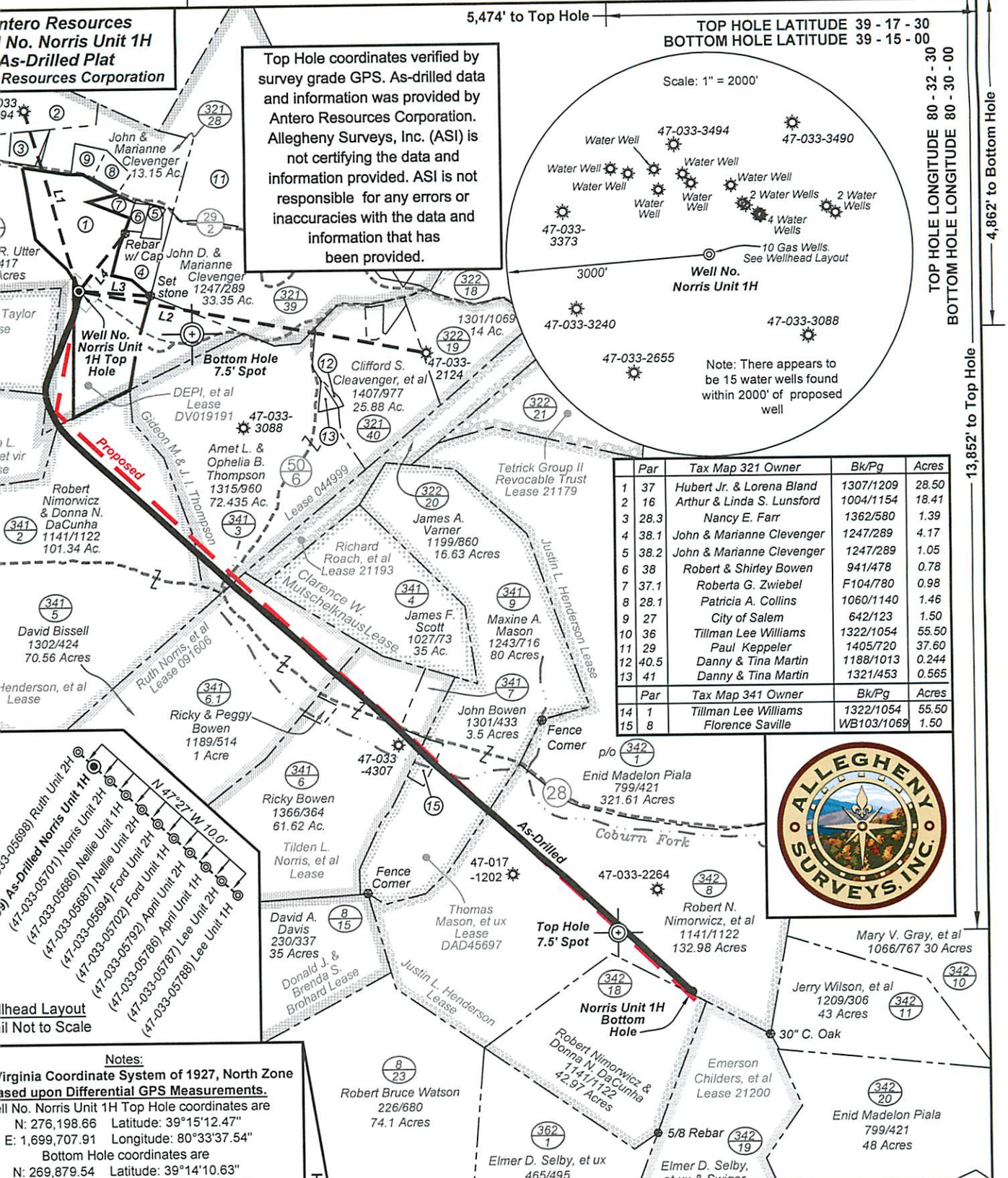
5,474' to Top Hole

TOP HOLE LATITUDE 39 - 17 - 30
BOTTOM HOLE LATITUDE 39 - 15 - 00

TOP HOLE LONGITUDE 80 - 32 - 30
BOTTOM HOLE LONGITUDE 80 - 30 - 00

4,862' to Bottom Hole

13,852' to Top Hole



	Par	Tax Map 321 Owner	Bk/Pg	Acres
1	37	Hubert Jr. & Lorena Bland	1307/1209	28.50
2	16	Arthur & Linda S. Lunsford	1004/1154	18.41
3	28.3	Nancy E. Farr	1362/580	1.39
4	38.1	John & Marianne Clevenger	1247/289	4.17
5	38.2	John & Marianne Clevenger	1247/289	1.05
6	38	Robert & Shirley Bowen	941/478	0.78
7	37.1	Roberta G. Zwiebel	F104/780	0.98
8	28.1	Patricia A. Collins	1060/1140	1.46
9	27	City of Salem	642/123	1.50
10	36	Tillman Lee Williams	1322/1054	55.50
11	29	Paul Keppeler	1405/720	37.60
12	40.5	Danny & Tina Martin	1188/1013	0.244
13	41	Danny & Tina Martin	1321/453	0.565
	Par	**Tax Map 341 Owner**	**Bk/Pg**	**Acres**
14	1	Tillman Lee Williams	1322/1054	55.50
15	8	Florence Saville	WB103/1069	1.50

ALLEGHENY SURVEYS, INC.

(47-033-05698) Ruth Unit 2H
(47-033-05699) As-Drilled Norris Unit 1H
(47-033-05701) Norris Unit 2H
(47-033-05686) Nellie Unit 1H
(47-033-05687) Nellie Unit 2H
(47-033-05694) Ford Unit 2H
(47-033-05702) Ford Unit 1H
(47-033-05792) April Unit 2H
(47-033-05786) April Unit 1H
(47-033-05787) Lee Unit 2H
(47-033-05788) Lee Unit 1H
N 47°27' W 10.0'

lhead Layout
il Not to Scale

Notes:
Virginia Coordinate System of 1927, North Zone
ased upon Differential GPS Measurements.
ll No. Norris Unit 1H Top Hole coordinates are
N: 276,198.66 Latitude: 39°15'12.47"
E: 1,699,707.91 Longitude: 80°33'37.54"
Bottom Hole coordinates are
N: 269,879.54 Latitude: 39°14'10.63"
E: 1,705,098.36 Longitude: 80°32'28.09"
UTM Zone 17, NAD 1983
Hole Coordinates: Bottom Hole Coordinates:
4,345,006.117m N: 4,343,108.377m
537,942.707m E: 539,617.030m
ientation and corner and well references are based
he grid north meridian. Well location references are based upon the magnetic meridian.

Line	Bearing	Distance
L1	S 16°36' E	1683.9'
L2	N 79°15' W	3146.9'
L3	N 85°40' W	642.9'
L4	S 39°24' W	668.1'

(-⊕-) Denotes location of well on United States Topographic Maps

Legend
- ◎ Proposed gas well
- ⊕ Found corner, as noted
- Surface boundary (approx.)
- Existing Road
- Interior surface tracts (approx.)
- Creek or Drain

NO: 254-36-TM-12
WING NO: Norris 1H As-Drilled Plat
E: 1" = 1200'
NIMUM DEGREE OF ACCURACY: Submeter
ROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

DATE: April 14 2015
OPERATOR'S WELL NO. Norris Unit 1H

API WELL NO:
47 - 033 - 05699
STATE COUNTY PERMIT

ELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL
(IF GAS) PRODUCTION : ☐ STORAGE ☐ DEEP ☒ SHALLOW

OCATION: ELEVATION: Original Grade - 1401' Existing Grade - 1376' WATERSHED: Tenmile Creek QUADRANGLE: Salem & Big Isaac
STRICT: Tenmile COUNTY: Harrison
URFACE OWNER: Hubert Jr. & Lorena Bland ACREAGE: 28.50
OYALTY OWNER: Ruth Norris, et al; Victor G.Taylor; Thomas Mason, et ux; Justin L. Henderson; Justin Henderson, et al; Valma L. Arters, et vir; DEPI, et al; Gideon M. & J. I. Thompson; Tiden L. Norris, et al LEASE NO: DAD45697; 091606; DV019191; 044999 ACREAGE: 1026.936; 1012; 55.5; 81.5; 70.56; 283; 144; 66.12; 55
ROPOSED WORK: ☐ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☐ PERFORATE NEW FORMATION ☒ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: TVD 7,410' MD 15,395'

VELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
DDRESS: 1615 Wynkoop Street ADDRESS: 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313

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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 033 - 05701 County Harrison District Tenmile
Quad Salem Pad Name Hubert Pad Field/Pool Name
Farm name Bland, Hubert Jr. and Lorena Well Number Norris Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,345,003.901m	Easting 537,945.051m
Landing Point of Curve	Northing 4,344,722.91m	Easting 538,090.08m
Bottom Hole	Northing 4,343,193.631m	Easting 539,824.814m

Elevation (ft) 1376' GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other ___

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine ■Gas □ NGL □ Oil □ Other ___
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air □ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine

Mud Type(s) and Additive(s)
Air - Foam & 4% KCL
Mud - Polymer

Date permit issued 12/27/2012 Date drilling commenced 5/12/2013 Date drilling ceased 8/19/2013
Date completion activities began 10/2/2013 Date completion activities ceased 1/17/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 367' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1760' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
AC 5/26/15
W.S. 6/02/15

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API 47- 033 - 05701 Farm name Bland, Hubert Jr. and Lorena Well number Norris Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30"	20"	40'	New	94#/H-40	N/A	Y
Surface	17-1/2"	13-3/8"	457'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2578'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15,752'	New	20#/P-110	N/A	Y
Tubing		2-3/8"	7493'	New	4.7#/N-80	N/A	N/A
Packer type and depth set		N/A					

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	200 sx	15.6	1.18	236 Cu. Ft.	0'	8 hrs
Surface	Class A	532 sx	15.6	1.18	628 Cu. Ft.	0'	8 hrs
Coal							
Intermediate 1	Class A	939 sx	15.6	1.18	1108 Cu. Ft.	0'	8 hrs
Intermediate 2							
Intermediate 3							
Production	Class H	1069 sx (Lead), 1460 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.80 (Tail)	3917 Cu. Ft.	~500' into Intermediate Casing	8 hrs
Tubing							

Drillers TD (ft) 15,765' MD, 7428' TVD (BHL), 7475' TVD (Deepest Point Drilled) Loggers TD (ft) 15,718' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6979'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Nellie Unit 2H API# 47-033-05687). Please reference the wireline logs submitted with Form WR-35 for the Nellie Unit 2H. A Cement Bond Log has been included with this submittal.

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction ☐ neutron ☐ resistivity ☐ gamma ray ☐ temperature

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ☐ Yes ■ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING

Conductor - 0

Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface

Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface

Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ■ Yes ☐ No TYPE OF TRACER(S) USED Radioactive and Chemical

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API 47- 033 - 05701 Farm name Bland, Hubert Jr. and Lorena Well number Norris Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*PLEASE SEE ATTACHED EXHIBIT 1

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

*PLEASE SEE ATTACHED EXHIBIT 2

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Please insert additional pages as applicable.

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API 47- 033 - 05701 Farm name Bland, Hubert Jr. and Lorena Well number Norris Unit 2H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	7430' (Top)	TVD	7774' (Top)	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole ---- psi DURATION OF TEST ---- hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	11,266 mcfpd	---- bpd	---- bpd	---- bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*PLEASE SEE ATTACHED EXHIBIT 3

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Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company, LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Allied Oil & Gas Services, LLC
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Natalie Komp Telephone 303-357-6820
Signature Natalie Komp Title Permitting Agent Date 4/23/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-033-05701 Farm Name Bland, Hubert Jr. & Lorena Well Number Norris Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2-Oct-13	15521'	15692'	60	Marcellus
2	29-Oct-13	15318'	15489'	60	Marcellus
3	29-Oct-13	15115'	15286'	60	Marcellus
4	3-Dec-13	14912'	15083'	60	Marcellus
5	3-Dec-13	14710'	14881'	60	Marcellus
6	4-Dec-13	14507'	14678'	60	Marcellus
7	4-Dec-13	14304'	14475'	60	Marcellus
8	5-Oct-13	14101'	14272'	60	Marcellus
9	5-Dec-13	13899'	14070'	60	Marcellus
10	5-Dec-13	13696'	13867'	60	Marcellus
11	5-Dec-13	13493'	13664'	60	Marcellus
12	5-Dec-13	13291'	13461'	60	Marcellus
13	6-Dec-13	13088'	13,259	60	Marcellus
14	6-Dec-13	12885'	13056'	60	Marcellus
15	7-Dec-13	12682'	12853'	60	Marcellus
16	7-Dec-13	12480'	12650'	60	Marcellus
17	8-Dec-13	12277'	12448'	60	Marcellus
18	8-Dec-13	12074'	12245'	60	Marcellus
19	8-Dec-13	11871'	12042'	60	Marcellus
20	9-Dec-13	11669'	11840'	60	Marcellus
21	9-Dec-13	11466'	11637'	60	Marcellus
22	9-Dec-13	11263'	11434'	60	Marcellus
23	10-Dec-13	11060'	11,231	60	Marcellus
24	10-Dec-13	10858'	11029'	60	Marcellus
25	11-Dec-13	10655'	10826'	60	Marcellus
26	11-Dec-13	10452'	10623'	60	Marcellus
27	11-Dec-13	10249'	10420'	60	Marcellus
28	11-Dec-13	10047'	10218'	60	Marcellus
29	12-Dec-13	9844'	10015'	60	Marcellus
30	12-Dec-13	9641'	9812'	60	Marcellus
31	12-Dec-13	9438'	9609'	60	Marcellus
32	13-Dec-13	9236'	9407'	60	Marcellus
33	13-Dec-13	9033'	9204'	60	Marcellus
34	13-Dec-13	8830'	9001'	60	Marcellus
35	13-Dec-13	8627'	8798'	60	Marcellus
36	13-Dec-13	8425'	8596'	60	Marcellus
37	14-Dec-13	8222'	8393'	60	Marcellus
38	14-Dec-13	8019'	8190'	60	Marcellus
39	14-Dec-13	7817'	7987'	60	Marcellus

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Office of Oil and Gas

API 47-033-05701 Farm Name Bland, Hubert Jr. and Lorena Well Number Norris Unit 2H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	28-Oct-13	73.1	7,469	6,712	4,420	129,000	6,613	N/A
2	29-Oct-13	68.5	8,126	6,261	3,926	86,700	6,510	N/A
3	29-Oct-13	46.9	8,223	6,094	9,358	47,500	3,483	N/A
4	3-Dec-13	69.4	7,903	6,369	4,332	231,400	6,356	N/A
5	3-Dec-13	68.0	7,493	5,127	4,494	150,600	6,587	N/A
6	4-Dec-13	66.2	7,619	6,520	4,555	236,800	6,709	N/A
7	4-Dec-13	67.6	7,615	5,917	4,397	190,700	5,996	N/A
8	5-Dec-13	67.0	7,683	6,110	4,640	186,100	6,646	N/A
9	5-Dec-13	65.3	7,624	6,013	4,253	231,500	6,244	N/A
10	5-Dec-13	64.0	8,398	6,456	4,203	122,400	6,471	N/A
11	5-Dec-13	69.8	7,547	6,290	4,578	234,500	6,154	N/A
12	5-Dec-13	65.6	7,563	6,094	4,465	183,400	6,540	N/A
13	6-Dec-13	51.6	8,213	6,863	4,612	29,000	6,559	N/A
14	6-Dec-13	73.1	7,750	6,303	4,652	233,600	6,097	N/A
15	7-Dec-13	67.3	7,470	6,636	4,736	231,100	5,990	N/A
16	7-Dec-13	70.3	7,405	5,532	4,590	230,800	6,113	N/A
17	8-Dec-13	74.8	7,547	5,642	5,124	231,100	6,050	N/A
18	8-Dec-13	71.5	7,616	5,676	4,873	230,200	6,169	N/A
19	8-Dec-13	65.8	7,814	5,164	5,171	137,300	6,521	N/A
20	9-Dec-13	60.1	7,937	6,487	4,106	107,100	6,531	N/A
21	9-Dec-13	70.5	7,269	6,082	4,608	230,600	5,998	N/A
22	9-Dec-13	70.7	7,504	5,508	4,328	235,000	6,448	N/A
23	10-Dec-13	74.9	7,495	5,946	4,692	233,800	5,921	N/A
24	10-Dec-13	72.3	7,300	5,105	4,746	233,300	6,053	N/A
25	11-Dec-13	71.6	7,493	5,726	5,104	230,800	5,881	N/A
26	11-Dec-13	71.7	7,616	5,823	4,939	235,900	5,879	N/A
27	11-Dec-13	68.8	7,411	6,049	4,365	196,800	6,319	N/A
28	11-Dec-13	72.4	7,716	6,105	4,519	197,600	6,355	N/A
29	12-Dec-13	72.9	7,318	5,794	4,972	233,900	5,845	N/A
30	12-Dec-13	75.2	7,690	6,191	4,873	231,700	5,807	N/A
31	12-Dec-13	68.2	7,268	6,119	4,930	233,000	5,825	N/A
32	13-Dec-13	69.9	7,377	6,029	4,691	232,900	5,801	N/A
33	13-Dec-13	73.5	7,529	5,972	4,635	230,800	5,798	N/A
34	13-Dec-13	67.8	7,782	6,013	5,005	231,200	5,636	N/A
35	13-Dec-13	72.7	7,341	5,454	4,416	234,500	5,760	N/A
36	13-Dec-13	77.4	7,284	5,855	4,877	231,800	5,741	N/A
37	14-Dec-13	64.3	7,335	5,708	4,487	112,800	6,107	N/A
38	14-Dec-13	67.7	7,523	5,698	4,641	222,700	6,211	N/A
39	14-Dec-13	73.8	7,434	5,356	4,212	233,000	5,770	N/A
AVG =		68.8	7,608	5,969	4,731	7,682,900	237,494	`=TOTAL

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API 47-033-05701 Farm Name Hubert Jr. & Lorena Bland Well Number Norris Unit 2H

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Freshwater	367	NA	NA	NA
Siltstone	0	97	0	97
Sandy Shale	est. 97	317	est. 97	317
Sandstone	est. 317	507	est. 317	507
Silty Sandstone	est. 507	657	est. 507	657
Sandstone	est. 657	1,027	est. 657	1,027
Limestone/Dolomite	est. 1027	1,117	est. 1027	1,117
Siltstone	est. 1117	1,297	est. 1117	1,297
Sandstone	est. 1297	1,327	est. 1297	1,327
Limey Siltstone	est. 1327	1,477	est. 1327	1,477
Sandstone	est. 1477	1,597	est. 1477	1,597
Sandy Siltstone	est. 1597	1,737	est. 1597	1,737
Coal	est. 1737	1,757	est. 1737	1,757
Sandstone	est. 1757	1,797	est. 1757	1,797
Siltstone	est. 1797	1,817	est. 1797	1,817
Sandstone	est. 1817	2,097	est. 1817	2,097
Limey Shale	est. 2097	2,278	est. 2097	2,278
Big Lime	2,278	2,407	2,278	2,407
Big Injun	2,407	2,759	2,407	2,759
Gantz Sand	2,759	2,847	2,759	2,847
Fifty Foot Sandstone	2,847	2,960	2,847	2,960
Gordon	2,960	3,290	2,960	3,290
Fifth Sandstone	3,290	3,322	3,290	3,322
Bayard	3,322	3,665	3,322	3,667
Warren	3,665	3,893	3,667	3,894
Speechley	3,893	4,410	3,894	4,411
Baltown	4,410	4,737	4,411	4,739
Bradford	4,737	5,258	4,739	5,263
Benson	5,258	5,535	5,263	5,539
Alexander	5,535	7,563	5,539	5,768
Elk	7,563	6,368	5,768	6,373
Rhinestreet	6,368	6,880	6,373	6,885
Sycamore	6,880	7,102	6,885	7,115
Middlesex	7,102	7,253	7,115	7,314
Burkett	7,253	7,279	7,314	7,360
Tully	7,279	7,430	7,360	7,774
Marcellus	7,430	NA	7,774	NA

*Please note Antero determines formation tops based on mud and wireline logs that are only run on one well on a multi-well pad (Please reference Ruth Unit 2H API# 47-033-05698). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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ANTERO RESOURCES

Antero Resources
Norris Unit 2H
Harrison County West Virginia
Northing: 14254517.38
Easting: 1764860.01
As Drilled

WELL DETAILS: Norris Unit 2H

Ground Level: 1376.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14254517.38	1764860.01	39° 15' 12.394 N	80° 33' 37.449 W	

Scientific Drilling

Genie Lightfoot
Scientific Drilling
421 South Eagle Lane
Oklahoma City Oklahoma
405-787-3663

REFERENCE INFORMATION

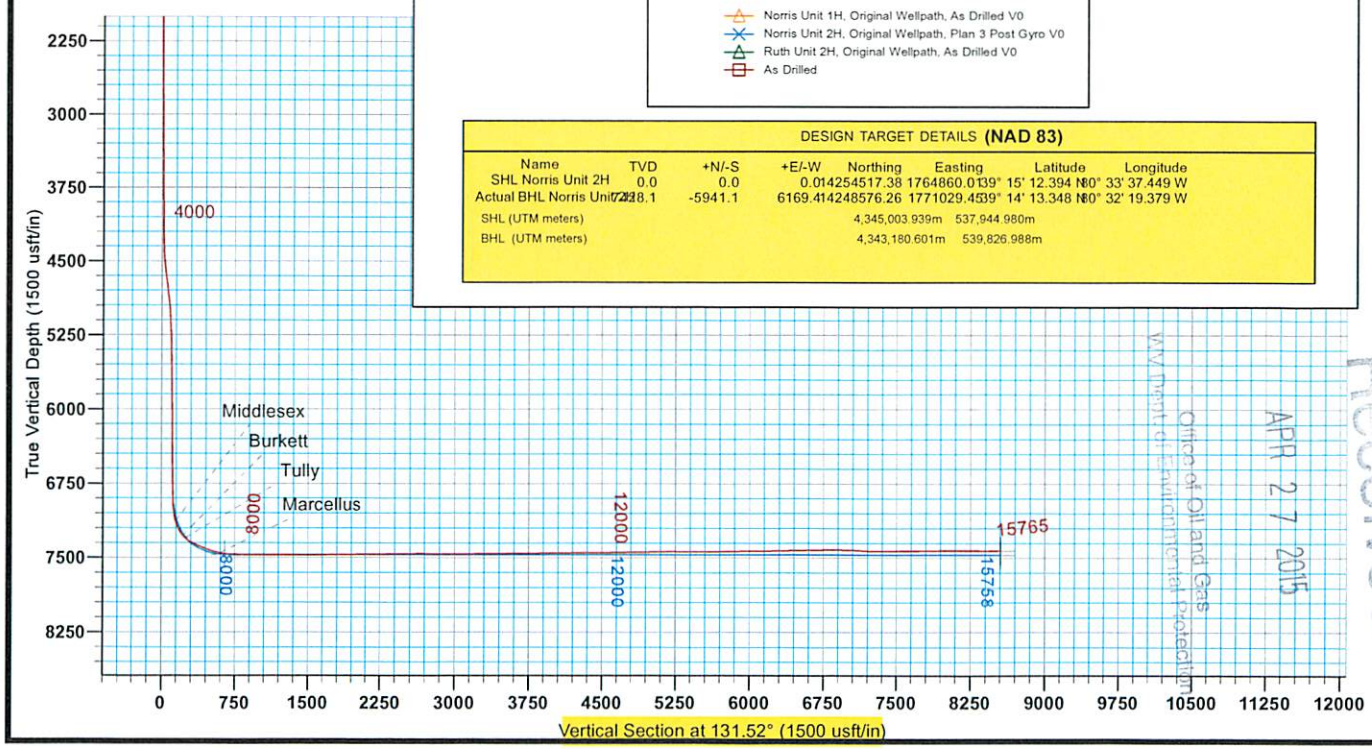
Co-ordinate (N/E) Reference: Well Norris Unit 2H, Grid North
Vertical (TVD) Reference: Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (Original Well Elev)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (Original Well Elev)
Calculation Method: Minimum Curvature

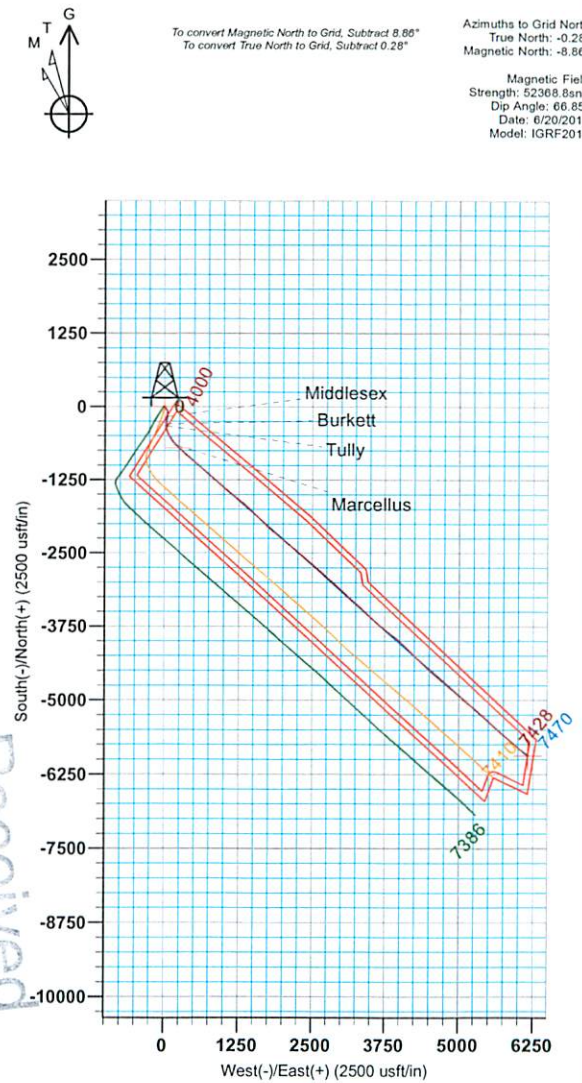
LEGEND

- Norris Unit 1H, Original Wellpath, As Drilled V0
- Norris Unit 2H, Original Wellpath, Plan 3 Post Gyro V0
- Ruth Unit 2H, Original Wellpath, As Drilled V0
- As Drilled

DESIGN TARGET DETAILS **(NAD 83)**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Norris Unit 2H	0.0	0.0	0.0	14254517.38	1764860.01	39° 15' 12.394 N	80° 33' 37.449 W
Actual BHL Norris Unit 2H	7428.1	-5941.1	6169.4	14248576.26	1771029.45	39° 14' 13.348 N	80° 32' 19.379 W
SHL (UTM meters)				4,345,003.939m	537,944.980m		
BHL (UTM meters)				4,343,180.601m	539,826.988m		





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Antero Resources

Harrison County West Virginia
Ruth/Norris/Nellie/Ford Pad
Norris Unit 2H
Original Wellpath

Design: As Drilled

EOW Completion Report

30 August, 2013

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WV Dept. of Environmental Protection

Scientific Drilling

ANTERO RESOURCES

EOW Completion Report

Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 2H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

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Project Harrison County West Virginia, Harrison County, USA

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Ruth/Norris/Nellie/Ford Pad

Site Position:		**Northing:**	14,254,530.66 usft	**Latitude:**	39° 15' 12.526 N
From:	Map	**Easting:**	1,764,845.07 usft	**Longitude:**	80° 33' 37.638 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.28 °

Well Norris Unit 2H, Marcellus

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,254,517.38 usft	**Latitude:**	39° 15' 12.394 N
	+E/-W	0.0 usft	**Easting:**	1,764,860.01 usft	**Longitude:**	80° 33' 37.449 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,400.0 usft	**Ground Level:**	1,376.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/20/2013	-8.58	66.85	52,369

Design As Drilled

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	131.52

Survey Program Date 8/30/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	2,530.2	Survey #2 Def Gyro to Int (Original Wellpa	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
2,630.2	4,261.9	Survey #3 Def Gyro 2 (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
4,361.0	6,879.0	Survey #4 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,900.5	15,765.0	Survey #5 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.41	168.83	100.0	-0.4	0.1	0.3	0.41
200.0	0.32	180.98	200.0	-1.0	0.1	0.8	0.12
300.0	0.15	164.99	300.0	-1.4	0.2	1.0	0.18
400.0	0.34	146.38	400.0	-1.8	0.4	1.4	0.20
500.0	0.34	171.50	500.0	-2.3	0.6	2.0	0.15
600.0	0.35	169.56	600.0	-2.9	0.7	2.4	0.02
700.0	0.13	166.82	700.0	-3.3	0.7	2.8	0.22
800.0	0.32	158.35	800.0	-3.7	0.9	3.1	0.19

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 2H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
900.0	0.37	159.37	900.0	-4.2	1.1	3.6	0.05
1,000.0	0.20	184.74	1,000.0	-4.7	1.2	4.0	0.21
1,100.0	0.16	128.22	1,100.0	-5.0	1.3	4.3	0.17
1,200.0	0.26	161.72	1,200.0	-5.3	1.5	4.6	0.15
1,300.0	0.34	168.51	1,300.0	-5.8	1.6	5.0	0.09
1,400.0	0.19	124.12	1,400.0	-6.2	1.8	5.4	0.24
1,500.0	0.34	185.16	1,500.0	-6.6	1.9	5.8	0.30
1,600.0	0.30	203.74	1,600.0	-7.1	1.8	6.0	0.11
1,700.0	0.29	177.74	1,700.0	-7.6	1.7	6.3	0.13
1,800.0	0.37	200.79	1,800.0	-8.1	1.6	6.6	0.15
1,900.0	0.18	256.55	1,900.0	-8.5	1.3	6.6	0.31
2,000.0	0.44	203.40	2,000.0	-8.9	1.0	6.6	0.36
2,100.0	0.17	199.80	2,100.0	-9.4	0.8	6.8	0.27
2,200.0	0.46	201.95	2,200.0	-9.9	0.6	7.0	0.29
2,300.0	0.26	191.35	2,300.0	-10.5	0.4	7.2	0.21
2,400.0	0.14	148.78	2,400.0	-10.8	0.4	7.5	0.18
2,500.0	0.18	186.16	2,500.0	-11.1	0.5	7.7	0.11
2,530.2	0.31	179.05	2,530.2	-11.2	0.5	7.8	0.44
2,630.2	0.43	127.99	2,630.2	-11.7	0.8	8.3	0.34
2,730.2	0.41	113.19	2,730.2	-12.1	1.4	9.0	0.11
2,830.2	0.57	120.09	2,830.2	-12.4	2.2	9.9	0.17
2,930.2	0.54	115.98	2,930.1	-12.9	3.0	10.8	0.05
3,030.2	0.72	109.02	3,030.1	-13.3	4.0	11.8	0.20
3,130.2	0.51	125.62	3,130.1	-13.8	5.0	12.9	0.27
3,230.2	0.36	99.10	3,230.1	-14.1	5.7	13.6	0.25
3,330.2	0.35	129.76	3,330.1	-14.3	6.2	14.1	0.19
3,430.2	0.26	104.61	3,430.1	-14.6	6.6	14.6	0.16
3,530.2	0.25	139.21	3,530.1	-14.8	7.0	15.1	0.15
3,630.2	0.18	108.71	3,630.1	-15.0	7.3	15.4	0.13
3,730.2	0.52	90.77	3,730.1	-15.1	7.9	15.9	0.35
3,830.2	0.32	78.54	3,830.1	-15.0	8.6	16.4	0.22
3,930.2	0.36	114.27	3,930.1	-15.1	9.2	16.9	0.21
4,030.2	0.36	116.18	4,030.1	-15.4	9.8	17.5	0.01
4,130.2	0.46	102.46	4,130.1	-15.6	10.4	18.1	0.14
4,230.2	0.53	117.41	4,230.1	-15.9	11.2	18.9	0.15
4,261.9	0.49	119.14	4,261.9	-16.0	11.5	19.2	0.13
4,361.0	2.04	152.03	4,360.9	-17.8	12.7	21.3	1.67
4,461.0	4.74	159.61	4,460.7	-23.2	15.0	26.6	2.73
4,561.0	6.79	148.75	4,560.2	-32.2	19.5	35.9	2.31
4,661.0	7.81	135.94	4,659.4	-42.1	27.3	48.3	1.91
4,761.0	7.02	135.11	4,758.6	-51.3	36.3	61.2	0.80
4,861.0	7.53	154.19	4,857.8	-61.5	43.5	73.3	2.46
4,961.0	6.25	166.34	4,957.1	-72.7	47.6	83.9	1.93
5,061.0	5.03	178.79	5,056.6	-82.4	49.0	91.3	1.72

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Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,161.0	2.58	187.02	5,156.3	-89.0	48.8	95.5	2.50
5,261.0	2.36	185.41	5,256.2	-93.3	48.3	98.0	0.23
5,361.0	1.25	184.37	5,356.2	-96.4	48.1	99.9	1.11
5,461.0	0.99	188.67	5,456.2	-98.4	47.8	101.0	0.27
5,561.0	1.69	184.74	5,556.1	-100.7	47.6	102.4	0.71
5,661.0	1.82	184.67	5,656.1	-103.8	47.3	104.2	0.13
5,761.0	1.69	178.89	5,756.1	-106.8	47.2	106.2	0.22
5,861.0	1.48	176.66	5,856.0	-109.6	47.3	108.1	0.22
5,961.0	0.74	190.71	5,956.0	-111.5	47.3	109.3	0.78
6,061.0	0.52	207.81	6,056.0	-112.5	47.0	109.8	0.29
6,161.0	0.37	219.88	6,156.0	-113.2	46.5	109.9	0.18
6,261.0	0.40	207.74	6,256.0	-113.7	46.2	110.0	0.09
6,361.0	0.51	171.48	6,356.0	-114.5	46.1	110.4	0.30
6,461.0	0.61	166.03	6,456.0	-115.5	46.3	111.2	0.11
6,561.0	0.79	153.71	6,556.0	-116.6	46.7	112.3	0.23
6,661.0	1.06	157.59	6,656.0	-118.1	47.4	113.7	0.28
6,761.0	1.33	156.26	6,755.9	-120.0	48.2	115.6	0.27
6,861.0	1.43	149.24	6,855.9	-122.1	49.3	117.8	0.20
6,879.0	1.46	146.76	6,873.9	-122.5	49.5	118.3	0.39
6,900.5	1.46	146.76	6,895.4	-123.0	49.8	118.8	0.00
6,917.0	1.16	136.67	6,911.9	-123.3	50.1	119.2	2.29
6,948.0	2.54	188.13	6,942.9	-124.2	50.2	119.9	6.55
6,979.0	6.83	196.28	6,973.8	-126.6	49.6	121.0	13.97
7,011.0	11.30	192.53	7,005.4	-131.5	48.3	123.4	14.08
7,042.0	15.03	194.42	7,035.5	-138.4	46.7	126.7	12.11
7,074.0	18.66	196.10	7,066.2	-147.3	44.2	130.8	11.44
7,105.0	23.01	194.15	7,095.1	-157.9	41.4	135.7	14.21
7,136.0	27.12	191.68	7,123.2	-170.7	38.5	142.0	13.68
7,143.0	27.97	191.14	7,129.4	-173.9	37.8	143.6	12.69
Middlesex							
7,168.0	31.03	189.43	7,151.2	-186.0	35.6	150.0	12.69
7,199.0	35.19	187.65	7,177.1	-202.8	33.1	159.2	13.78
7,231.0	39.22	186.59	7,202.6	-222.0	30.7	170.2	12.75
7,262.0	43.11	185.55	7,225.9	-242.3	28.6	182.0	12.74
7,293.0	47.47	184.41	7,247.7	-264.2	26.7	195.1	14.30
7,325.0	51.38	181.76	7,268.6	-288.5	25.4	210.2	13.74
7,337.0	52.77	180.64	7,275.9	-297.9	25.2	216.4	13.71
Burkett							
7,356.0	54.98	178.94	7,287.1	-313.3	25.3	226.6	13.71
7,383.0	58.10	175.40	7,302.0	-335.8	26.4	242.3	15.92
Tully							
7,388.0	58.69	174.77	7,304.6	-340.0	26.8	245.4	15.92
7,419.0	61.68	170.53	7,320.1	-366.7	30.2	265.7	15.29
7,450.0	63.39	166.07	7,334.4	-393.6	35.8	287.7	13.90
7,482.0	64.37	160.33	7,348.5	-421.1	44.1	312.1	16.39

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 2H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,513.0	65.64	155.30	7,361.6	-447.1	54.7	337.3	15.26
7,545.0	67.04	152.36	7,374.4	-473.4	67.6	364.4	9.48
7,576.0	68.61	149.83	7,386.1	-498.5	81.5	391.5	9.10
7,608.0	69.56	148.29	7,397.5	-524.1	96.9	420.0	5.39
7,639.0	69.72	146.07	7,408.3	-548.6	112.6	448.0	6.73
7,670.0	70.80	144.01	7,418.8	-572.5	129.3	476.3	7.16
7,702.0	71.77	141.41	7,429.1	-596.6	147.7	506.1	8.27
7,733.0	74.07	139.20	7,438.2	-619.4	166.6	535.3	10.07
7,765.0	76.77	137.52	7,446.2	-642.5	187.2	566.1	9.85
7,796.0	78.23	136.86	7,452.9	-664.7	207.8	596.2	5.15
7,797.0	78.31	136.86	7,453.1	-665.4	208.5	597.2	7.56
Marcellus							
7,827.0	80.57	137.01	7,458.6	-687.0	228.6	626.5	7.56
7,859.0	84.86	135.01	7,462.7	-709.8	250.6	658.2	14.77
7,890.0	87.48	134.42	7,464.8	-731.6	272.6	689.0	8.66
7,921.0	86.23	134.12	7,466.5	-753.2	294.8	720.0	4.15
7,953.0	85.93	133.75	7,468.7	-775.3	317.8	751.9	1.49
7,984.0	85.97	133.56	7,470.8	-796.7	340.1	782.8	0.62
8,075.0	89.70	132.56	7,474.3	-858.7	406.6	873.6	4.24
8,169.0	90.27	132.13	7,474.3	-922.1	476.0	967.6	0.76
8,263.0	90.67	131.69	7,473.5	-984.8	546.0	1,061.6	0.63
8,357.0	91.38	131.84	7,471.8	-1,047.4	616.1	1,155.6	0.77
8,451.0	89.29	130.98	7,471.3	-1,109.6	686.6	1,249.6	2.40
8,546.0	88.99	130.87	7,472.7	-1,171.8	758.4	1,344.6	0.34
8,640.0	89.19	131.02	7,474.2	-1,233.4	829.3	1,438.6	0.27
8,734.0	89.30	130.75	7,475.5	-1,295.0	900.4	1,532.6	0.31
8,828.0	90.94	130.99	7,475.3	-1,356.5	971.5	1,626.5	1.76
8,922.0	90.20	129.98	7,474.3	-1,417.5	1,043.0	1,720.5	1.33
9,016.0	91.08	129.91	7,473.3	-1,477.8	1,115.0	1,814.5	0.94
9,110.0	90.00	127.21	7,472.4	-1,536.4	1,188.5	1,908.3	3.09
9,204.0	90.60	129.07	7,471.9	-1,594.5	1,262.5	2,002.2	2.08
9,298.0	91.44	132.11	7,470.2	-1,655.6	1,333.8	2,096.1	3.35
9,392.0	91.54	133.16	7,467.8	-1,719.3	1,402.9	2,190.1	1.12
9,486.0	91.68	133.77	7,465.1	-1,783.9	1,471.1	2,284.0	0.67
9,580.0	90.37	133.75	7,463.5	-1,848.9	1,539.0	2,377.9	1.39
9,674.0	90.54	134.11	7,462.7	-1,914.1	1,606.7	2,471.8	0.42
9,769.0	90.81	135.54	7,461.6	-1,981.1	1,674.1	2,566.7	1.53
9,863.0	89.33	135.37	7,461.5	-2,048.1	1,740.0	2,660.4	1.58
9,957.0	89.97	133.50	7,462.0	-2,113.9	1,807.1	2,754.3	2.10
10,051.0	89.23	129.96	7,462.7	-2,176.4	1,877.3	2,848.3	3.85
10,145.0	89.29	129.53	7,463.9	-2,236.5	1,949.6	2,942.2	0.46
10,239.0	92.62	129.49	7,462.4	-2,296.3	2,022.1	3,036.1	3.54
10,334.0	91.68	128.61	7,458.8	-2,356.1	2,095.8	3,131.0	1.35
10,428.0	91.51	127.23	7,456.2	-2,413.9	2,169.9	3,224.8	1.48
10,522.0	89.43	131.20	7,455.4	-2,473.3	2,242.7	3,318.7	4.77

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 2H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
10,617.0	89.43	130.91	7,456.3	-2,535.7	2,314.3	3,413.7	0.31
10,711.0	89.83	131.18	7,457.0	-2,597.4	2,385.2	3,507.6	0.51
10,806.0	90.17	131.51	7,457.0	-2,660.1	2,456.6	3,602.6	0.50
10,900.0	90.27	131.29	7,456.6	-2,722.3	2,527.1	3,696.6	0.26
10,994.0	90.30	130.78	7,456.1	-2,784.0	2,598.0	3,790.6	0.54
11,088.0	90.27	129.94	7,455.7	-2,844.9	2,669.6	3,884.6	0.89
11,182.0	90.91	129.95	7,454.7	-2,905.2	2,741.7	3,978.6	0.68
11,276.0	90.57	131.75	7,453.5	-2,966.7	2,812.8	4,072.6	1.95
11,371.0	90.71	131.52	7,452.4	-3,029.8	2,883.8	4,167.6	0.28
11,465.0	90.92	130.80	7,451.1	-3,091.7	2,954.5	4,261.5	0.80
11,559.0	90.34	133.24	7,450.0	-3,154.6	3,024.3	4,355.5	2.67
11,653.0	90.74	132.48	7,449.2	-3,218.5	3,093.2	4,449.5	0.91
11,747.0	90.60	132.76	7,448.1	-3,282.2	3,162.4	4,543.5	0.33
11,841.0	90.71	132.30	7,447.0	-3,345.7	3,231.7	4,637.4	0.50
11,935.0	90.77	132.18	7,445.8	-3,408.9	3,301.3	4,731.4	0.14
12,030.0	90.81	132.01	7,444.5	-3,472.6	3,371.7	4,826.4	0.18
12,124.0	91.44	132.80	7,442.6	-3,536.0	3,441.1	4,920.4	1.07
12,218.0	90.54	132.83	7,441.0	-3,599.8	3,510.1	5,014.3	0.96
12,312.0	90.91	132.21	7,439.8	-3,663.4	3,579.4	5,108.3	0.77
12,406.0	90.10	131.47	7,439.0	-3,726.1	3,649.4	5,202.3	1.17
12,500.0	89.80	127.54	7,439.1	-3,785.8	3,721.9	5,296.2	4.19
12,595.0	89.66	127.37	7,439.5	-3,843.6	3,797.3	5,391.0	0.23
12,689.0	88.89	126.23	7,440.7	-3,899.9	3,872.6	5,484.7	1.46
12,783.0	90.64	128.67	7,441.1	-3,957.1	3,947.2	5,578.4	3.19
12,876.0	91.58	133.27	7,439.3	-4,018.0	4,017.4	5,671.4	5.05
12,971.0	90.04	134.23	7,437.9	-4,083.7	4,086.0	5,766.3	1.91
13,064.0	91.04	135.52	7,437.1	-4,149.3	4,151.9	5,859.1	1.75
13,158.0	90.50	135.20	7,435.8	-4,216.2	4,217.9	5,952.9	0.67
13,252.0	90.66	134.40	7,434.8	-4,282.4	4,284.6	6,046.7	0.87
13,346.0	90.71	135.55	7,433.7	-4,348.9	4,351.1	6,140.6	1.22
13,440.0	91.78	135.35	7,431.7	-4,415.8	4,417.0	6,234.3	1.16
13,534.0	90.40	134.39	7,429.9	-4,482.1	4,483.6	6,328.1	1.79
13,629.0	91.71	131.59	7,428.1	-4,546.9	4,553.1	6,423.1	3.25
13,723.0	90.30	130.01	7,426.5	-4,608.3	4,624.3	6,517.1	2.25
13,817.0	91.17	129.79	7,425.3	-4,668.6	4,696.4	6,611.0	0.95
13,911.0	91.21	130.35	7,423.3	-4,729.1	4,768.3	6,705.0	0.60
14,005.0	90.10	129.89	7,422.3	-4,789.7	4,840.2	6,798.9	1.28
14,099.0	90.34	130.92	7,421.9	-4,850.6	4,911.7	6,892.9	1.13
14,193.0	88.09	131.41	7,423.2	-4,912.5	4,982.5	6,986.9	2.45
14,287.0	87.45	130.98	7,426.8	-4,974.3	5,053.2	7,080.8	0.82
14,381.0	87.45	129.94	7,431.0	-5,035.3	5,124.6	7,174.7	1.11
14,475.0	88.79	129.14	7,434.1	-5,095.1	5,197.1	7,268.6	1.66
14,569.0	89.97	129.60	7,435.1	-5,154.7	5,269.7	7,362.5	1.35
14,663.0	91.24	130.71	7,434.1	-5,215.3	5,341.6	7,456.5	1.79

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Norris Unit 2H
Project:	Harrison County West Virginia	**TVD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Site:	Ruth/Norris/Nellie/Ford Pad	**MD Reference:**	Norris Unit 2H GL 1376' + 24' KB @ 1400.0usft (C
Well:	Norris Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
14,757.0	90.54	132.07	7,432.7	-5,277.4	5,412.1	7,550.5	1.63
14,851.0	90.84	134.05	7,431.5	-5,341.6	5,480.8	7,644.4	2.13
14,945.0	91.51	135.55	7,429.6	-5,407.8	5,547.4	7,738.2	1.75
15,036.0	88.90	133.87	7,429.3	-5,471.8	5,612.1	7,829.1	3.41
15,129.0	90.30	132.57	7,429.9	-5,535.5	5,679.9	7,922.0	2.05
15,223.0	89.25	130.89	7,430.3	-5,598.1	5,750.0	8,016.0	2.11
15,317.0	90.64	131.08	7,430.4	-5,659.7	5,821.0	8,110.0	1.49
15,411.0	90.44	130.39	7,429.5	-5,721.1	5,892.2	8,204.0	0.76
15,505.0	89.09	128.32	7,429.9	-5,780.7	5,964.9	8,297.9	2.63
15,599.0	90.67	128.37	7,430.1	-5,839.0	6,038.6	8,391.8	1.68
15,693.0	90.77	128.00	7,428.9	-5,897.1	6,112.5	8,485.6	0.41
15,718.0	90.57	127.64	7,428.6	-5,912.4	6,132.2	8,510.6	1.65
15,765.0	90.57	127.64	7,428.1	-5,941.1	6,169.4	8,557.5	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
7,143.0	7,129.4	-173.9	37.8	Middlesex
7,337.0	7,275.9	-297.9	25.2	Burkett
7,383.0	7,302.0	-335.8	26.4	Tully
7,797.0	7,453.1	-665.4	208.5	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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WV Dept. of Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/28/2013
Job End Date:	12/14/2013
State:	West Virginia
County:	Harrison
API Number:	47-033-05701-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Norris Unit 2H
Longitude:	-80.56040280
Latitude:	39.25344170
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,600
Total Base Water Volume (gal):	9,974,748
Total Base Non Water Volume:	0

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Environmental Protection

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	ANTERO RESOURCES	Water					
			Water	7732-18-5	100.00000	90.93770	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	5.15741	
			Aluminum Oxide	1344-28-1	1.10000	0.05679	
			Iron Oxide	1309-37-1	0.10000	0.00516	
			Titanium Oxide	13463-67-7	0.10000	0.00516	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	2.89338	
			Aluminum Oxide	1344-28-1	1.10000	0.03186	
			Titanium Oxide	13463-67-7	0.10000	0.00290	
			Iron Oxide	1309-37-1	0.10000	0.00290	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.63492	
			Aluminum Oxide	1344-28-1	1.10000	0.00699	

			Iron Oxide	1309-37-1	0.10000	0.00064	
			Titanium Oxide	13463-67-7	0.10000	0.00064	
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
			Hydrogen Chloride	7647-01-0	18.00000	0.03963	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	70.00000	0.03342	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8	30.00000	0.01802	
			Ethoxylated alcohols	68002-97-1	15.00000	0.00901	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00300	
KR-153SL	Nabors Completion and Production Services	Biocides					
			Polyethlyene-Glycol	25322-68-3	50.00000	0.00634	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00253	
OB-2 LT	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	85.00000	0.00590	
			Crystalline Silica (in the form of quartz)	14808-60-7	10.00000	0.00070	
Super GREEN SOLV	Nabors Completion and Production Services	Paraffin & Scale Additives					
			BTEX Free Aliphatic Hydrocarbon	64742-96-7	100.00000	0.00420	
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Isopropyl Alcohol	67-63-0	40.00000	0.00017	
			Propargyl Alcohol	107-19-7	40.00000	0.00017	
			Glycol Ethers	111-46-6	40.00000	0.00017	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00005	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004	
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000	0.00018	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			Water	7732-18-5	87.50000	0.19265	
			Anionic Polyacrylamide	910644-97-2	40.00000	0.02403	

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			Water	7732-18-5	40.00000	0.02403	
			guar gum	9000-30-0	50.00000	0.02387	
			Water	7732-18-5	80.00000	0.01014	
			Water	7732-18-5	60.00000	0.00913	
			Propylene glycol	57-55-6	15.00000	0.00901	
			Proprietary	Proprietary	50.00000	0.00761	
			Proprietary	Proprietary	15.00000	0.00228	
			Proprietary	Proprietary	15.00000	0.00228	
			Proprietary	Proprietary	15.00000	0.00228	
			Proprietary	Proprietary	2.00000	0.00120	
			Alkali Chloride salt	Proprietary	15.00000	0.00104	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00096	
			Surfactant	68439-51-0	2.00000	0.00096	
			Sugar	57-50-1	100.00000	0.00046	
			Proprietary	Proprietary	100.00000	0.00046	
			Water	7732-18-5	100.00000	0.00023	
			Water	7732-18-5	48.00000	0.00020	
			2-Butoxyethanol	111-76-2	13.00000	0.00005	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Dioxane	123-91-1	1.00000	0.00000	
			Organophylic Clay	68953-58-2			

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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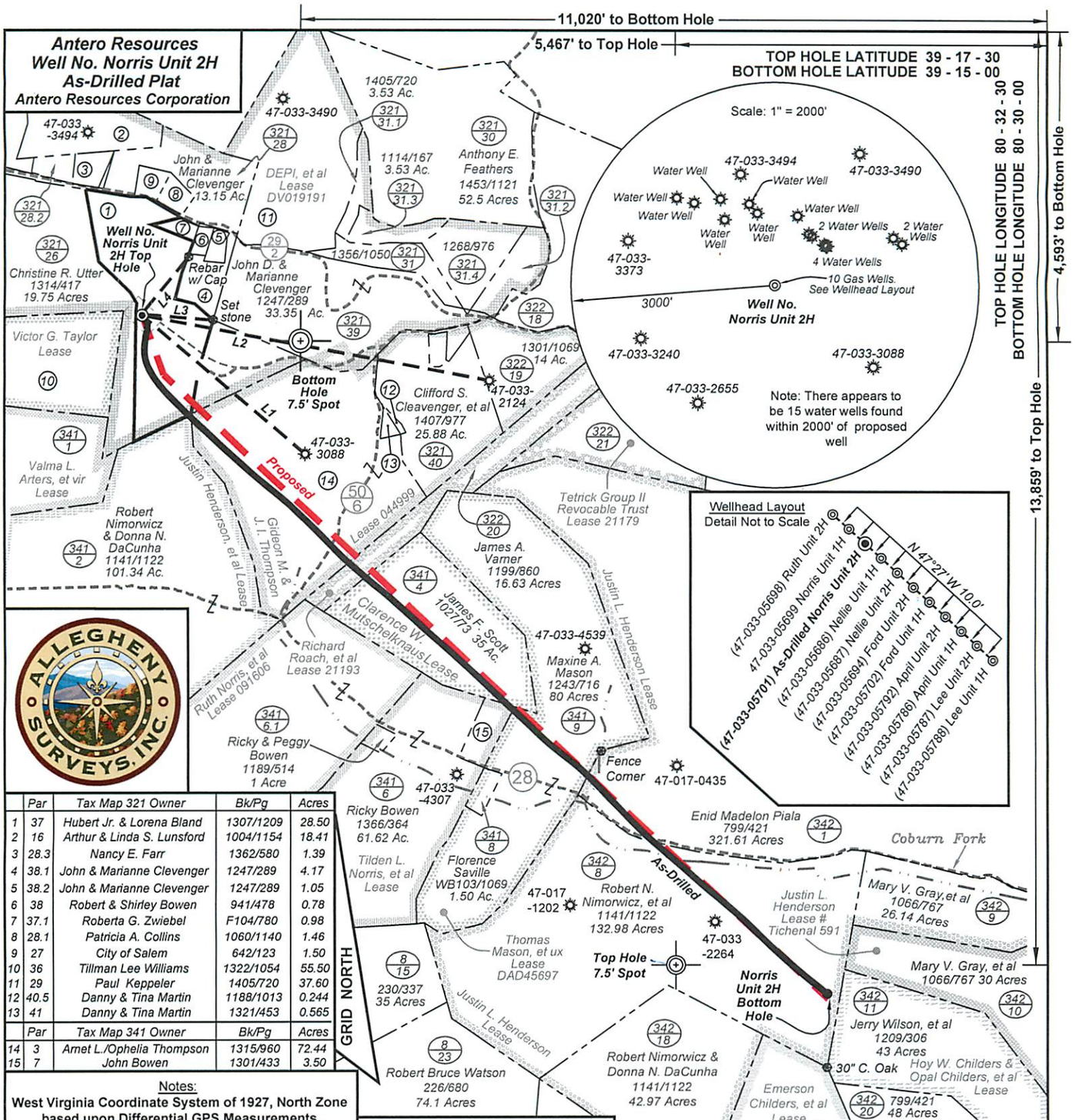
WV Dept. of Environmental Protection

Antero Resources
Well No. Norris Unit 2H
As-Drilled Plat
Antero Resources Corporation



	Par	Tax Map 321 Owner	Bk/Pg	Acres
1	37	Hubert Jr. & Lorena Bland	1307/1209	28.50
2	16	Arthur & Linda S. Lunsford	1004/1154	18.41
3	28.3	Nancy E. Farr	1362/580	1.39
4	38.1	John & Marianne Clevenger	1247/289	4.17
5	38.2	John & Marianne Clevenger	1247/289	1.05
6	38	Robert & Shirley Bowen	941/478	0.78
7	37.1	Roberta G. Zwiebel	F104/780	0.98
8	28.1	Patricia A. Collins	1060/1140	1.46
9	27	City of Salem	642/123	1.50
10	36	Tillman Lee Williams	1322/1054	55.50
11	29	Paul Keppeler	1405/720	37.60
12	40.5	Danny & Tina Martin	1188/1013	0.244
13	41	Danny & Tina Martin	1321/453	0.565
	Par	Tax Map 341 Owner	Bk/Pg	Acres
14	3	Arnet L./Ophelia Thompson	1315/960	72.44
15	7	John Bowen	1301/433	3.50

Line	Bearing	Distance
L1	N 49°45' W	1898.6'
L2	N 79°21' W	3138.0'
L3	N 86°17' W	634.8'
L4	S 38°30' W	669.1'

Notes:

West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.

Well No. Norris Unit 2H Top Hole coordinates are
N: 276,191.26 Latitude: 39°15'12.39"
E: 1,699,715.48 Longitude: 80°33'37.45"
Bottom Hole coordinates are
N: 270,147.93 Latitude: 39°14'13.36"
E: 1,705,784.86 Longitude: 80°32'19.41"

UTM Zone 17, NAD 1983

Top Hole Coordinates: N: 4,345,003.901m E: 537,945.051m
Bottom Hole Coordinates: N: 4,343,193.631m E: 539,824.814m

Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.

Top Hole coordinates verified by survey grade GPS. As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys, Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

(-⊕-) Denotes location of well on United States Topographic Maps

Legend
- Proposed gas well
- Found corner, as noted
- Surface boundary (approx.)
- Existing Road
- Interior surface tracts (approx.)
- Creek or Drain

FILE NO: 254-36-TM-12
DRAWING NO: Norris 2H As-Drilled Plat
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

DATE: April 14 2015
OPERATOR'S WELL NO. Norris Unit 2H

API WELL NO:
47 - 033 - 05701
STATE COUNTY PERMIT

WELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL
(IF GAS) PRODUCTION: ☐ STORAGE ☐ DEEP ☒ SHALLOW

LOCATION: ELEVATION: Original Grade - 1400' Existing Grade - 1376' WATERSHED: Tenmile Creek QUADRANGLE: Salem & Big Isaac
DISTRICT: Tenmile COUNTY: Harrison
SURFACE OWNER: Hubert Jr. & Lorena Bland ACREAGE: 28.50
ROYALTY OWNER: DEPI, et al; Gideon M. & J. I. Thompson; Tiden L. Norris, et al LEASE NO: DAD45697; 044999 ACREAGE: 283; 144; 17.50
PROPOSED WORK: ☐ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☐ PERFORATE NEW FORMATION ☒ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: TVD 7,428' MD 15,765'

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 1615 Wynkoop Street, Denver, CO 80202 ADDRESS: 5400 D Big Tyler Road, Charleston, WV 25313

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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 051 - 01678 County Marshall District Webster
Quad Majorsville Pad Name WEB22 Field/Pool Name NA
Farm name Tim M. Turley and Tammy JF Well Number WEB 22 CHS
Operator (as registered with the OOG) Noble Energy, Inc.
Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4419601.5 Easting 541045.6
Landing Point of Curve Northing 4419508.0 Easting 541000.1
Bottom Hole Northing 4421323.2 Easting 539680.7

Elevation (ft) 1338.95 GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework □ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine □Gas □ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air ■ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Synthetic Oil Based

Date permit issued 11/18/2013 Date drilling commenced 2/17/2014 Date drilling ceased 5/1/2014
Date completion activities began 10/15/2014 Date completion activities ceased 2/14/2015
Verbal plugging (Y/N) N Date permission granted NA Granted by NA

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 212', 295' Open mine(s) (Y/N) depths Near Bailey Mine - approx. 770'
Salt water depth(s) ft None noted for Offsets Void(s) encountered (Y/N) depths none
Coal depth(s) ft 761' to 771' Pittsburgh Cavern(s) encountered (Y/N) depths none
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/26/15
W.S. 06/01/15

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API 47- 051 - 01678 Farm name Tim M. Turley and Tammy JF Well number WEB 22 CHS

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	36	30	40	N	X-70		Y
Surface	24	20	418.0	N	J-55 94#		Y
Coal							
Intermediate 1	17 1/2	13 3/8	1271.0	N	J-55 54.5#		Y
Intermediate 2	12 1/4	9 5/8	3409.0	N	J-55 36#		
Intermediate 3							
Production	8 3/4	5 1/2	14792.4	N	P-110 20#		Y
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	GEL SPACER	695	15.6	1.22	847.69	0	8
Coal							
Intermediate 1	Class A	1052	15.8	1.16	1220.32	0	8
Intermediate 2	Class A	1138	15.8	1.19	1354.22	0	8
Intermediate 3							
Production	Lead ECONOCEM - Tail Class H	Lead 479 Tail 1757	Lead 14.2 Tail 14.8	Lead 1.56 Tail 1.39	Lead 747.24 Tail 2442.23	3209	8
Tubing							

Drillers TD (ft) 14,797 Loggers TD (ft) 14,772
Deepest formation penetrated Marcellus Plug back to (ft) Not a Pilot Hole
Plug back procedure N/A

Kick off depth (ft) 6931

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction ☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ☐ No ☐ Conventional ☐ Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Conductor - No centralizers used. Fresh Water/Surface- Surface - 4 centralizers used, one every third joint with 2 Baskets Intermediate - 11 centralizers - Intermediate 2 - 28 centralizers on every joint to KOP, on every third joint from KOP to 100' from surface. Production - 260 centralizers - rigid bow spring every third joint from KOP to TOC, rigid bow spring every joint to KOP.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 051 - 01678 Farm name Tim M. Turley and Tammy JF Well number WEB 22 CHS

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE ATTACHED PERFORATION RECORD				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
	SEE ATTACHED STIMULATION INFORMATION PER STAGE RECORD							

Please insert additional pages as applicable.

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PERFORATION RECORD

API: 47-051-01678 Farm name: TIM M. TURLEY AND TAMMY JENKINS Well Name: WEB-22C

Stage No.	Perf Date	Top Perf	Bottom Perf	# of Perfs	Formation
1	10/15/2014	14,438	14,640	50	Marcellus
2	10/16/2014	14,188	14,390	50	Marcellus
3	10/16/2014	13,938	14,140	50	Marcellus
4	10/16/2014	13,688	13,890	50	Marcellus
5 (Screen Out)	10/18/2014	13,438	13,640	50	Marcellus
5 inj test	10/20/2014	-	-	-	Marcellus
5 Reperf	11/5/2014	13,466	13,618	48	Marcellus
6	11/8/2014	13,192	13,410	54	Marcellus
7	11/9/2014	12,944	13,162	54	Marcellus
8	11/12/2014	12,696	12,914	54	Marcellus
9	11/13/2014	12,448	12,666	54	Marcellus
10	11/13/2014	12,200	12,418	54	Marcellus
11	11/14/2014	11,952	12,170	54	Marcellus
12	11/14/2014	11,704	11,922	54	Marcellus
13	11/14/2014	11,456	11,674	54	Marcellus
14	11/14/2014	11,208	11,426	54	Marcellus
15	11/16/2014	10,960	11,178	54	Marcellus
16	11/16/2014	10,712	10,930	54	Marcellus
17	11/17/2014	10,464	10,682	54	Marcellus
18	11/18/2014	10,216	10,434	54	Marcellus
19	11/18/2014	9,968	10,186	54	Marcellus
20	11/19/2014	9,720	9,938	54	Marcellus
21	11/19/2014	9,472	9,690	54	Marcellus
22	11/20/2014	9,224	9,442	54	Marcellus
23 Inj Test	11/20/2014	-	-	-	Marcellus
23	11/21/2014	8,976	9,194	54	Marcellus
24	11/21/2014	8,728	8,946	54	Marcellus
25	11/22/2014	8,480	8,698	54	Marcellus
26	11/22/2014	8,232	8,450	54	Marcellus
27	11/22/2014	7,984	8,202	54	Marcellus
28	11/23/2014	7,736	7,954	54	Marcellus
29	11/24/2014	7,488	7,706	54	Marcellus
30	11/24/2014	7,240	7,458	54	Marcellus
31	11/25/2014	6,992	7,210	54	Marcellus

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STIMULATION INFORMATION PER STAGE

API: 47-051-01678 Farm name: TIM M. TURLEY AND TAMMY JENKINS Well Name: WEB-22 C

Stage No.	Stim Date	Avg Rate (bpm)	ATP (psi)	Max BD Pressure	ISIP (psi)	Proppant (lbs)	Water (BBLS)	Amount of N^2/ other
1	10/15/2014	84.0	7,152	5,298	4,107	502,868	18,209.29	
2	10/16/2014	90.4	7,642	5,837	4,493	502,428	10,644.38	
3	10/16/2014	89.3	7,931	6,027	4,480	501,274	10,466.38	
4	10/16/2014	86.4	7,851	6,920	4,498	492,779	12,359.38	
5 (Screen Out)	10/18/2014	64.1	6,937	5,443	3,682	500,632	8,259.10	
5 inj test	10/20/2014	-	-	-	-	-	763.00	
5 Reperf	11/5/2014	87.6	8,015	-	4,790	-	9,202.38	
6	11/8/2014	84.1	8,469	5,819	4,511	490,290	16,524.38	
7	11/9/2014	85.7	7,987	5,761	4,651	492,399	13,573.38	
8	11/12/2014	75.2	8,060	5,772	3,978	500,486	20,366.38	
9	11/13/2014	88.0	8,390	5,342	4,236	444,425	13,673.38	
10	11/13/2014	88.9	8,220	5,262	4,267	500,065	12,444.38	
11	11/14/2014	85.4	7,646	4,964	4,713	502,701	17,003.38	
12	11/14/2014	88.5	7,834	5,745	4,813	503,330	15,667.38	
13	11/14/2014	88.3	7,791	5,661	4,554	502,973	14,143.38	
14	11/14/2014	88.4	7,491	6,250	5,095	500,087	17,811.38	
15	11/16/2014	90.1	7,543	5,795	4,558	501,230	11,554.38	
16	11/16/2014	89.6	7,551	5,340	4,529	503,003	11,085.38	
17	11/17/2014	88.5	7,486	5,866	4,571	500,138	12,956.38	
18	11/18/2014	88.8	7,252	6,050	4,544	503,592	11,970.38	
19	11/18/2014	89.9	7,424	5,566	4,435	500,915	11,431.38	
20	11/19/2014	90.0	7,676	5,774	4,276	501,157	10,526.38	
21	11/19/2014	88.3	7,607	4,952	4,354	501,156	11,288.38	
22	11/20/2014	88.2	7,622	5,365	5,728	492,924	10,083.38	
23 Inj Test	11/20/2014	-	-	-	-	-	390.00	
23	11/21/2014	86.6	7,373	5,649	4,644	481,627	13,431.38	
24	11/21/2014	88.8	7,127	5,633	4,791	500,452	11,958.38	
25	11/22/2014	87.9	7,300	5,589	7,884	469,131	10,842.38	
26	11/22/2014	89.6	7,070	5,619	5,275	501,261	10,325.38	
27	11/22/2014	87.8	7,077	5,185	4,488	503,392	14,164.38	
28	11/23/2014	89.2	6,904	5,859	4,603	501,125	10,615.38	
29	11/24/2014	88.4	7,188	6,773	4,888	501,796	10,470.38	
30	11/24/2014	88.3	7,017	6,204	5,391	500,462	11,321.38	
31	11/25/2014	88.7	7,034	7,788	4,567	501,442	9,998.38	

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API 47- 051 - 01678 Farm name Tim M. Turley and Tammy JF Well number WEB 22 CHS

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6,820	TVD	14,797	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ☐ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW	Gas		Oil		NGL		Water		GAS MEASURED BY
	3249	mcfpd	14.8	bpd	280.9	bpd	598	bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
	SEE ATTACHED FORMATION SHEET				

Please insert additional pages as applicable.

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Drilling Contractor Precision Drilling Company
Address 5400 D Big Tyler Road City Charleston State WV Zip 25313

Logging Company Baker Hughes
Address 400 Technology Drive, Suite 120 City Canonsburg State PA Zip 15317

Cementing Company Schlumberger
Address 4600 J. Barry Court, Suite 200 City Canonsburg State PA Zip 15317

Stimulating Company FTS International
Address 6000 Town Center Boulevard, Suite 120 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Regina A. Logue Telephone 724-820-3559
Signature Regina A Logue Title Regulatory Analyst Date _____

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

WEB 22 CHS 47-051-01678

Formations	Top TVD	Base TVD	Top MD	Base MD	Fluid
Shale	0	780	0	780	
Pittsburgh Coal	780	790	780	790	
Shale and Sandstone	790	1308	790	1308	
Dunkard Sand	1308	1329	1308	1329	
Shale	1329	1470	1329	1470	
Gas Sand	1470	1518	1470	1518	
Shale	1518	1594	1518	1594	
1st Salt Sand	1594	1605	1594	1605	
Shale	1605	1730	1605	1730	
2nd Salt Sand	1730	1778	1730	1778	
Shale	1778	1798	1778	1798	
Maxton Sand	1798	1862	1798	1862	
Shale	1862	1905	1862	5409	
Big Lime	1905	1991	1905	6064	
Big Injun	1991	2147	1991	6637	
Price	2147	2492	2147	7111	
Murrysville	2492	2508	2492	7145	
Shale	2508	2694	2508	7221	
50' Sand	2694	2701	2694	5307	
Shale	2701	2808	2701	5409	
30' Sand	2808	2817	2808	6064	
Shale	2817	2869	2817	6637	
Gordon	2869	2873	2869	7111	
Shale	2873	2969	2873	7145	
Fifth Sand	2969	3008	2969	7221	
Shale	3008	3418	3008	7242	
Speechley Sand	3418	3438	3419	7274	
Shale	3438	4509	3440	7400	
Warren Sand	4509	4514	4521	not encountered	
Shale	4514	5180	4526	not encountered	
Java Shale	5180	5287	5199	not encountered	
Pipe Creek Shale	5287	5388	5307	not encountered	
Angola Shale	5388	6035	5409	6064	
Rhinestreet	6035	6495	6064	6637	
Cashaqua	6495	6603	6637	7111	
Middlesex	6603	6634	7111	7145	
West River	6634	6705	7145	7221	
Burkett	6705	6724	7221	7242	
Tully Limestone	6724	6754	7242	7274	
Hamilton	6754	6871	7274	7400	Gas
Marcellus	6871	6922	7400	not encountered	
Onondaga	6922	6930	not encountered	not encountered	
Huntersville	6930	[illegible]	not encountered	not encountered	

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/15/2014
Job End Date:	11/25/2014
State:	West Virginia
County:	Marshall
API Number:	47-051-01678-00-00
Operator Name:	Noble Energy, Inc.
Well Name and Number:	WEB-22C
Longitude:	-80.51989100
Latitude:	39.92274300
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,820
Total Base Water Volume (gal):	17,031,958
Total Base Non Water Volume:	0

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FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

INTERSTATE Oil & Gas COMPACT COMMISSION

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Operator	Carrier					
			Water	7732-18-5	100.00000	89.73195	
40/70 White	FTSI	proppant					
			Silica, Quartz	14808-60-7	100.00000	7.73833	
100 Mesh Sand	FTSI	proppant					
			Silica, Quartz	14808-60-7	100.00000	1.99095	
Hydrochloric Acid (HCl)	FTSI	Acid					
			Water	7732-18-5	63.00000	0.23699	
			Hydrogen Chloride	7647-01-0	37.00000	0.13918	
FRW-600	FTSI	Friction Reducer					
			Acrylamide Polymer	Trade Secret	100.00000	0.06790	
			Hydrotreated light distillate	64742-47-8	30.00000	0.02037	
			Ammonium acetate	631-61-8	6.00000	0.00407	
CS-500 SI	FTSI	Scale inhibitor					
			Water	7732-18-5	55.00000	0.02698	
			Acrylic Polymer	Proprietary	24.00000	0.01177	
			Ethylene glycol	107-21-1	10.00000	0.00490	
			Sodium chloride	7647-14-5	6.00000	0.00294	
			Sodium Polyacrylate	9003-04-7	5.00000	0.00245	

ICI-3240	FTSI	Biocide					
			Water	7732-18-5	55.00000	0.02191	
			Dazomet (Tetrahydro-3, 5-dimethyl-2H-1, 3, 5-thiadiazine-2-thione.	533-74-4	24.00000	0.00956	
			Sodium Hydroxide	1310-73-2	23.00000	0.00916	
HVG-1	FTSI	Water Gelling Agent					
			Petroleum Distillate	64742-47-8	55.00000	0.00192	
			Guar Gum	9000-30-0	55.00000	0.00192	
			Raffinates (Petroleum), Sorption Process	64741-85-1	50.00000	0.00174	
			Clay	1302-78-9	5.00000	0.00017	
			Surfactant	Proprietary	2.00000	0.00007	
			Clay	14808-60-7	2.00000	0.00007	
			Surfactant	24938-91-8	1.00000	0.00003	
			Surfactant	9043-30-5	1.00000	0.00003	
			Surfactant	154518-36-2	1.00000	0.00003	
FE-100L	FTSI	Iron control					
			Water	7732-18-5	60.00000	0.00072	
			Citric acid	77-92-9	55.00000	0.00066	
CI-150	FTSI	Acid Corrosion Inhibitor					
			Isopropanol	67-63-0	30.00000	0.00020	
			Organic amine resin salt	Proprietary	30.00000	0.00020	
			Ethylene Glycol	107-21-1	30.00000	0.00020	
			Aromatic aldehyde	Proprietary	10.00000	0.00007	
			Alkylene Oxide Block Polymer	Proprietary	10.00000	0.00007	
			Quaternary ammonium compound	Proprietary	10.00000	0.00007	
			Dimethylformamide	68-12-2	10.00000	0.00007	
			Water	7732-18-5	5.00000	0.00003	
			Diethylene glycol	111-46-6	1.00000	0.00001	
			Fatty Acid Salt	Proprietary	0.10000	0.00000	
			Aliphatic alcohol	Proprietary	0.10000	0.00000	
			Fatty Acid	Proprietary	0.10000	0.00000	
NE-100	FTSI	Non-emulsifier					
			Water	7732-18-5	90.00000	0.00031	
			2-Propanol	67-63-0	10.00000	0.00003	
			2-Butoxyethanol	111-76-2	10.00000	0.00003	
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00002	
			Benzene, C10-16 Alkyl Derivatives	68648-87-3	0.04000	0.00000	
			Unsulphonated Matter	Proprietary	0.03000	0.00000	
			Sulfuric Acid	7664-93-9	0.01000	0.00000	
			Sulfur Dioxide	7446-09-5		0.00000	
APB-1	FTSI	Gel breaker					

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			Ammonium Persulfate	7727-54-0	100.00000	0.00013	

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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Actual Wellpath Report

WEB-22C-HS (AWP) Proj: 14797'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

REPORT SETUP INFORMATION			
Projection System	**NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet**	Software System	**WellArchitect® 4.0.1**
North Reference	**Grid**	User	**Edsaryar**
Scale	**0.999954**	Report Generated	**08/May/2014 at 14:50**
Convergence at slot	**0.65° West**	Database/Source file	**WellArchitectEasternDB/WEB-22C-HS_AWB.xml**

WELLPATH LOCATION						
	Local coordinates		**Grid coordinates**		**Geographic coordinates**	
	North[ft]	**East[ft]**	**Easting[US ft]**	**Northing[US ft]**	**Latitude**	**Longitude**
Slot Location	-27.83	28.39	**1713954.20**	**519824.71**	39°55'21.875"N	80°31'11.609"W
Facility Reference Pt			**1713925.81**	**519852.54**	39°55'22.147"N	80°31'11.977"W
Field Reference Pt			**609601.22**	**0.00**	38°23'48.753"N	84°21'09.765"W

WELLPATH DATUM			
Calculation method	**Minimum curvature**	Precision 542 (RT) to Facility Vertical Datum	**18.60ft**
Horizontal Reference Pt	**Slot**	Precision 542 (RT) to Mean Sea Level	**1343.60ft**
Vertical Reference Pt	**Precision 542 (RT)**	Precision 542 (RT) to Mud Line at Slot (Slot C)	**18.60ft**
MD Reference Pt	**Precision 542 (RT)**	Section Origin	**N 0.00, E 0.00 ft**
Field Vertical Reference	**Mean Sea Level**	Section Azimuth	**325.00°**

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Actual Wellpath Report

WEB-22C-HS (AWP) Proj: 14797'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (210 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	59.000	0.00	0.00	0.00	0.00	1713954.20	519824.71	39°55'21.875"N	80°31'11.609"W	0.00	0.000	0.00	0.00	0.00
18.60	0.000	59.000	18.60	0.00	0.00	0.00	1713954.20	519824.71	39°55'21.875"N	80°31'11.609"W	0.00	0.000	0.00	0.00	0.00
50.00	0.980	59.000	50.00	-0.02	0.14	0.23	1713954.43	519824.85	39°55'21.876"N	80°31'11.606"W	0.27	59.000	3.12	3.12	0.00
100.00	1.090	53.850	99.99	-0.04	0.64	0.98	1713955.18	519825.35	39°55'21.881"N	80°31'11.596"W	1.17	56.910	0.29	0.22	-10.30
150.00	0.940	55.490	149.98	-0.03	1.15	1.70	1713955.90	519825.86	39°55'21.886"N	80°31'11.587"W	2.06	55.919	0.31	-0.30	3.28
200.00	0.780	65.390	199.98	-0.10	1.53	2.35	1713956.55	519826.24	39°55'21.890"N	80°31'11.579"W	2.80	57.001	0.44	-0.32	19.80
250.00	0.790	63.560	249.97	-0.21	1.82	2.97	1713957.17	519826.53	39°55'21.893"N	80°31'11.571"W	3.48	58.466	0.05	0.02	-3.66
300.00	0.930	62.870	299.97	-0.32	2.16	3.64	1713957.84	519826.87	39°55'21.896"N	80°31'11.562"W	4.23	59.303	0.28	0.28	-1.38
350.00	0.780	64.840	349.96	-0.43	2.49	4.31	1713958.51	519827.20	39°55'21.900"N	80°31'11.554"W	4.97	59.972	0.31	-0.30	3.94
400.00	1.030	71.150	399.95	-0.61	2.78	5.04	1713959.24	519827.49	39°55'21.903"N	80°31'11.544"W	5.76	61.127	0.54	0.50	12.62
441.00	1.200	70.970	440.95	-0.83	3.04	5.79	1713960.00	519827.75	39°55'21.905"N	80°31'11.535"W	6.54	62.331	0.41	0.41	-0.44
527.00	3.700	184.250	526.89	-3.23	0.56	6.44	1713960.64	519825.27	39°55'21.881"N	80°31'11.526"W	6.47	84.999	5.02	2.91	131.72
558.00	4.130	195.370	557.82	-4.72	-1.51	6.07	1713960.27	519823.20	39°55'21.860"N	80°31'11.530"W	6.26	103.970	2.81	1.39	35.87
588.00	4.050	208.010	587.74	-5.89	-3.49	5.29	1713959.49	519821.22	39°55'21.841"N	80°31'11.540"W	6.33	123.408	3.01	-0.27	42.13
621.00	3.990	232.710	620.66	-6.46	-5.21	3.83	1713958.03	519819.50	39°55'21.824"N	80°31'11.559"W	6.47	143.716	5.21	-0.18	74.85
653.00	3.820	257.800	652.59	-6.10	-6.11	1.90	1713956.10	519818.60	39°55'21.814"N	80°31'11.583"W	6.40	162.743	5.32	-0.53	78.41
684.00	3.530	277.100	683.53	-5.06	-6.21	-0.06	1713954.14	519818.50	39°55'21.813"N	80°31'11.608"W	6.21	180.534	4.08	-0.94	62.26
716.00	3.070	286.300	715.47	-3.73	-5.85	-1.86	1713952.34	519818.86	39°55'21.817"N	80°31'11.632"W	6.14	197.621	2.19	-1.44	28.75
747.00	2.300	298.820	746.44	-2.52	-5.32	-3.20	1713951.00	519819.39	39°55'21.822"N	80°31'11.649"W	6.21	211.040	3.11	-2.48	40.39
779.00	1.960	327.940	778.42	-1.40	-4.54	-4.05	1713950.15	519820.17	39°55'21.829"N	80°31'11.660"W	6.09	221.733	3.50	-1.06	91.00
810.00	2.410	358.780	809.40	-0.33	-3.44	-4.35	1713949.85	519821.27	39°55'21.840"N	80°31'11.664"W	5.55	231.630	4.00	1.45	99.48
842.00	2.870	29.480	841.37	0.58	-2.07	-3.97	1713950.23	519822.64	39°55'21.854"N	80°31'11.659"W	4.48	242.424	4.58	1.44	95.94
873.00	2.990	25.520	872.32	1.31	-0.67	-3.24	1713950.96	519824.04	39°55'21.868"N	80°31'11.650"W	3.31	258.357	0.76	0.39	-12.77
905.00	3.640	30.820	904.27	2.14	0.96	-2.36	1713951.84	519825.67	39°55'21.884"N	80°31'11.639"W	2.55	292.118	2.24	2.03	16.56
936.00	3.220	29.470	935.22	2.92	2.56	-1.43	1713952.78	519827.27	39°55'21.900"N	80°31'11.627"W	2.93	330.904	1.38	-1.35	-4.35
968.00	2.650	17.020	967.17	3.76	4.05	-0.77	1713953.44	519828.76	39°55'21.915"N	80°31'11.619"W	4.12	349.283	2.66	-1.78	-38.91
999.00	2.160	32.380	998.15	4.42	5.23	-0.24	1713953.96	519829.94	39°55'21.926"N	80°31'11.612"W	5.24	357.328	2.60	-1.58	49.55
1031.00	1.200	48.830	1030.13	4.69	5.96	0.33	1713954.53	519830.67	39°55'21.934"N	80°31'11.605"W	5.97	3.180	3.33	-3.00	51.41
1062.00	0.280	77.160	1061.13	4.70	6.19	0.65	1713954.85	519830.90	39°55'21.936"N	80°31'11.601"W	6.22	5.988	3.11	-2.97	91.39
1094.00	0.650	244.760	1093.13	4.70	6.13	0.56	1713954.76	519830.84	39°55'21.935"N	80°31'11.602"W	6.16	5.232	2.89	1.16	523.75

Actual Wellpath Report

WEB-22C-HS (AWP) Proj: 14797'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (210 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
1125.00	0.710	200.450	1124.13	4.62	5.88	0.34	1713954.54	519830.59	39°55'21.933"N	80°31'11.605"W	5.88	3.265	1.66	0.19	-142.94
1157.00	1.050	211.250	1156.12	4.39	5.44	0.11	1713954.32	519830.15	39°55'21.928"N	80°31'11.608"W	5.44	1.199	1.18	1.06	33.75
1188.00	0.910	243.230	1187.12	4.31	5.09	-0.25	1713953.95	519829.80	39°55'21.925"N	80°31'11.613"W	5.09	357.148	1.79	-0.45	103.16
1226.00	1.510	225.430	1225.11	4.27	4.60	-0.88	1713953.32	519829.31	39°55'21.920"N	80°31'11.621"W	4.68	349.172	1.84	1.58	-46.84
1317.00	1.570	214.910	1316.08	3.64	2.73	-2.45	1713951.76	519827.44	39°55'21.901"N	80°31'11.640"W	3.67	318.172	0.32	0.07	-11.56
1348.00	1.700	213.490	1347.07	3.33	2.00	-2.94	1713951.26	519826.71	39°55'21.894"N	80°31'11.647"W	3.56	304.225	0.44	0.42	-4.58
1380.00	1.710	216.230	1379.05	3.00	1.22	-3.49	1713950.71	519825.93	39°55'21.886"N	80°31'11.653"W	3.70	289.300	0.26	0.03	8.56
1411.00	1.260	203.600	1410.04	2.67	0.54	-3.90	1713950.30	519825.25	39°55'21.880"N	80°31'11.659"W	3.93	277.830	1.79	-1.45	-40.74
1443.00	1.270	186.120	1442.03	2.22	-0.14	-4.08	1713950.13	519824.57	39°55'21.873"N	80°31'11.661"W	4.08	268.047	1.20	0.03	-54.62
1506.00	1.020	169.400	1505.02	1.19	-1.38	-4.05	1713950.15	519823.33	39°55'21.861"N	80°31'11.660"W	4.28	251.118	0.66	-0.40	-26.54
1627.00	1.190	144.430	1626.00	-1.05	-3.47	-3.12	1713951.08	519821.25	39°55'21.840"N	80°31'11.648"W	4.66	221.988	0.42	0.14	-20.64
1672.00	0.790	122.640	1670.99	-1.80	-4.01	-2.59	1713951.62	519820.70	39°55'21.835"N	80°31'11.641"W	4.77	212.798	1.21	-0.89	-48.42
1762.00	1.230	118.090	1760.98	-3.24	-4.80	-1.21	1713952.99	519819.91	39°55'21.827"N	80°31'11.623"W	4.95	194.154	0.50	0.49	-5.06
1851.00	1.160	105.500	1849.96	-4.79	-5.49	0.50	1713954.70	519819.22	39°55'21.820"N	80°31'11.601"W	5.52	174.800	0.30	-0.08	-14.15
1941.00	1.080	22.180	1939.95	-5.03	-4.95	1.70	1713955.90	519819.76	39°55'21.826"N	80°31'11.586"W	5.23	161.068	1.66	-0.09	-92.58
2030.00	1.960	351.460	2028.92	-3.21	-2.67	1.79	1713955.99	519822.04	39°55'21.849"N	80°31'11.585"W	3.21	146.167	1.31	0.99	-34.52
2120.00	1.730	348.700	2118.87	-0.59	0.19	1.29	1713955.50	519824.90	39°55'21.877"N	80°31'11.592"W	1.31	81.835	0.27	-0.26	-3.07
2209.00	1.940	339.740	2207.82	2.10	2.92	0.51	1713954.71	519827.63	39°55'21.904"N	80°31'11.602"W	2.96	9.901	0.40	0.24	-10.07
2299.00	2.080	328.390	2297.77	5.20	5.74	-0.87	1713953.33	519830.45	39°55'21.931"N	80°31'11.621"W	5.80	351.331	0.47	0.16	-12.61
2388.00	2.350	318.990	2386.70	8.63	8.49	-2.92	1713951.28	519833.20	39°55'21.958"N	80°31'11.647"W	8.98	341.027	0.51	0.30	-10.56
2478.00	2.290	312.230	2476.63	12.22	11.09	-5.46	1713948.74	519835.80	39°55'21.984"N	80°31'11.680"W	12.36	333.784	0.31	-0.07	-7.51
2567.00	1.970	303.170	2565.57	15.37	13.12	-8.06	1713946.14	519837.83	39°55'22.003"N	80°31'11.714"W	15.40	328.447	0.52	-0.36	-10.18
2657.00	1.020	276.820	2655.54	17.34	14.06	-10.15	1713944.05	519838.77	39°55'22.013"N	80°31'11.741"W	17.34	324.186	1.28	-1.06	-29.28
2746.00	1.120	248.170	2744.52	18.07	13.83	-11.74	1713942.46	519838.54	39°55'22.010"N	80°31'11.761"W	18.15	319.676	0.60	0.11	-32.19
2836.00	0.160	189.400	2834.52	18.18	13.38	-12.58	1713941.62	519838.09	39°55'22.006"N	80°31'11.772"W	18.37	316.773	1.16	-1.07	-65.30
2925.00	0.470	59.390	2923.51	18.06	13.45	-12.29	1713941.92	519838.16	39°55'22.006"N	80°31'11.768"W	18.21	317.583	0.66	0.35	-146.08
3015.00	0.620	38.200	3013.51	18.17	14.02	-11.67	1713942.54	519838.73	39°55'22.012"N	80°31'11.760"W	18.24	320.229	0.28	0.17	-23.54
3104.00	0.830	43.090	3102.50	18.45	14.87	-10.93	1713943.27	519839.58	39°55'22.020"N	80°31'11.751"W	18.45	323.679	0.25	0.24	5.49
3194.00	0.780	30.190	3192.49	18.84	15.87	-10.17	1713944.03	519840.58	39°55'22.030"N	80°31'11.741"W	18.85	327.337	0.21	-0.06	-14.33
3283.00	1.120	354.900	3281.48	19.85	17.26	-9.95	1713944.26	519841.97	39°55'22.044"N	80°31'11.739"W	19.92	330.046	0.74	0.38	-39.65

Actual Wellpath Report

WEB-22C-HS (AWP) Proj: 14797'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (210 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
3370.00	1.530	357.370	3368.46	21.56	19.27	-10.08	1713944.13	519843.98	39°55'22.064"N	80°31'11.741"W	21.74	332.393	0.48	0.47	2.84
3455.00	1.340	354.240	3453.43	23.39	21.39	-10.23	1713943.97	519846.10	39°55'22.085"N	80°31'11.743"W	23.71	334.445	0.24	-0.22	-3.68
3545.00	1.080	2.500	3543.41	24.98	23.29	-10.30	1713943.91	519847.99	39°55'22.104"N	80°31'11.744"W	25.46	336.145	0.35	-0.29	9.18
3635.00	1.110	357.130	3633.40	26.39	25.00	-10.30	1713943.90	519849.71	39°55'22.121"N	80°31'11.744"W	27.04	337.604	0.12	0.03	-5.97
3724.00	0.960	103.340	3722.39	26.56	25.69	-9.62	1713944.58	519850.40	39°55'22.127"N	80°31'11.736"W	27.43	339.470	1.86	-0.17	119.34
3814.00	1.180	120.160	3812.37	25.16	25.05	-8.09	1713946.12	519849.76	39°55'22.121"N	80°31'11.716"W	26.33	342.111	0.42	0.24	18.69
3903.00	0.880	102.600	3901.36	23.82	24.44	-6.63	1713947.58	519849.15	39°55'22.115"N	80°31'11.697"W	25.33	344.831	0.49	-0.34	-19.73
3993.00	2.650	161.840	3991.32	21.32	22.32	-5.30	1713948.90	519847.02	39°55'22.095"N	80°31'11.680"W	22.94	346.630	2.58	1.97	65.82
4082.00	2.660	158.370	4080.22	17.34	18.44	-3.90	1713950.30	519843.15	39°55'22.056"N	80°31'11.661"W	18.85	348.054	0.18	0.01	-3.90
4172.00	0.490	19.030	4170.19	15.54	16.86	-3.01	1713951.20	519841.57	39°55'22.041"N	80°31'11.650"W	17.13	349.893	3.39	-2.41	-154.82
4262.00	0.610	60.970	4260.19	15.71	17.46	-2.46	1713951.74	519842.17	39°55'22.047"N	80°31'11.643"W	17.63	351.975	0.45	0.13	46.60
4351.00	0.580	50.150	4349.18	15.70	17.98	-1.70	1713952.50	519842.69	39°55'22.052"N	80°31'11.633"W	18.06	354.593	0.13	-0.03	-12.16
4441.00	0.410	5.340	4439.18	15.99	18.59	-1.32	1713952.88	519843.30	39°55'22.058"N	80°31'11.628"W	18.64	355.933	0.45	-0.19	-49.79
4531.00	0.720	348.820	4529.18	16.75	19.47	-1.40	1713952.80	519844.17	39°55'22.067"N	80°31'11.629"W	19.52	355.882	0.39	0.34	-18.36
4620.00	0.730	103.280	4618.17	16.84	19.88	-0.96	1713953.24	519844.59	39°55'22.071"N	80°31'11.624"W	19.91	357.241	1.37	0.01	128.61
4710.00	0.820	89.070	4708.16	16.05	19.76	0.24	1713954.45	519844.47	39°55'22.070"N	80°31'11.608"W	19.76	0.707	0.23	0.10	-15.79
4799.00	0.540	124.200	4797.16	15.30	19.54	1.23	1713955.43	519844.25	39°55'22.068"N	80°31'11.596"W	19.58	3.595	0.55	-0.31	39.47
4889.00	0.880	134.120	4887.15	14.22	18.82	2.07	1713956.28	519843.53	39°55'22.061"N	80°31'11.585"W	18.93	6.291	0.40	0.38	11.02
4979.00	1.060	178.940	4977.14	12.86	17.50	2.59	1713956.79	519842.21	39°55'22.048"N	80°31'11.578"W	17.69	8.404	0.84	0.20	49.80
5068.00	1.280	181.030	5066.12	11.37	15.69	2.58	1713956.79	519840.40	39°55'22.030"N	80°31'11.578"W	15.90	9.352	0.25	0.25	2.35
5158.00	0.870	166.040	5156.11	9.92	14.02	2.73	1713956.93	519838.73	39°55'22.014"N	80°31'11.576"W	14.28	11.020	0.55	-0.46	-16.66
5247.00	0.800	190.100	5245.10	8.85	12.75	2.78	1713956.99	519837.46	39°55'22.001"N	80°31'11.575"W	13.05	12.317	0.40	-0.08	27.03
5337.00	0.330	176.360	5335.09	8.18	11.87	2.69	1713956.89	519836.58	39°55'21.992"N	80°31'11.576"W	12.18	12.766	0.54	-0.52	-15.27
5426.00	0.460	187.380	5424.09	7.70	11.26	2.66	1713956.86	519835.97	39°55'21.986"N	80°31'11.576"W	11.57	13.291	0.17	0.15	12.38
5516.00	0.570	202.880	5514.09	7.20	10.49	2.44	1713956.64	519835.20	39°55'21.979"N	80°31'11.579"W	10.77	13.092	0.20	0.12	17.22
5605.00	0.290	207.520	5603.08	6.86	9.89	2.16	1713956.37	519834.60	39°55'21.973"N	80°31'11.582"W	10.12	12.348	0.32	-0.31	5.21
5631.00	4.390	119.180	5629.06	5.93	9.34	3.00	1713957.21	519834.05	39°55'21.967"N	80°31'11.571"W	9.81	17.820	16.89	15.77	-339.77
5676.00	6.900	117.840	5673.84	1.97	7.24	6.90	1713961.10	519831.95	39°55'21.947"N	80°31'11.521"W	10.00	43.613	5.59	5.58	-2.98
5721.00	8.110	116.240	5718.45	-3.21	4.57	12.13	1713966.34	519829.28	39°55'21.921"N	80°31'11.453"W	12.97	69.348	2.73	2.69	-3.56
5765.00	8.550	117.320	5761.99	-8.83	1.70	17.82	1713972.03	519826.41	39°55'21.893"N	80°31'11.380"W	17.91	84.551	1.06	1.00	2.45

Actual Wellpath Report

WEB-22C-HS (AWP) Proj: 14797'

REFERENCE WELLPATH IDENTIFICATION

Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (210 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
5810.00	10.060	118.970	5806.39	-15.33	-1.74	24.24	1713978.44	519822.97	39°55'21.860"N	80°31'11.297"W	24.30	94.103	3.41	3.36	3.67
5855.00	11.370	117.890	5850.61	-22.81	-5.72	31.60	1713985.80	519818.99	39°55'21.822"N	80°31'11.202"W	32.11	100.257	2.94	2.91	-2.40
5900.00	13.020	113.210	5894.59	-31.06	-9.79	40.18	1713994.38	519814.92	39°55'21.782"N	80°31'11.092"W	41.35	103.696	4.27	3.67	-10.40
5944.00	15.010	109.420	5937.28	-39.91	-13.64	50.11	1714004.31	519811.07	39°55'21.746"N	80°31'10.964"W	51.93	105.227	4.98	4.52	-8.61
5989.00	17.240	110.300	5980.51	-50.13	-17.89	61.86	1714016.06	519806.82	39°55'21.705"N	80°31'10.812"W	64.39	106.131	4.99	4.96	1.96
6034.00	17.450	112.780	6023.46	-61.33	-22.82	74.33	1714028.53	519801.90	39°55'21.658"N	80°31'10.651"W	77.75	107.064	1.71	0.47	5.51
6079.00	16.750	116.140	6066.47	-72.71	-28.29	86.37	1714040.57	519796.43	39°55'21.605"N	80°31'10.496"W	90.89	108.133	2.69	-1.56	7.47
6124.00	14.600	115.280	6109.80	-83.32	-33.57	97.33	1714051.52	519791.15	39°55'21.554"N	80°31'10.355"W	102.95	109.028	4.81	-4.78	-1.91
6168.00	13.030	98.270	6152.54	-91.54	-36.65	107.25	1714061.45	519788.06	39°55'21.525"N	80°31'10.227"W	113.34	108.865	9.85	-3.57	-38.66
6213.00	14.330	86.810	6196.27	-97.95	-37.07	117.84	1714072.03	519787.64	39°55'21.522"N	80°31'10.091"W	123.53	107.462	6.67	2.89	-25.47
6258.00	16.290	77.010	6239.68	-103.25	-35.34	129.55	1714083.75	519789.37	39°55'21.540"N	80°31'09.941"W	134.28	105.258	7.20	4.36	-21.78
6303.00	17.080	64.320	6282.80	-106.69	-31.06	141.66	1714095.85	519793.66	39°55'21.584"N	80°31'09.786"W	145.02	102.365	8.27	1.76	-28.20
6347.00	17.260	47.180	6324.86	-106.85	-23.81	152.28	1714106.47	519800.90	39°55'21.656"N	80°31'09.651"W	154.13	98.888	11.47	0.41	-38.95
6392.00	17.850	30.710	6367.80	-103.10	-13.34	160.70	1714114.90	519811.37	39°55'21.761"N	80°31'09.544"W	161.25	94.745	11.08	1.31	-36.60
6437.00	18.490	15.910	6410.57	-95.76	-0.54	166.18	1714120.38	519824.17	39°55'21.888"N	80°31'09.476"W	166.18	90.187	10.33	1.42	-32.89
6482.00	19.010	9.450	6453.19	-86.03	13.55	169.34	1714123.54	519838.26	39°55'22.028"N	80°31'09.437"W	169.88	85.424	4.75	1.16	-14.36
6527.00	20.180	3.800	6495.59	-74.75	28.53	171.06	1714125.25	519853.24	39°55'22.176"N	80°31'09.417"W	173.42	80.532	4.95	2.60	-12.56
6572.00	22.270	359.250	6537.54	-61.65	44.80	171.46	1714125.66	519869.51	39°55'22.337"N	80°31'09.415"W	177.22	75.356	5.91	4.64	-10.11
6616.00	25.420	348.830	6577.79	-46.11	62.42	169.52	1714123.72	519887.12	39°55'22.510"N	80°31'09.442"W	180.65	69.787	11.93	7.16	-23.68
6661.00	30.690	345.030	6617.49	-26.47	83.00	164.68	1714118.88	519907.71	39°55'22.713"N	80°31'09.507"W	184.42	63.251	12.36	11.71	-8.44
6706.00	35.780	344.350	6655.12	-3.25	106.78	158.16	1714112.36	519931.48	39°55'22.948"N	80°31'09.594"W	190.83	55.976	11.34	11.31	-1.51
6751.00	40.770	343.590	6690.44	23.11	133.56	150.46	1714104.65	519958.26	39°55'23.211"N	80°31'09.697"W	201.18	48.405	11.14	11.09	-1.69
6795.00	46.320	342.390	6722.32	51.93	162.53	141.58	1714095.77	519987.23	39°55'23.497"N	80°31'09.815"W	215.54	41.059	12.75	12.61	-2.73
6840.00	50.740	340.110	6752.11	84.29	194.44	130.72	1714084.92	520019.14	39°55'23.811"N	80°31'09.959"W	234.30	33.913	10.53	9.82	-5.07
6885.00	55.770	337.070	6779.03	119.33	227.98	117.54	1714071.73	520052.68	39°55'24.141"N	80°31'10.133"W	256.49	27.274	12.42	11.18	-6.76
6930.00	60.980	333.530	6802.62	157.02	262.76	101.50	1714055.70	520087.45	39°55'24.483"N	80°31'10.344"W	281.68	21.122	13.37	11.58	-7.87
6975.00	67.010	330.720	6822.35	197.13	298.47	82.58	1714036.78	520123.17	39°55'24.833"N	80°31'10.592"W	309.69	15.466	14.53	13.40	-6.24
7019.00	72.110	328.930	6837.71	238.20	334.10	61.86	1714016.06	520158.79	39°55'25.183"N	80°31'10.863"W	339.78	10.490	12.20	11.59	-4.07
7064.00	75.860	329.160	6850.12	281.33	371.18	39.62	1713993.82	520195.88	39°55'25.547"N	80°31'11.154"W	373.29	6.092	8.35	8.33	0.51
7109.00	76.740	330.110	6860.78	324.91	408.91	17.52	1713971.72	520233.60	39°55'25.917"N	80°31'11.443"W	409.28	2.453	2.83	1.96	2.11

Actual Wellpath Report

WEB-22C-HS (AWP) Proj: 14797'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (210 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
7154.00	80.390	332.260	6869.70	368.75	447.55	-3.73	1713950.47	520272.23	39°55'26.297"N	80°31'11.722"W	447.56	359.522	9.37	8.11	4.78
7199.00	81.910	332.980	6876.62	412.82	487.03	-24.18	1713930.02	520311.71	39°55'26.685"N	80°31'11.990"W	487.63	357.158	3.73	3.38	1.60
7243.00	85.470	332.130	6881.46	456.17	525.83	-44.33	1713909.87	520350.52	39°55'27.066"N	80°31'12.254"W	527.70	355.181	8.32	8.09	-1.93
7288.00	86.700	330.500	6884.53	500.79	565.21	-65.88	1713888.32	520389.90	39°55'27.453"N	80°31'12.536"W	569.04	353.351	4.53	2.73	-3.62
7333.00	87.040	328.870	6886.99	545.57	604.00	-88.56	1713865.64	520428.68	39°55'27.833"N	80°31'12.833"W	610.46	351.658	3.69	0.76	-3.62
7378.00	87.780	326.800	6889.02	590.46	642.05	-112.49	1713841.71	520466.73	39°55'28.207"N	80°31'13.146"W	651.83	350.062	4.88	1.64	-4.60
7424.00	90.120	325.530	6889.87	636.44	680.25	-138.10	1713816.11	520504.93	39°55'28.581"N	80°31'13.480"W	694.13	348.524	5.79	5.09	-2.76
7467.00	89.850	322.410	6889.88	679.43	715.02	-163.39	1713790.82	520539.70	39°55'28.922"N	80°31'13.810"W	733.45	347.128	7.28	-0.63	-7.26
7557.00	89.940	324.930	6890.04	769.40	787.52	-216.70	1713737.51	520612.20	39°55'29.633"N	80°31'14.505"W	816.79	344.615	2.80	0.10	2.80
7647.00	90.620	325.720	6889.60	859.39	861.54	-267.91	1713686.31	520686.21	39°55'30.358"N	80°31'15.173"W	902.23	342.726	1.16	0.76	0.88
7736.00	90.650	325.020	6888.62	948.39	934.76	-318.48	1713635.74	520759.43	39°55'31.076"N	80°31'15.832"W	987.53	341.186	0.79	0.03	-0.79
7826.00	90.890	323.930	6887.41	1038.37	1008.00	-370.77	1713583.45	520832.67	39°55'31.794"N	80°31'16.514"W	1074.03	339.805	1.24	0.27	-1.21
7915.00	91.260	323.230	6885.74	1127.33	1079.61	-423.60	1713530.62	520904.27	39°55'32.496"N	80°31'17.203"W	1159.74	338.577	0.89	0.42	-0.79
8005.00	92.310	321.090	6882.93	1217.17	1150.64	-478.78	1713475.45	520975.30	39°55'33.192"N	80°31'17.921"W	1246.28	337.408	2.65	1.17	-2.38
8094.00	90.950	318.980	6880.40	1305.79	1218.82	-535.92	1713418.31	521043.48	39°55'33.859"N	80°31'18.664"W	1331.44	336.265	2.82	-1.53	-2.37
8184.00	90.810	319.890	6879.02	1395.36	1287.19	-594.44	1713359.79	521111.83	39°55'34.528"N	80°31'19.426"W	1417.82	335.212	1.02	-0.16	1.01
8274.00	91.110	320.390	6877.51	1485.02	1356.26	-652.11	1713302.12	521180.91	39°55'35.204"N	80°31'20.176"W	1504.89	334.321	0.65	0.33	0.56
8363.00	90.620	323.040	6876.17	1573.85	1426.11	-707.24	1713246.99	521250.75	39°55'35.888"N	80°31'20.894"W	1591.84	333.622	3.03	-0.55	2.98
8453.00	88.860	327.080	6876.58	1663.83	1499.86	-758.77	1713195.47	521324.50	39°55'36.611"N	80°31'21.566"W	1680.87	333.165	4.90	-1.96	4.49
8543.00	90.800	330.170	6876.84	1753.64	1576.69	-805.62	1713148.62	521401.33	39°55'37.365"N	80°31'22.178"W	1770.59	332.935	4.05	2.16	3.43
8632.00	92.680	329.220	6874.14	1842.29	1653.49	-850.51	1713103.73	521478.12	39°55'38.119"N	80°31'22.766"W	1859.41	332.780	2.37	2.11	-1.07
8722.00	93.760	325.970	6869.08	1932.04	1729.34	-898.66	1713055.59	521553.97	39°55'38.863"N	80°31'23.395"W	1948.90	332.541	3.80	1.20	-3.61
8812.00	92.520	323.300	6864.15	2021.90	1802.62	-950.66	1713003.59	521627.24	39°55'39.581"N	80°31'24.073"W	2037.94	332.194	3.27	-1.38	-2.97
8901.00	91.260	321.570	6861.22	2110.75	1873.12	-1004.89	1712949.36	521697.74	39°55'40.272"N	80°31'24.779"W	2125.65	331.787	2.40	-1.42	-1.94
8991.00	88.860	323.330	6861.12	2200.65	1944.47	-1059.73	1712894.52	521769.09	39°55'40.971"N	80°31'25.494"W	2214.50	331.410	3.31	-2.67	1.96
9080.00	87.850	327.670	6863.68	2289.59	2017.77	-1110.11	1712844.14	521842.38	39°55'41.689"N	80°31'26.151"W	2302.98	331.182	5.00	-1.13	4.88
9170.00	91.410	332.830	6864.26	2379.17	2095.86	-1154.75	1712799.51	521920.47	39°55'42.456"N	80°31'26.735"W	2392.93	331.147	6.96	3.96	5.73
9274.00	91.140	331.830	6861.95	2482.29	2187.95	-1203.03	1712751.23	522012.55	39°55'43.361"N	80°31'27.368"W	2496.88	331.196	1.00	-0.26	-0.96
9369.00	91.850	325.350	6859.47	2577.02	2268.95	-1252.50	1712701.77	522093.56	39°55'44.156"N	80°31'28.015"W	2591.70	331.101	6.86	0.75	-6.82
9463.00	90.920	322.540	6857.19	2670.97	2344.92	-1307.80	1712646.47	522169.52	39°55'44.900"N	80°31'28.736"W	2684.95	330.851	3.15	-0.99	-2.99

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot C
Area	Marshall County, WV	Well	WEB-22C-HS
Field	Marshall	Wellbore	WEB-22C-HS AWB
Facility	WEB-22 Pad		

WELLPATH DATA (210 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
9558.00	90.550	322.670	6855.98	2765.88	2420.39	-1365.49	1712588.78	522244.98	39°55'45.639"N	80°31'29.488"W	2779.00	330.570	0.41	-0.39	0.14
9652.00	90.680	324.900	6854.97	2859.84	2496.22	-1421.02	1712533.25	522320.81	39°55'46.382"N	80°31'30.211"W	2872.35	330.348	2.38	0.14	2.37
9747.00	90.460	323.250	6854.02	2954.82	2573.14	-1476.75	1712477.52	522397.73	39°55'47.136"N	80°31'30.938"W	2966.79	330.148	1.75	-0.23	-1.74
9841.00	90.310	323.690	6853.39	3048.79	2648.67	-1532.70	1712421.57	522473.25	39°55'47.876"N	80°31'31.667"W	3060.17	329.943	0.49	-0.16	0.47
9936.00	89.910	325.690	6853.21	3143.78	2726.19	-1587.61	1712366.67	522550.77	39°55'48.636"N	80°31'32.383"W	3154.78	329.785	2.15	-0.42	2.11
10031.00	90.060	325.550	6853.23	3238.78	2804.60	-1641.26	1712313.03	522629.17	39°55'49.405"N	80°31'33.083"W	3249.53	329.664	0.22	0.16	-0.15
10125.00	90.370	323.460	6852.88	3332.77	2881.12	-1695.83	1712258.45	522705.69	39°55'50.155"N	80°31'33.795"W	3343.16	329.519	2.25	0.33	-2.22
10220.00	89.750	324.720	6852.78	3427.75	2958.06	-1751.55	1712202.74	522782.63	39°55'50.909"N	80°31'34.522"W	3437.74	329.369	1.48	-0.65	1.33
10309.00	89.910	324.790	6853.04	3516.75	3030.75	-1802.91	1712151.38	522855.31	39°55'51.622"N	80°31'35.192"W	3526.46	329.253	0.20	0.18	0.08
10399.00	90.000	325.030	6853.11	3606.75	3104.39	-1854.65	1712099.65	522928.95	39°55'52.343"N	80°31'35.866"W	3616.21	329.145	0.28	0.10	0.27
10488.00	90.520	323.200	6852.71	3695.73	3176.50	-1906.81	1712047.48	523001.05	39°55'53.050"N	80°31'36.547"W	3704.87	329.024	2.14	0.58	-2.06
10578.00	89.720	323.140	6852.52	3785.69	3248.53	-1960.76	1711993.54	523073.09	39°55'53.756"N	80°31'37.250"W	3794.41	328.886	0.89	-0.89	-0.07
10667.00	90.430	324.910	6852.41	3874.67	3320.55	-2013.04	1711941.26	523145.11	39°55'54.462"N	80°31'37.931"W	3883.09	328.774	2.14	0.80	1.99
10757.00	90.550	324.340	6851.64	3964.66	3393.94	-2065.14	1711889.16	523218.48	39°55'55.181"N	80°31'38.611"W	3972.86	328.680	0.65	0.13	-0.63
10846.00	90.430	324.200	6850.87	4053.65	3466.18	-2117.11	1711837.19	523290.73	39°55'55.889"N	80°31'39.288"W	4061.60	328.584	0.21	-0.13	-0.16
10936.00	90.400	325.100	6850.22	4143.65	3539.58	-2169.18	1711785.12	523364.13	39°55'56.608"N	80°31'39.968"W	4151.39	328.499	1.00	-0.03	1.00
11026.00	90.370	325.070	6849.62	4233.65	3613.38	-2220.69	1711733.62	523437.92	39°55'57.332"N	80°31'40.640"W	4241.23	328.426	0.05	-0.03	-0.03
11115.00	90.460	328.100	6848.97	4322.60	3687.66	-2269.70	1711684.61	523512.20	39°55'58.060"N	80°31'41.280"W	4330.17	328.388	3.41	0.10	3.40
11205.00	90.430	328.800	6848.27	4412.43	3764.36	-2316.79	1711637.53	523588.89	39°55'58.813"N	80°31'41.895"W	4420.17	328.390	0.78	-0.03	0.78
11294.00	90.370	327.270	6847.65	4501.30	3839.86	-2363.90	1711590.41	523664.38	39°55'59.554"N	80°31'42.511"W	4509.16	328.383	1.72	-0.07	-1.72
11384.00	90.430	327.200	6847.02	4591.23	3915.54	-2412.61	1711541.71	523740.06	39°56'00.296"N	80°31'43.147"W	4599.14	328.360	0.10	0.07	-0.08
11474.00	90.370	326.990	6846.40	4681.17	3991.09	-2461.50	1711492.82	523815.61	39°56'01.037"N	80°31'43.786"W	4689.12	328.336	0.24	-0.07	-0.23
11563.00	90.400	325.700	6845.80	4770.14	4065.17	-2510.82	1711443.50	523889.69	39°56'01.764"N	80°31'44.430"W	4778.06	328.299	1.45	0.03	-1.45
11653.00	90.680	323.780	6844.95	4860.13	4138.66	-2562.77	1711391.55	523963.17	39°56'02.484"N	80°31'45.108"W	4867.88	328.233	2.16	0.31	-2.13
11743.00	90.620	324.880	6843.93	4950.12	4211.77	-2615.25	1711339.08	524036.27	39°56'03.200"N	80°31'45.792"W	4957.67	328.162	1.22	-0.07	1.22
11832.00	90.620	325.530	6842.97	5039.11	4284.85	-2666.03	1711288.30	524109.35	39°56'03.917"N	80°31'46.455"W	5046.55	328.110	0.73	0.00	0.73
11922.00	90.590	325.240	6842.02	5129.11	4358.91	-2717.15	1711237.18	524183.41	39°56'04.643"N	80°31'47.122"W	5136.44	328.062	0.32	-0.03	-0.32
12012.00	91.390	324.630	6840.46	5219.09	4432.57	-2768.85	1711185.48	524257.06	39°56'05.365"N	80°31'47.796"W	5226.30	328.009	1.12	0.89	-0.68
12101.00	91.450	322.760	6838.25	5308.04	4504.26	-2821.53	1711132.81	524328.76	39°56'06.068"N	80°31'48.483"W	5315.02	327.936	2.10	0.07	-2.10
12191.00	90.740	322.130	6836.53	5397.93	4575.60	-2876.37	1711077.97	524400.09	39°56'06.766"N	80°31'49.197"W	5404.59	327.845	1.05	-0.79	-0.70

Actual Wellpath Report

WEB-22C-HS (AWP) Proj: 14797'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (210 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
12281.00	90.890	321.090	6835.25	5487.76	4646.13	-2932.26	1711022.08	524470.62	39°56'07.457"N	80°31'49.925"W	5494.06	327.743	1.17	0.17	-1.16
12370.00	90.620	319.930	6834.08	5576.48	4714.81	-2988.85	1710965.49	524539.29	39°56'08.129"N	80°31'50.662"W	5582.35	327.628	1.34	-0.30	-1.30
12460.00	90.580	321.500	6833.14	5666.22	4784.46	-3045.83	1710908.52	524608.95	39°56'08.811"N	80°31'51.403"W	5671.70	327.519	1.74	-0.04	1.74
12550.00	90.680	326.350	6832.15	5756.17	4857.18	-3098.81	1710855.54	524681.66	39°56'09.524"N	80°31'52.094"W	5761.49	327.463	5.39	0.11	5.39
12639.00	90.710	327.600	6831.07	5845.11	4931.79	-3147.31	1710807.04	524756.27	39°56'10.255"N	80°31'52.728"W	5850.48	327.455	1.40	0.03	1.40
12729.00	90.800	326.570	6829.88	5935.04	5007.34	-3196.21	1710758.14	524831.81	39°56'10.996"N	80°31'53.367"W	5940.47	327.450	1.15	0.10	-1.14
12818.00	90.250	326.370	6829.07	6024.01	5081.53	-3245.37	1710708.99	524905.99	39°56'11.724"N	80°31'54.009"W	6029.46	327.435	0.66	-0.62	-0.22
12908.00	90.280	326.650	6828.65	6113.98	5156.58	-3295.03	1710659.33	524981.05	39°56'12.460"N	80°31'54.657"W	6119.44	327.422	0.31	0.03	0.31
12998.00	90.310	325.400	6828.19	6203.96	5231.22	-3345.32	1710609.04	525055.68	39°56'13.192"N	80°31'55.314"W	6209.41	327.401	1.39	0.03	-1.39
13087.00	90.370	324.820	6827.66	6292.96	5304.22	-3396.23	1710558.13	525128.67	39°56'13.907"N	80°31'55.978"W	6298.34	327.369	0.66	0.07	-0.65
13177.00	90.280	326.390	6827.15	6382.95	5378.48	-3447.07	1710507.30	525202.93	39°56'14.636"N	80°31'56.642"W	6388.30	327.344	1.75	-0.10	1.74
13266.00	90.400	328.630	6826.62	6471.86	5453.54	-3494.87	1710459.50	525277.99	39°56'15.372"N	80°31'57.266"W	6477.29	327.346	2.52	0.13	2.52
13356.00	90.280	326.580	6826.09	6561.76	5529.53	-3543.09	1710411.29	525353.98	39°56'16.117"N	80°31'57.896"W	6567.28	327.350	2.28	-0.13	-2.28
13446.00	90.340	326.410	6825.60	6651.73	5604.57	-3592.77	1710361.61	525429.02	39°56'16.853"N	80°31'58.545"W	6657.27	327.338	0.20	0.07	-0.19
13535.00	90.370	325.860	6825.05	6740.71	5678.47	-3642.36	1710312.02	525502.91	39°56'17.578"N	80°31'59.193"W	6746.25	327.323	0.62	0.03	-0.62
13625.00	90.310	324.240	6824.51	6830.70	5752.24	-3693.91	1710260.46	525576.67	39°56'18.301"N	80°31'59.865"W	6836.17	327.293	1.80	-0.07	-1.80
13714.00	90.090	323.260	6824.20	6919.68	5824.01	-3746.54	1710207.84	525648.44	39°56'19.004"N	80°32'00.552"W	6925.00	327.247	1.13	-0.25	-1.10
13804.00	90.120	322.600	6824.04	7009.62	5895.82	-3800.79	1710153.59	525720.25	39°56'19.708"N	80°32'01.259"W	7014.75	327.192	0.73	0.03	-0.73
13893.00	90.030	322.140	6823.92	7098.52	5966.31	-3855.13	1710099.26	525790.73	39°56'20.398"N	80°32'01.967"W	7103.44	327.131	0.53	-0.10	-0.52
13983.00	90.030	322.090	6823.88	7188.41	6037.34	-3910.40	1710043.99	525861.76	39°56'21.094"N	80°32'02.686"W	7193.10	327.069	0.06	0.00	-0.06
14073.00	90.120	323.100	6823.76	7278.33	6108.83	-3965.07	1709989.33	525933.25	39°56'21.794"N	80°32'03.399"W	7282.83	327.014	1.13	0.10	1.12
14162.00	90.030	324.790	6823.64	7367.31	6180.78	-4017.45	1709936.95	526005.19	39°56'22.499"N	80°32'04.082"W	7371.70	326.977	1.90	-0.10	1.90
14252.00	90.220	325.010	6823.44	7457.31	6254.41	-4069.20	1709885.20	526078.82	39°56'23.221"N	80°32'04.757"W	7461.64	326.951	0.32	0.21	0.24
14342.00	90.150	325.620	6823.15	7547.31	6328.42	-4120.41	1709833.99	526152.83	39°56'23.946"N	80°32'05.426"W	7551.60	326.932	0.68	-0.08	0.68
14431.00	90.150	326.260	6822.92	7636.30	6402.15	-4170.26	1709784.14	526226.55	39°56'24.669"N	80°32'06.076"W	7640.59	326.920	0.72	0.00	0.72
14521.00	90.400	327.390	6822.49	7726.25	6477.48	-4219.50	1709734.90	526301.88	39°56'25.408"N	80°32'06.720"W	7730.58	326.919	1.29	0.28	1.26
14611.00	90.520	328.690	6821.77	7816.12	6553.83	-4267.14	1709687.27	526378.23	39°56'26.157"N	80°32'07.342"W	7820.56	326.932	1.45	0.13	1.44
14700.00	90.550	327.960	6820.94	7904.96	6629.57	-4313.87	1709640.54	526453.96	39°56'26.900"N	80°32'07.954"W	7909.53	326.948	0.82	0.03	-0.82
14772.00	90.520	324.590	6820.26	7976.93	6689.44	-4353.84	1709600.57	526513.83	39°56'27.487"N	80°32'08.475"W	7981.51	326.942	4.68	-0.04	-4.68
14797.00	90.520	324.590	6820.04	8001.93	6709.82	-4368.32	1709586.09	526534.21	39°56'27.687"N	80°32'08.664"W	8006.49	326.934	0.00	0.00	0.00

REFERENCE WELLPATH IDENTIFICATION

Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
WEB-22C-HS BHL:rev-1		6890.00	6707.47	-4372.29	**1709582.12**	**526531.86**	39°56'27.663"N	80°32'08.715"W	point
WEB-22C-HS LP:Rev-1		6890.00	586.77	-86.53	**1713867.68**	**520411.45**	39°55'27.663"N	80°31'12.805"W	point
WEB-22C-HS BHL Plat		6913.00	6707.47	-4372.29	**1709582.12**	**526531.86**	39°56'27.663"N	80°32'08.715"W	point
WEB-22C-HS LP Plat		6913.00	586.77	-86.53	**1713867.68**	**520411.45**	39°55'27.663"N	80°31'12.805"W	point

WELLPATH COMPOSITION - Ref Wellbore: WEB-22C-HS AWB Ref Wellpath: WEB-22C-HS (AWP) Proj: 14797'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.60	441.00	Generic gyro - northseeking (Standard)	01_Gyrodata MS Gyro <17-1/2"> (50'-441')	WEB-22C-HS AWB
441.00	1226.00	NaviTrak (MagCorr)	02_BHI MWD <12-1/4"> (441')(527'-1226') Proj:1281	WEB-22C-HS AWB
1226.00	5605.00	ISCWSA MWD, Rev. 2 (Standard)	03_BHI UBHO Surveys (1226')(1317'-6916')	WEB-22C-HS AWB
5605.00	14772.00	NaviTrak (AT Curve Short Spaced)	BHI ATCurve Surveys 8.75" (5605')(5631'-14772')	WEB-22C-HS AWB
14772.00	14797.00	Blind Drilling (std)	Projection to bit	WEB-22C-HS AWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

COMMENTS

Wellpath general comments
API: 47-051-01678-0100
BHI Job #: 6234481
Rig: Precision 542
Duration: 4/23/2014-5/2/2014
Gyrodata MS Gyro <17-1/2"> (50'-441')
BHI MWD <12-1/4"> (441')(527'-1226')
BHI MWD <8-3/4"> (1226')(1317'-5605')
BHI AT Curve <8-3/4"> (5605')(5631'-14772')
Projected MD at TD: 14797'
API: 47-051-01678-0100
BHI Job #: 6234481
Rig: Precision 542
Duration: 4/19/2014-4/23/2014
Gyrodata MS Gyro <17-1/2"> (50'-441')
BHI MWD <12-1/4"> (441')(527'-1226')
BHI MWD <8-3/4"> (1226')(1317'-6916')
Pilot TD: 6970'

NOBLE ENERGY

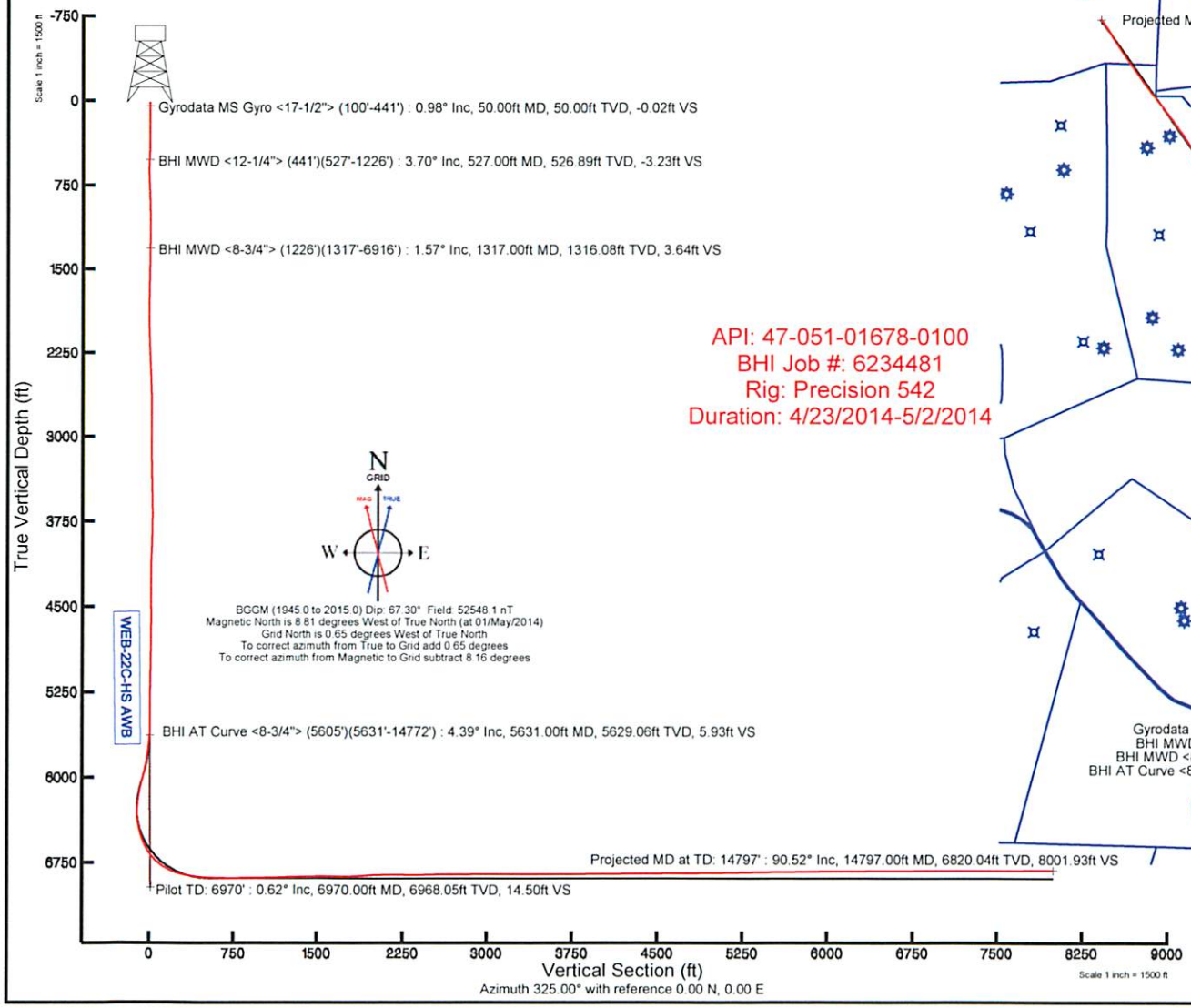
Location: Marshall County, WV
Field: Marshall
Facility: WEB-22 Pad

Slot: Slot C
Well: WEB-22C-HS
Wellbore: WEB-22C-HS PWB

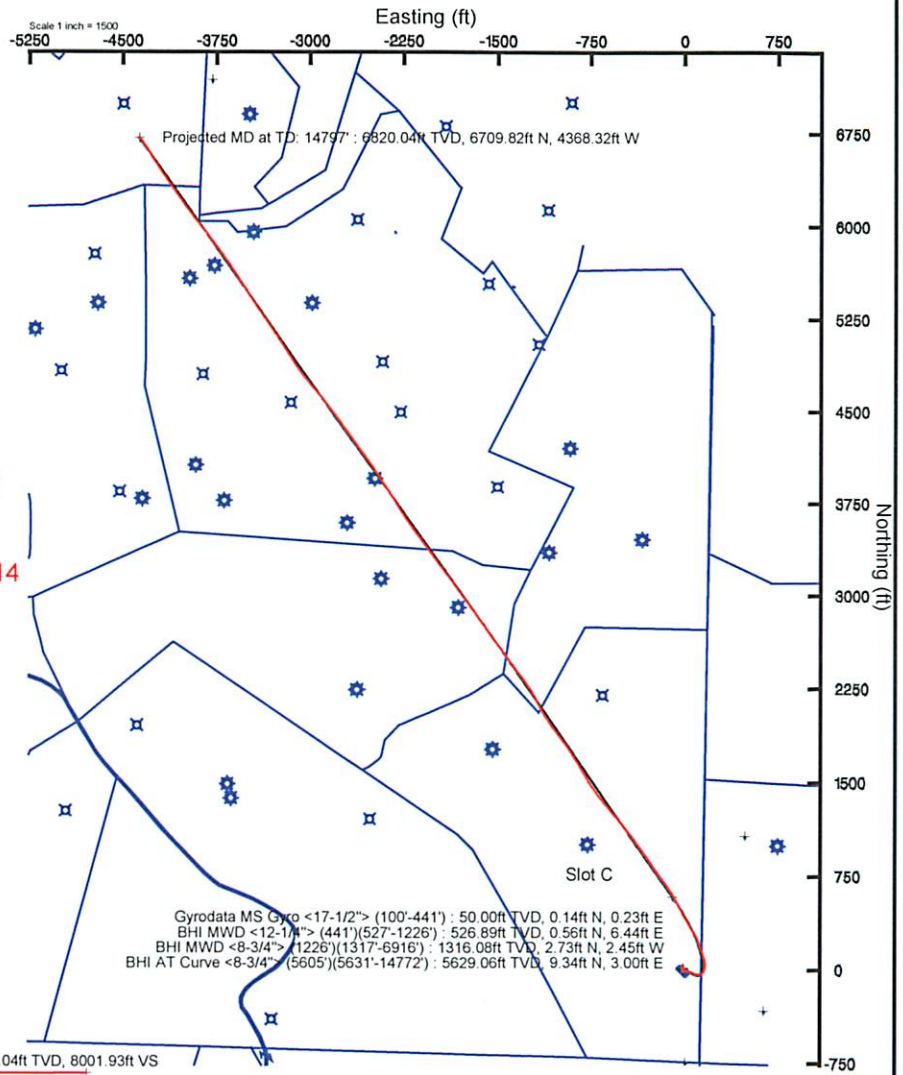
Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
WEB-22 Pad			1713925.810	519852.540	39°55'22.147"N	80°31'11.977"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot C	-27.83	28.39	1713954.202	519824.710	39°55'21.875"N	80°31'11.609"W
Precision 542 (RT) to Mud line (At Slot: Slot C)					18.6ft	
Mean Sea Level to Mud line (At Slot: Slot C)					-1325ft	
Precision 542 (RT) to Mean Sea Level					1343.6ft	

Plot reference wellpath is WEB-22C-HS PWP Rev-C.0	
True vertical depths are referenced to Precision 542 (RT)	Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet
Measured depths are referenced to Precision 542 (RT)	North Reference: Grid north
Precision 542 (RT) to Mean Sea Level: 1343.6 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot C): -1325 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: edsaryar on 08/May/2014



API: 47-051-01678-0100
BHI Job #: 6234481
Rig: Precision 542
Duration: 4/23/2014-5/2/2014



Actual Wellpath Report

WEB-22C-HS (Pilot Hole) Proj: 6970'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

REPORT SETUP INFORMATION			
Projection System	**NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet**	Software System	**WellArchitect® 4.0.1**
North Reference	**Grid**	User	**Edsaryar**
Scale	**0.999954**	Report Generated	**06/May/2014 at 15:24**
Convergence at slot	**0.65° West**	Database/Source file	**WellArchitectEasternDB/WEB-22C-HS_AWB.xml**

WELLPATH LOCATION						
	Local coordinates		**Grid coordinates**		**Geographic coordinates**	
	North[ft]	**East[ft]**	**Easting[US ft]**	**Northing[US ft]**	**Latitude**	**Longitude**
Slot Location	-27.83	28.39	**1713954.20**	**519824.71**	39°55'21.875"N	80°31'11.609"W
Facility Reference Pt			**1713925.81**	**519852.54**	39°55'22.147"N	80°31'11.977"W
Field Reference Pt			**609601.22**	**0.00**	38°23'48.753"N	84°21'09.765"W

WELLPATH DATUM			
Calculation method	**Minimum curvature**	Precision 542 (RT) to Facility Vertical Datum	**18.60ft**
Horizontal Reference Pt	**Slot**	Precision 542 (RT) to Mean Sea Level	**1343.60ft**
Vertical Reference Pt	**Precision 542 (RT)**	Precision 542 (RT) to Mud Line at Slot (Slot C)	**18.60ft**
MD Reference Pt	**Precision 542 (RT)**	Section Origin	**N 0.00, E 0.00 ft**
Field Vertical Reference	**Mean Sea Level**	Section Azimuth	**325.00°**

Actual Wellpath Report

WEB-22C-HS (Pilot Hole) Proj: 6970'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (103 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	59.000	0.00	0.00	0.00	0.00	1713954.20	519824.71	39°55'21.875"N	80°31'11.609"W	0.00	0.000	0.00	0.00	0.00
18.60	0.000	59.000	18.60	0.00	0.00	0.00	1713954.20	519824.71	39°55'21.875"N	80°31'11.609"W	0.00	0.000	0.00	0.00	0.00
50.00	0.980	59.000	50.00	-0.02	0.14	0.23	1713954.43	519824.85	39°55'21.876"N	80°31'11.606"W	0.27	59.000	3.12	3.12	0.00
100.00	1.090	53.850	99.99	-0.04	0.64	0.98	1713955.18	519825.35	39°55'21.881"N	80°31'11.596"W	1.17	56.910	0.29	0.22	-10.30
150.00	0.940	55.490	149.98	-0.03	1.15	1.70	1713955.90	519825.86	39°55'21.886"N	80°31'11.587"W	2.06	55.919	0.31	-0.30	3.28
200.00	0.780	65.390	199.98	-0.10	1.53	2.35	1713956.55	519826.24	39°55'21.890"N	80°31'11.579"W	2.80	57.001	0.44	-0.32	19.80
250.00	0.790	63.560	249.97	-0.21	1.82	2.97	1713957.17	519826.53	39°55'21.893"N	80°31'11.571"W	3.48	58.466	0.05	0.02	-3.66
300.00	0.930	62.870	299.97	-0.32	2.16	3.64	1713957.84	519826.87	39°55'21.896"N	80°31'11.562"W	4.23	59.303	0.28	0.28	-1.38
350.00	0.780	64.840	349.96	-0.43	2.49	4.31	1713958.51	519827.20	39°55'21.900"N	80°31'11.554"W	4.97	59.972	0.31	-0.30	3.94
400.00	1.030	71.150	399.95	-0.61	2.78	5.04	1713959.24	519827.49	39°55'21.903"N	80°31'11.544"W	5.76	61.127	0.54	0.50	12.62
441.00	1.200	70.970	440.95	-0.83	3.04	5.79	1713960.00	519827.75	39°55'21.905"N	80°31'11.535"W	6.54	62.331	0.41	0.41	-0.44
527.00	3.700	184.250	526.89	-3.23	0.56	6.44	1713960.64	519825.27	39°55'21.881"N	80°31'11.526"W	6.47	84.999	5.02	2.91	131.72
558.00	4.130	195.370	557.82	-4.72	-1.51	6.07	1713960.27	519823.20	39°55'21.860"N	80°31'11.530"W	6.26	103.970	2.81	1.39	35.87
588.00	4.050	208.010	587.74	-5.89	-3.49	5.29	1713959.49	519821.22	39°55'21.841"N	80°31'11.540"W	6.33	123.408	3.01	-0.27	42.13
621.00	3.990	232.710	620.66	-6.46	-5.21	3.83	1713958.03	519819.50	39°55'21.824"N	80°31'11.559"W	6.47	143.716	5.21	-0.18	74.85
653.00	3.820	257.800	652.59	-6.10	-6.11	1.90	1713956.10	519818.60	39°55'21.814"N	80°31'11.583"W	6.40	162.743	5.32	-0.53	78.41
684.00	3.530	277.100	683.53	-5.06	-6.21	-0.06	1713954.14	519818.50	39°55'21.813"N	80°31'11.608"W	6.21	180.534	4.08	-0.94	62.26
716.00	3.070	286.300	715.47	-3.73	-5.85	-1.86	1713952.34	519818.86	39°55'21.817"N	80°31'11.632"W	6.14	197.621	2.19	-1.44	28.75
747.00	2.300	298.820	746.44	-2.52	-5.32	-3.20	1713951.00	519819.39	39°55'21.822"N	80°31'11.649"W	6.21	211.040	3.11	-2.48	40.39
779.00	1.960	327.940	778.42	-1.40	-4.54	-4.05	1713950.15	519820.17	39°55'21.829"N	80°31'11.660"W	6.09	221.733	3.50	-1.06	91.00
810.00	2.410	358.780	809.40	-0.33	-3.44	-4.35	1713949.85	519821.27	39°55'21.840"N	80°31'11.664"W	5.55	231.630	4.00	1.45	99.48
842.00	2.870	29.480	841.37	0.58	-2.07	-3.97	1713950.23	519822.64	39°55'21.854"N	80°31'11.659"W	4.48	242.424	4.58	1.44	95.94
873.00	2.990	25.520	872.32	1.31	-0.67	-3.24	1713950.96	519824.04	39°55'21.868"N	80°31'11.650"W	3.31	258.357	0.76	0.39	-12.77
905.00	3.640	30.820	904.27	2.14	0.96	-2.36	1713951.84	519825.67	39°55'21.884"N	80°31'11.639"W	2.55	292.118	2.24	2.03	16.56
936.00	3.220	29.470	935.22	2.92	2.56	-1.43	1713952.78	519827.27	39°55'21.900"N	80°31'11.627"W	2.93	330.904	1.38	-1.35	-4.35
968.00	2.650	17.020	967.17	3.76	4.05	-0.77	1713953.44	519828.76	39°55'21.915"N	80°31'11.619"W	4.12	349.283	2.66	-1.78	-38.91
999.00	2.160	32.380	998.15	4.42	5.23	-0.24	1713953.96	519829.94	39°55'21.926"N	80°31'11.612"W	5.24	357.328	2.60	-1.58	49.55
1031.00	1.200	48.830	1030.13	4.69	5.96	0.33	1713954.53	519830.67	39°55'21.934"N	80°31'11.605"W	5.97	3.180	3.33	-3.00	51.41
1062.00	0.280	77.160	1061.13	4.70	6.19	0.65	1713954.85	519830.90	39°55'21.936"N	80°31'11.601"W	6.22	5.988	3.11	-2.97	91.39
1094.00	0.650	244.760	1093.13	4.70	6.13	0.56	1713954.76	519830.84	39°55'21.935"N	80°31'11.602"W	6.16	5.232	2.89	1.16	523.75

Actual Wellpath Report

WEB-22C-HS (Pilot Hole) Proj: 6970'

REFERENCE WELLPATH IDENTIFICATION

Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (103 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
1125.00	0.710	200.450	1124.13	4.62	5.88	0.34	1713954.54	519830.59	39°55'21.933"N	80°31'11.605"W	5.88	3.265	1.66	0.19	-142.94
1157.00	1.050	211.250	1156.12	4.39	5.44	0.11	1713954.32	519830.15	39°55'21.928"N	80°31'11.608"W	5.44	1.199	1.18	1.06	33.75
1188.00	0.910	243.230	1187.12	4.31	5.09	-0.25	1713953.95	519829.80	39°55'21.925"N	80°31'11.613"W	5.09	357.148	1.79	-0.45	103.16
1226.00	1.510	225.430	1225.11	4.27	4.60	-0.88	1713953.32	519829.31	39°55'21.920"N	80°31'11.621"W	4.68	349.172	1.84	1.58	-46.84
1317.00	1.570	214.910	1316.08	3.64	2.73	-2.45	1713951.76	519827.44	39°55'21.901"N	80°31'11.640"W	3.67	318.172	0.32	0.07	-11.56
1348.00	1.700	213.490	1347.07	3.33	2.00	-2.94	1713951.26	519826.71	39°55'21.894"N	80°31'11.647"W	3.56	304.225	0.44	0.42	-4.58
1380.00	1.710	216.230	1379.05	3.00	1.22	-3.49	1713950.71	519825.93	39°55'21.886"N	80°31'11.653"W	3.70	289.300	0.26	0.03	8.56
1411.00	1.260	203.600	1410.04	2.67	0.54	-3.90	1713950.30	519825.25	39°55'21.880"N	80°31'11.659"W	3.93	277.830	1.79	-1.45	-40.74
1443.00	1.270	186.120	1442.03	2.22	-0.14	-4.08	1713950.13	519824.57	39°55'21.873"N	80°31'11.661"W	4.08	268.047	1.20	0.03	-54.62
1506.00	1.020	169.400	1505.02	1.19	-1.38	-4.05	1713950.15	519823.33	39°55'21.861"N	80°31'11.660"W	4.28	251.118	0.66	-0.40	-26.54
1627.00	1.190	144.430	1626.00	-1.05	-3.47	-3.12	1713951.08	519821.25	39°55'21.840"N	80°31'11.648"W	4.66	221.988	0.42	0.14	-20.64
1672.00	0.790	122.640	1670.99	-1.80	-4.01	-2.59	1713951.62	519820.70	39°55'21.835"N	80°31'11.641"W	4.77	212.798	1.21	-0.89	-48.42
1762.00	1.230	118.090	1760.98	-3.24	-4.80	-1.21	1713952.99	519819.91	39°55'21.827"N	80°31'11.623"W	4.95	194.154	0.50	0.49	-5.06
1851.00	1.160	105.500	1849.96	-4.79	-5.49	0.50	1713954.70	519819.22	39°55'21.820"N	80°31'11.601"W	5.52	174.800	0.30	-0.08	-14.15
1941.00	1.080	22.180	1939.95	-5.03	-4.95	1.70	1713955.90	519819.76	39°55'21.826"N	80°31'11.586"W	5.23	161.068	1.66	-0.09	-92.58
2030.00	1.960	351.460	2028.92	-3.21	-2.67	1.79	1713955.99	519822.04	39°55'21.849"N	80°31'11.585"W	3.21	146.167	1.31	0.99	-34.52
2120.00	1.730	348.700	2118.87	-0.59	0.19	1.29	1713955.50	519824.90	39°55'21.877"N	80°31'11.592"W	1.31	81.835	0.27	-0.26	-3.07
2209.00	1.940	339.740	2207.82	2.10	2.92	0.51	1713954.71	519827.63	39°55'21.904"N	80°31'11.602"W	2.96	9.901	0.40	0.24	-10.07
2299.00	2.080	328.390	2297.77	5.20	5.74	-0.87	1713953.33	519830.45	39°55'21.931"N	80°31'11.621"W	5.80	351.331	0.47	0.16	-12.61
2388.00	2.350	318.990	2386.70	8.63	8.49	-2.92	1713951.28	519833.20	39°55'21.958"N	80°31'11.647"W	8.98	341.027	0.51	0.30	-10.56
2478.00	2.290	312.230	2476.63	12.22	11.09	-5.46	1713948.74	519835.80	39°55'21.984"N	80°31'11.680"W	12.36	333.784	0.31	-0.07	-7.51
2567.00	1.970	303.170	2565.57	15.37	13.12	-8.06	1713946.14	519837.83	39°55'22.003"N	80°31'11.714"W	15.40	328.447	0.52	-0.36	-10.18
2657.00	1.020	276.820	2655.54	17.34	14.06	-10.15	1713944.05	519838.77	39°55'22.013"N	80°31'11.741"W	17.34	324.186	1.28	-1.06	-29.28
2746.00	1.120	248.170	2744.52	18.07	13.83	-11.74	1713942.46	519838.54	39°55'22.010"N	80°31'11.761"W	18.15	319.676	0.60	0.11	-32.19
2836.00	0.160	189.400	2834.52	18.18	13.38	-12.58	1713941.62	519838.09	39°55'22.006"N	80°31'11.772"W	18.37	316.773	1.16	-1.07	-65.30
2925.00	0.470	59.390	2923.51	18.06	13.45	-12.29	1713941.92	519838.16	39°55'22.006"N	80°31'11.768"W	18.21	317.583	0.66	0.35	-146.08
3015.00	0.620	38.200	3013.51	18.17	14.02	-11.67	1713942.54	519838.73	39°55'22.012"N	80°31'11.760"W	18.24	320.229	0.28	0.17	-23.54
3104.00	0.830	43.090	3102.50	18.45	14.87	-10.93	1713943.27	519839.58	39°55'22.020"N	80°31'11.751"W	18.45	323.679	0.25	0.24	5.49
3194.00	0.780	30.190	3192.49	18.84	15.87	-10.17	1713944.03	519840.58	39°55'22.030"N	80°31'11.741"W	18.85	327.337	0.21	-0.06	-14.33
3283.00	1.120	354.900	3281.48	19.85	17.26	-9.95	1713944.26	519841.97	39°55'22.044"N	80°31'11.739"W	19.92	330.046	0.74	0.38	-39.65

Actual Wellpath Report

WEB-22C-HS (Pilot Hole) Proj: 6970'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (103 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
3370.00	1.530	357.370	3368.46	21.56	19.27	-10.08	1713944.13	519843.98	39°55'22.064"N	80°31'11.741"W	21.74	332.393	0.48	0.47	2.84
3455.00	1.340	354.240	3453.43	23.39	21.39	-10.23	1713943.97	519846.10	39°55'22.085"N	80°31'11.743"W	23.71	334.445	0.24	-0.22	-3.68
3545.00	1.080	2.500	3543.41	24.98	23.29	-10.30	1713943.91	519847.99	39°55'22.104"N	80°31'11.744"W	25.46	336.145	0.35	-0.29	9.18
3635.00	1.110	357.130	3633.40	26.39	25.00	-10.30	1713943.90	519849.71	39°55'22.121"N	80°31'11.744"W	27.04	337.604	0.12	0.03	-5.97
3724.00	0.960	103.340	3722.39	26.56	25.69	-9.62	1713944.58	519850.40	39°55'22.127"N	80°31'11.736"W	27.43	339.470	1.86	-0.17	119.34
3814.00	1.180	120.160	3812.37	25.16	25.05	-8.09	1713946.12	519849.76	39°55'22.121"N	80°31'11.716"W	26.33	342.111	0.42	0.24	18.69
3903.00	0.880	102.600	3901.36	23.82	24.44	-6.63	1713947.58	519849.15	39°55'22.115"N	80°31'11.697"W	25.33	344.831	0.49	-0.34	-19.73
3993.00	2.650	161.840	3991.32	21.32	22.32	-5.30	1713948.90	519847.02	39°55'22.095"N	80°31'11.680"W	22.94	346.630	2.58	1.97	65.82
4082.00	2.660	158.370	4080.22	17.34	18.44	-3.90	1713950.30	519843.15	39°55'22.056"N	80°31'11.661"W	18.85	348.054	0.18	0.01	-3.90
4172.00	0.490	19.030	4170.19	15.54	16.86	-3.01	1713951.20	519841.57	39°55'22.041"N	80°31'11.650"W	17.13	349.893	3.39	-2.41	-154.82
4262.00	0.610	60.970	4260.19	15.71	17.46	-2.46	1713951.74	519842.17	39°55'22.047"N	80°31'11.643"W	17.63	351.975	0.45	0.13	46.60
4351.00	0.580	50.150	4349.18	15.70	17.98	-1.70	1713952.50	519842.69	39°55'22.052"N	80°31'11.633"W	18.06	354.593	0.13	-0.03	-12.16
4441.00	0.410	5.340	4439.18	15.99	18.59	-1.32	1713952.88	519843.30	39°55'22.058"N	80°31'11.628"W	18.64	355.933	0.45	-0.19	-49.79
4531.00	0.720	348.820	4529.18	16.75	19.47	-1.40	1713952.80	519844.17	39°55'22.067"N	80°31'11.629"W	19.52	355.882	0.39	0.34	-18.36
4620.00	0.730	103.280	4618.17	16.84	19.88	-0.96	1713953.24	519844.59	39°55'22.071"N	80°31'11.624"W	19.91	357.241	1.37	0.01	128.61
4710.00	0.820	89.070	4708.16	16.05	19.76	0.24	1713954.45	519844.47	39°55'22.070"N	80°31'11.608"W	19.76	0.707	0.23	0.10	-15.79
4799.00	0.540	124.200	4797.16	15.30	19.54	1.23	1713955.43	519844.25	39°55'22.068"N	80°31'11.596"W	19.58	3.595	0.55	-0.31	39.47
4889.00	0.880	134.120	4887.15	14.22	18.82	2.07	1713956.28	519843.53	39°55'22.061"N	80°31'11.585"W	18.93	6.291	0.40	0.38	11.02
4979.00	1.060	178.940	4977.14	12.86	17.50	2.59	1713956.79	519842.21	39°55'22.048"N	80°31'11.578"W	17.69	8.404	0.84	0.20	49.80
5068.00	1.280	181.030	5066.12	11.37	15.69	2.58	1713956.79	519840.40	39°55'22.030"N	80°31'11.578"W	15.90	9.352	0.25	0.25	2.35
5158.00	0.870	166.040	5156.11	9.92	14.02	2.73	1713956.93	519838.73	39°55'22.014"N	80°31'11.576"W	14.28	11.020	0.55	-0.46	-16.66
5247.00	0.800	190.100	5245.10	8.85	12.75	2.78	1713956.99	519837.46	39°55'22.001"N	80°31'11.575"W	13.05	12.317	0.40	-0.08	27.03
5337.00	0.330	176.360	5335.09	8.18	11.87	2.69	1713956.89	519836.58	39°55'21.992"N	80°31'11.576"W	12.18	12.766	0.54	-0.52	-15.27
5426.00	0.460	187.380	5424.09	7.70	11.26	2.66	1713956.86	519835.97	39°55'21.986"N	80°31'11.576"W	11.57	13.291	0.17	0.15	12.38
5516.00	0.570	202.880	5514.09	7.20	10.49	2.44	1713956.64	519835.20	39°55'21.979"N	80°31'11.579"W	10.77	13.092	0.20	0.12	17.22
5605.00	0.290	207.520	5603.08	6.86	9.89	2.16	1713956.37	519834.60	39°55'21.973"N	80°31'11.582"W	10.12	12.348	0.32	-0.31	5.21
5695.00	0.090	260.460	5693.08	6.78	9.67	1.99	1713956.19	519834.38	39°55'21.970"N	80°31'11.584"W	9.87	11.622	0.27	-0.22	58.82
5785.00	0.180	302.520	5783.08	6.94	9.74	1.80	1713956.00	519834.45	39°55'21.971"N	80°31'11.587"W	9.90	10.476	0.14	0.10	46.73
5875.00	0.130	353.620	5873.08	7.16	9.91	1.67	1713955.87	519834.62	39°55'21.973"N	80°31'11.589"W	10.05	9.560	0.16	-0.06	56.78
5964.00	0.200	25.700	5962.08	7.33	10.15	1.73	1713955.93	519834.86	39°55'21.975"N	80°31'11.588"W	10.30	9.646	0.13	0.08	36.04

Actual Wellpath Report

WEB-22C-HS (Pilot Hole) Proj: 6970'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

WELLPATH DATA (103 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
6054.00	0.220	32.390	6052.08	7.47	10.44	1.89	1713956.09	519835.15	39°55'21.978"N	80°31'11.586"W	10.61	10.242	0.04	0.02	7.43
6143.00	0.390	352.070	6141.08	7.81	10.89	1.94	1713956.14	519835.60	39°55'21.982"N	80°31'11.585"W	11.06	10.086	0.30	0.19	-45.30
6233.00	0.490	344.400	6231.08	8.44	11.56	1.79	1713955.99	519836.27	39°55'21.989"N	80°31'11.587"W	11.70	8.805	0.13	0.11	-8.52
6323.00	0.580	340.840	6321.07	9.24	12.36	1.54	1713955.74	519837.07	39°55'21.997"N	80°31'11.591"W	12.46	7.091	0.11	0.10	-3.96
6412.00	0.530	329.190	6410.07	10.09	13.14	1.18	1713955.38	519837.85	39°55'22.005"N	80°31'11.595"W	13.19	5.127	0.14	-0.06	-13.09
6502.00	0.520	325.330	6500.07	10.91	13.83	0.73	1713954.94	519838.54	39°55'22.011"N	80°31'11.601"W	13.85	3.035	0.04	-0.01	-4.29
6592.00	0.380	329.590	6590.06	11.62	14.43	0.35	1713954.55	519839.14	39°55'22.017"N	80°31'11.606"W	14.43	1.390	0.16	-0.16	4.73
6681.00	0.310	307.160	6679.06	12.14	14.83	0.01	1713954.21	519839.54	39°55'22.021"N	80°31'11.611"W	14.83	0.034	0.17	-0.08	-25.20
6771.00	0.500	305.390	6769.06	12.74	15.20	-0.51	1713953.70	519839.91	39°55'22.025"N	80°31'11.617"W	15.21	358.095	0.21	0.21	-1.97
6860.00	0.510	305.730	6858.06	13.48	15.66	-1.14	1713953.06	519840.37	39°55'22.029"N	80°31'11.626"W	15.70	355.823	0.01	0.01	0.38
6897.00	0.500	296.320	6895.05	13.78	15.83	-1.42	1713952.78	519840.53	39°55'22.031"N	80°31'11.629"W	15.89	354.865	0.23	-0.03	-25.43
6916.00	0.620	304.890	6914.05	13.95	15.92	-1.58	1713952.62	519840.63	39°55'22.032"N	80°31'11.631"W	16.00	354.330	0.77	0.63	45.11
6970.00	0.620	304.890	6968.05	14.50	16.25	-2.06	1713952.14	519840.96	39°55'22.035"N	80°31'11.637"W	16.38	352.778	0.00	0.00	0.00

REFERENCE WELLPATH IDENTIFICATION

Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
WEB-22C-HS BHL:rev-1		6890.00	6707.47	-4372.29	**1709582.12**	**526531.86**	39°56'27.663"N	80°32'08.715"W	point
WEB-22C-HS LP:Rev-1		6890.00	586.77	-86.53	**1713867.68**	**520411.45**	39°55'27.663"N	80°31'12.805"W	point
WEB-22C-HS BHL Plat		6913.00	6707.47	-4372.29	**1709582.12**	**526531.86**	39°56'27.663"N	80°32'08.715"W	point
WEB-22C-HS LP Plat		6913.00	586.77	-86.53	**1713867.68**	**520411.45**	39°55'27.663"N	80°31'12.805"W	point

WELLPATH COMPOSITION - Ref Wellbore: WEB-22C-HS AWB Ref Wellpath: WEB-22C-HS (Pilot Hole) Proj: 6970'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.60	441.00	Generic gyro - northseeking (Standard)	01_Gyrodata MS Gyro <17-1/2"> (50'-441')	WEB-22C-HS AWB
441.00	1226.00	NaviTrak (MagCorr)	02_BHI MWD <12-1/4"> (441')(527'-1226') Proj:1281	WEB-22C-HS AWB
1226.00	6916.00	ISCWSA MWD, Rev. 2 (Standard)	03_BHI UBHO Surveys (1226')(1317'-6916')	WEB-22C-HS AWB
6916.00	6970.00	Blind Drilling (std)	Projection to bit	WEB-22C-HS AWB

Actual Wellpath Report

WEB-22C-HS (Pilot Hole) Proj: 6970'

REFERENCE WELLPATH IDENTIFICATION			
Operator	**NOBLE ENERGY**	Slot	**Slot C**
Area	**Marshall County, WV**	Well	**WEB-22C-HS**
Field	**Marshall**	Wellbore	**WEB-22C-HS AWB**
Facility	**WEB-22 Pad**		

COMMENTS

Wellpath general comments
API: 47-051-01678-0100
BHI Job #: 6234481
Rig: Precision 542
Duration: 4/19/2014-4/23/2014
Gyrodata MS Gyro <17-1/2"> (50'-441')
BHI MWD <12-1/4"> (441')(527'-1226')
BHI MWD <8-3/4"> (1226')(1317'-6916')
Pilot TD: 6970'

NOBLE ENERGY

Location: Marshall County, WV
Field: Marshall
Facility: WEB-22 Pad

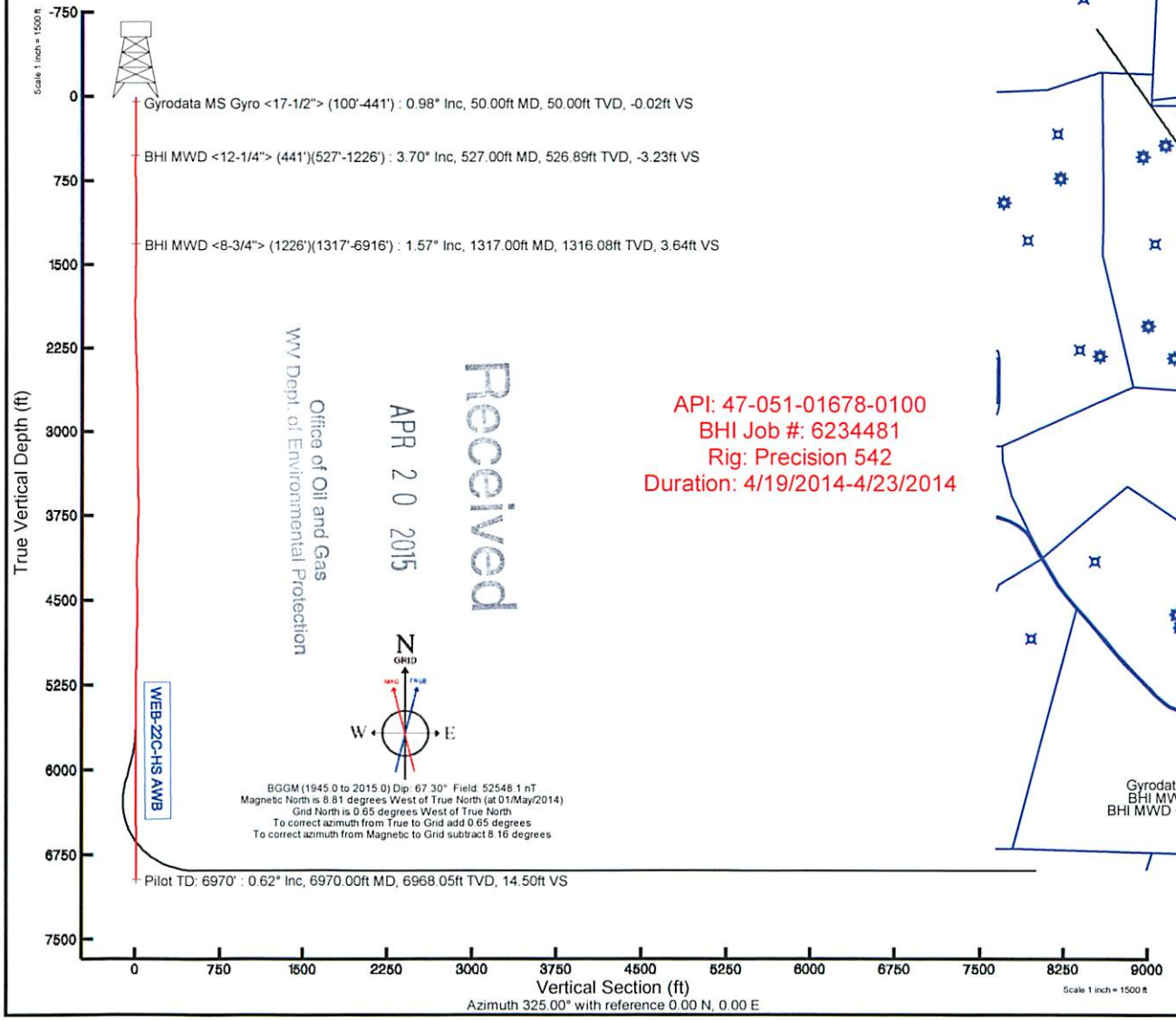
Slot: Slot C
Well: WEB-22C-HS
Wellbore: WEB-22C-HS PWB

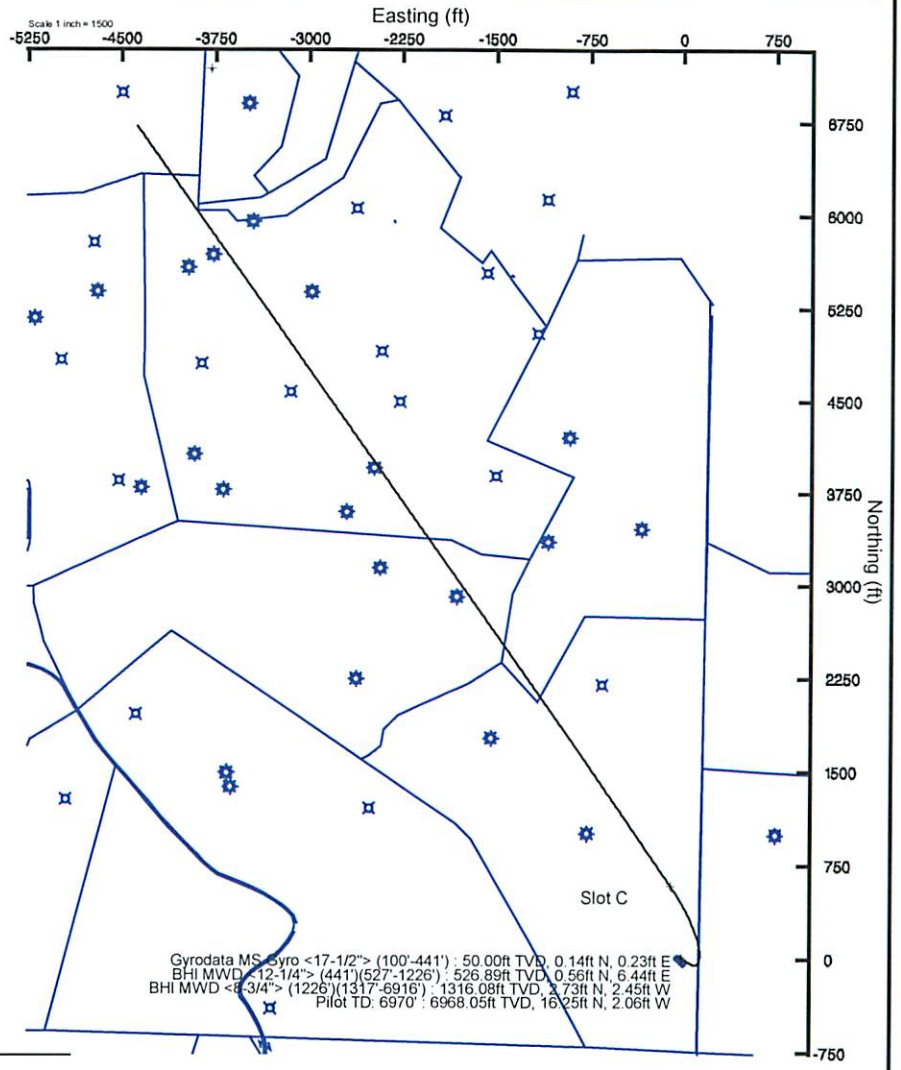
BAKER HUGHES

Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
WEB-22 Pad			1713925.810	519852.540	39°55'22.147"N	80°31'11.977"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot C	-27.83	28.39	1713954.202	519824.710	39°55'21.875"N	80°31'11.609"W
Precision 542 (RT) to Mud line (At Slot: Slot C)					18.6ft	
Mean Sea Level to Mud line (At Slot: Slot C)					-1325ft	
Precision 542 (RT) to Mean Sea Level					1343.6ft	

Plot reference wellpath is WEB-22C-HS PWP Rev-C.0	
True vertical depths are referenced to Precision 542 (RT)	Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet
Measured depths are referenced to Precision 542 (RT)	North Reference: Grid north
Precision 542 (RT) to Mean Sea Level: 1343.6 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot C): -1325 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: edsaryar on 06/May/2014





API: 47-051-01678-0100
BHI Job #: 6234481
Rig: Precision 542
Duration: 4/19/2014-4/23/2014

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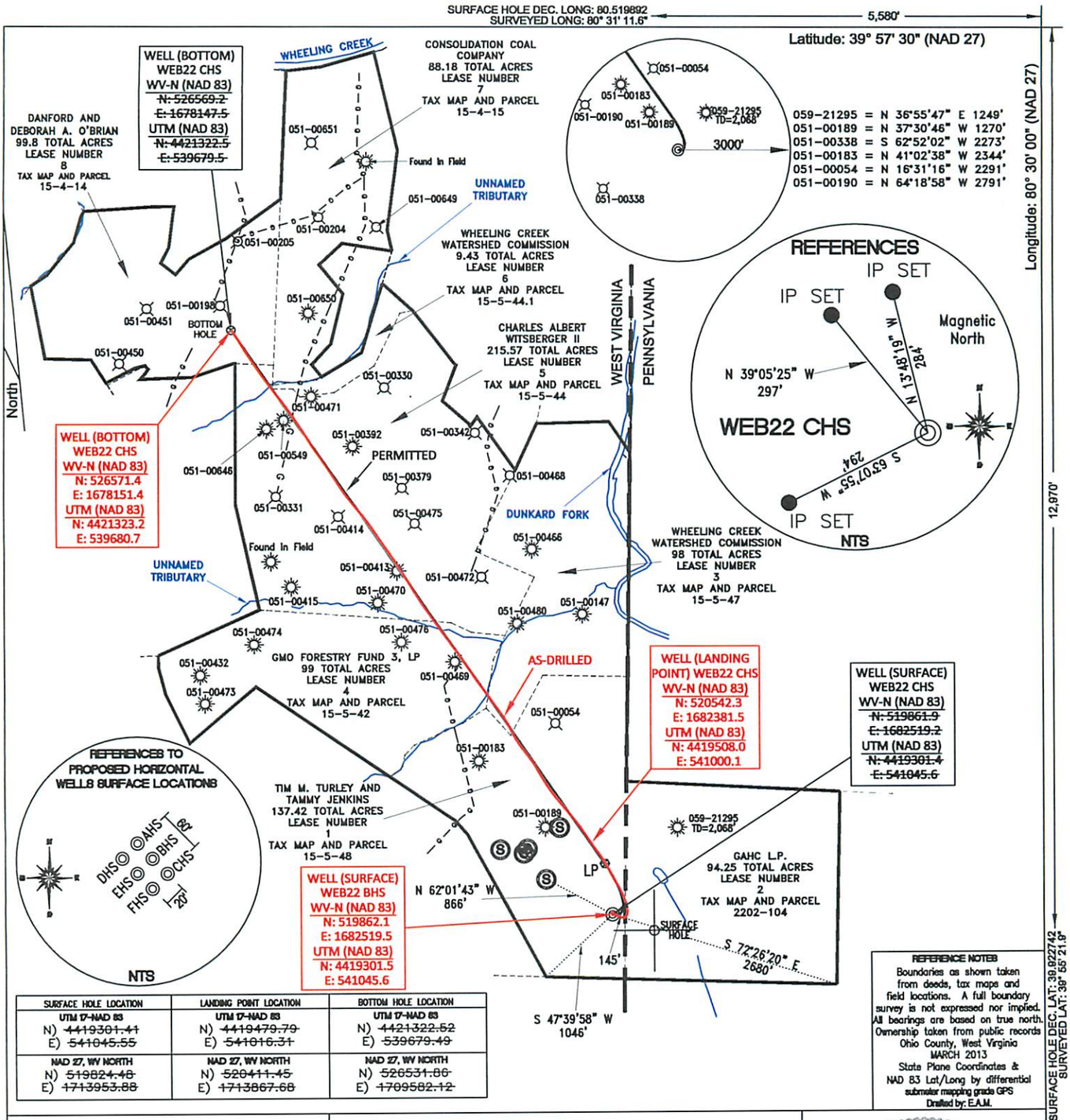

SURFACE HOLE LOCATION	LANDING POINT LOCATION	BOTTOM HOLE LOCATION
UTM 17-NAD 83	UTM 17-NAD 83	UTM 17-NAD 83
N) ~~4419301.41~~	N) ~~4419479.79~~	N) ~~4421322.52~~
E) ~~541045.55~~	E) ~~541016.31~~	E) ~~539679.49~~
NAD 27, WV NORTH	NAD 27, WV NORTH	NAD 27, WV NORTH
N) ~~519824.48~~	N) ~~520411.45~~	N) ~~526531.86~~
E) ~~1713953.88~~	E) ~~1713867.68~~	E) ~~1709582.12~~

REFERENCE NOTES
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records Ohio County, West Virginia MARCH 2013 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
Drafted by: E.A.M.

FILE #: NOB 001
DRAWING #: 2166
SCALE: PLAT - 1"=1600' TICK MARK - 1"=2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed:

L.L.S. #2124 : Ernest J. Benchek III

ERNEST J. BENCHEK III LICENSED No. 2124 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: JANUARY 27, 2015
OPERATOR'S WELL #: WEB22 CHS AS-DRILLED PLAT
API WELL #: 47 (STATE) 51 (COUNTY) 01678 (PERMIT)

Well Type: ☐ Oil ☐ Waste Diposal ☒ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: WHEELING CREEK
ELEVATION: 1,338.95'
COUNTY/DISTRICT: MARSHALL / WEBSTER
QUADRANGLE: MAJORSVILLE WV-PA
SURFACE OWNER: TIM M. TURLEY AND TAMMY JENKINS
ACREAGE: 137.42 +/-
OIL & GAS ROYALTY OWNER: TIM M. TURLEY AND TAMMY JENKINS
ACREAGE: 841.65 +/-
LEASE NUMBERS:

DRILL ☒ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒
PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON ☐
CLEAN OUT & REPLUG ☐ OTHER CHANGE ☐ (SPECIFY):

TARGET FORMATION: MARCELLUS
ESTIMATED DEPTH: TVD: 6,913' TMD: 14,758'
WELL OPERATOR: NOBLE ENERGY, INC.
DESIGNATED AGENT: STEVEN M. GREEN
ADDRESS: 333 TECHNOLOGY DRIVE SUITE 116
ADDRESS: 500 VIRGINIA STREET EAST
CITY: CANONSBURG STATE: PA ZIP CODE: 15317
CITY: CHARLESTON STATE: WV ZIP CODE: 25301

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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 051 - 01687 County Marshall District Webster
Quad Majorsville Pad Name WEB22 Field/Pool Name NA
Farm name Tim M. Turley and Tammy JF Well Number AHS
Operator (as registered with the OOG) Noble Energy, Inc.
Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4419309.8 Easting 541036.8
Landing Point of Curve Northing 4419402.5 Easting 540788.3
Bottom Hole Northing 4421210.7 Easting 539478.0

Elevation (ft) 1338.56 GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework □ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine □Gas □ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air ■ Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Synthetic Oil Based

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Date permit issued 12/12/2013 Date drilling commenced 2/8/2014 Date drilling ceased 6/14/2014
Date completion activities began 10/14/2014 Date completion activities ceased 2/14/2015
Verbal plugging (Y/N) N Date permission granted NA Granted by NA

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 212', 295' Open mine(s) (Y/N) depths Near Bailey Mine - approx. 770'
Salt water depth(s) ft None noted for Offsets Void(s) encountered (Y/N) depths none
Coal depth(s) ft 761' to 771' Pittsburgh Cavern(s) encountered (Y/N) depths none
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/26/15
W.S. 6/01/15

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API 47- 051 - 01687 Farm name Tim M. Turley and Tammy JF Well number AHS

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	36	30	40	N			
Surface	24	20	429.0	N	J-55 94#		Y
Coal							
Intermediate 1	17 1/2	13 3/8	1244.5	N	J-55 54.5#		Y
Intermediate 2	12 1/4	9 5/8	3402.8	N	J-55 36#		
Intermediate 3							
Production	8 3/4	5 1/2	14789.0	N	P-110 20#		Y
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface							
Coal							
Intermediate 1	Class A	1051	15.6	1.16	1219.16	0	8
Intermediate 2	Class HALCEM	1175	16.2	1.09	1280.75	0	8
Intermediate 3							
Production	Lead ECONOCEM - Tail Class H	Lead 1032 Tail 1779	Lead 14.2 Tail 15.0	Lead 1.32 Tail 1.30	Lead 240.0 Tail 416.8	1550.0	8
Tubing							

Drillers TD (ft) 14,804 Loggers TD (ft) 14,781

Deepest formation penetrated Marcellus Plug back to (ft) Not a Pilot Hole

Plug back procedure N/A

Kick off depth (ft) 6888

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction ☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ☐ No ☐ Conventional ☐ Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Conductor - No centralizers used. Fresh Water/Surface- Surface - 4 centralizers used, one every third joint with 2 Baskets Intermediate - 11 bow spring centralizers - Intermediate 2 - 24 bow spring centralizers on every joint to KOP, on every third joint from KOP to 100' from surface. Production - 236 centralizers - rigid bow spring every third joint from KOP to TOC, rigid bow spring every joint to KOP.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 051 - 01687 Farm name Tim M. Turley and Tammy JF Well number AHS

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE ATTACHED PERFORATION RECORD				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
	SEE ATTACHED STIMULATION INFORMATION PER STAGE RECORD							

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Please insert additional pages as applicable.

PERFORATION RECORD

API: 47-051-01687 Farm name: TIM M. TURLEY AND TAMMY JENKINS Well Name: WEB-22 A

Stage No.	Perf Date	Top Perf	Bottom Perf	# of Perfs	Formation
1	10/14/2014	14471	14633	50	Marcellus
1 Inj Test (1)	10/14/2014				Marcellus
1 Inj Test (2)	10/14/2014				Marcellus
2	10/15/2014	14269	14431	50	Marcellus
3	10/16/2014	14067	14229	50	Marcellus
4	10/16/2014	13865	14027	50	Marcellus
5	10/17/2014	13663	13825	50	Marcellus
6	10/18/2014	13461	13623	50	Marcellus
7	10/18/2014	13259	13421	50	Marcellus
8	10/18/2014	13057	13219	50	Marcellus
9	10/19/2014	12855	13017	50	Marcellus
10 + Inj Test	10/19/2014	12653	12815	50	Marcellus
11	10/19/2014	12451	12613	50	Marcellus
12	10/20/2014	12249	12411	50	Marcellus
13	10/20/2014	12047	12209	50	Marcellus
13 Reperf	10/21/2014	12037	12078	48	Marcellus
14	10/21/2014	11845	12007	50	Marcellus
15	10/21/2014	11643	11805	50	Marcellus
16	10/21/2014	11441	11603	50	Marcellus
16 Reperf	10/22/2014	11453	11511	48	Marcellus
17 TCP	10/25/2014	11239	11401	50	Marcellus
17 Inj test	10/26/2014				Marcellus
17 Reperf	10/26/2014	11210	11222	24	Marcellus
18	10/28/2014	11041	11211	58	Marcellus
19	10/28/2014	10841	11011	58	Marcellus
20	10/29/2014	10641	10811	58	Marcellus
21	10/29/2014	10441	10611	58	Marcellus
22	10/29/2014	10241	10411	58	Marcellus
23	10/29/2014	10041	10211	58	Marcellus
24	10/30/2014	9841	10011	58	Marcellus
25	10/30/2014	9641	9811	58	Marcellus
26	10/30/2014	9441	9611	58	Marcellus
27	10/30/2014	9241	9411	58	Marcellus
28	10/31/2014	9041	9211	58	Marcellus
29	10/31/2014	8841	9011	58	Marcellus
30	10/31/2014	8641	8811	58	Marcellus
31	11/1/2014	8441	8611	58	Marcellus
32	11/1/2014	8241	8411	58	Marcellus
32 Reperf	11/1/2014	8247	8282	48	Marcellus
33	11/2/2014	8041	8211	58	Marcellus
34	11/2/2014	7841	8011	58	Marcellus

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PERFORATION RECORD

API: 47-051-01687 Farm name: TIM M. TURLEY AND TAMMY JENKINS Well Name: WEB-22 A

Stage No.	Perf Date	Top Perf	Bottom Perf	# of Perfs	Formation
35	11/2/2014	7641	7811	58	Marcellus
36	11/3/2014	7441	7611	58	Marcellus
37	11/3/2014	7241	7411	58	Marcellus
38	11/3/2014	7100	7212	36	Marcellus

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STIMULATION INFORMATIOIN PER STAGE

API: 47-051-01687 Farm name: TIM M. TURLEY AND TAMMY JENKINS Well Name: WEB-22 A

Stage No.	Stim Date	Avg Rate (bpm)	ATP (psi)	Max BD Pressure	ISIP (psi)	Proppant (lbs)	Water (BBLS)	Amount of N^2/ other
1	10/14/2014	82.4	7944	6921	4013	406,604	11,726.38	
1 Inj Test (1)	10/14/2014	12.3	6624				393.10	
1 Inj Test (2)	10/14/2014	12.3	6624				859.10	
2	10/15/2014	83.1	7970	6395	4339	391,400	16,138.38	
3	10/16/2014	90.3	7448	5715	4609	402,468	9,155.38	
4	10/16/2014	88.9	7934	6174	4238	403,549	10,244.38	
5	10/17/2014	90.3	7826	5895	4506	404,399	9,222.38	
6	10/18/2014	87.5	7751	6390	4457	402,078	9,318.38	
7	10/18/2014	90.9	7763	6058	4474	400,924	9,168.38	
8	10/18/2014	90.0	7520	6163	4617	401,176	8,998.38	
9	10/19/2014	79.4	7820	5989	4349	402,351	14,318.76	
10 + Inj Test	10/19/2014	84.8	8073	5805	4419	397,528	12,207.38	
11	10/19/2014	85.7	7668	6059	4382	399,504	11,898.38	
12	10/20/2014	75.3	7996	5674	4706	354,155	9,834.38	
13	10/20/2014	44.2	8227	4850	5561	384,100	4,221.95	
13 Reperf	10/21/2014	79.5	8128		5460		11,844.57	
14	10/21/2014	59.5	8088	5516	4332	400,652	12,650.76	
15	10/21/2014	85.3	7404	5323	4800	403,143	10,887.38	
16	10/21/2014	65.1	8211	5990	4750	403,783	11,858.76	
16 Reperf	10/22/2014	45.0	8400		5466		9,310.76	
17 TCP	10/25/2014	30.1	8100		4684	380,155	3,521.14	
17 Inj test	10/26/2014						1,119.57	
17 Reperf	10/26/2014	73.2	8373		4334		10,999.38	
18	10/28/2014	87.1	8426	5910	5132	402,264	8,561.38	
19	10/28/2014	85.4	7620	5478	4886	401,038	10,944.38	
20	10/29/2014	83.2	8174	6167	5494	401,764	12,588.38	
21	10/29/2014	89.5	7595	6238	4523	400,883	12,686.38	
22	10/29/2014	88.9	7812	5804	4458	405,304	9,887.38	
23	10/29/2014	79.4	7879	5782	4657	401,779	13,493.38	
24	10/30/2014	84.0	7450	6383	4459	401,396	10,541.38	
25	10/30/2014	89.0	7709	6202	4644	400,599	10,458.38	
26	10/30/2014	88.3	7449	5941	5033	404,526	10,343.38	
27	10/30/2014	89.9	7500	5597	5020	401,753	9,455.38	
28	10/31/2014	89.2	7536	5949	4766	399,749	10,682.38	
29	10/31/2014	90.1	7852	5681	4676	402,583	10,783.38	
30	10/31/2014	86.5	7454	5989	4856	342,869	11,437.38	
31	11/1/2014	87.0	7307	6003	4047	402,658	10,343.38	
32	11/1/2014	88.1	7293	6112	4495	344,590	11,233.76	
32 Reperf	11/1/2014	82.1	7917		4102		8,973.76	
33	11/2/2014	86.8	7472	5406	3945	455,336	11,111.38	
34	11/2/2014	90.4	7327	5659	4506	402,351	12,307.38	

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STIMULATION INFORMATIOIN PER STAGE

API: 47-051-01687 Farm name: TIM M. TURLEY AND TAMMY JENKINS Well Name: WEB-22 A

Stage No.	Stim Date	Avg Rate (bpm)	ATP (psi)	Max BD Pressure	ISIP (psi)	Proppant (lbs)	Water (BBLS)	Amount of N^2/ other
35	11/2/2014	90.8	7302	5703	4470	402,142	10,401.38	
36	11/3/2014	90.7	6925	5289	5433	400,273	9,246.38	
37	11/3/2014	90.8	6849	5351	4611	403,402	8,547.38	
38	11/3/2014	88.7	7218	7083	4296	401,934	8,730.38	

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API 47- 051 - 01687 Farm name Tim M. Turley and Tammy JF Well number WEB 22 AHS

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6819	TVD	14,804	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ☐ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3334 mcfpd	15 bpd	284.7 bpd	584 bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
	SEE ATTACHED FORMATION SHEET				

Please insert additional pages as applicable.

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Drilling Contractor Precision Drilling Company
Address 5400 D Big Tyler Road City Charleston State WV Zip 25313

Logging Company Baker Hughes
Address 400 Technology Drive, Suite 120 City Canonsburg State PA Zip 15317

Cementing Company Schlumberger
Address 4600 J. Barry Court, Suite 200 City Canonsburg State PA Zip 15317

Stimulating Company FTS International
Address 6000 Town Center Boulevard, Suite 120 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Regina A. Logue Telephone 724-820-3559
Signature Regina A. Logue Title Regulatory Analyst Date _____

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

WEB 22 AHS 47-051-01687

Formations	Top TVD	Base TVD	Top MD	Base MD	Fluid
Shale	0	780	0	780	
Pittsburgh Coal	780	790	780	790	
Shale and Sandstone	790	1308	790	1308	
Dunkard Sand	1308	1329	1308	1329	
Shale	1329	1470	1329	1470	
Gas Sand	1470	1518	1470	1518	
Shale	1518	1594	1518	1594	
1st Salt Sand	1594	1605	1594	1605	
Shale	1605	1730	1605	1730	
2nd Salt Sand	1730	1778	1730	1778	
Shale	1778	1798	1778	1798	
Maxton Sand	1798	1862	1798	1862	
Shale	1862	1905	1862	5409	
Big Lime	1905	1991	1905	6064	
Big Injun	1991	2147	1991	6637	
Price	2147	2492	2147	7111	
Murrysville	2492	2508	2492	7145	
Shale	2508	2694	2508	7221	
50' Sand	2694	2701	2694	5307	
Shale	2701	2808	2701	5409	
30' Sand	2808	2817	2808	6064	
Shale	2817	2869	2817	6637	
Gordon	2869	2873	2869	7111	
Shale	2873	2969	2873	7145	
Fifth Sand	2969	3008	2969	7221	
Shale	3008	3418	3008	7242	
Speechley Sand	3418	3438	3419	7274	
Shale	3438	4509	3440	7400	
Warren Sand	4509	4514	4521	not encountered	
Shale	4514	5180	4526	not encountered	
Java Shale	5180	5287	5199	not encountered	
Pipe Creek Shale	5287	5388	5307	not encountered	
Angola Shale	5388	6035	5409	6064	
Rhinestreet	6035	6495	6064	6637	
Cashaqua	6495	6603	6637	7111	
Middlesex	6603	6634	7111	7145	
West River	6634	6705	7145	7221	
Burkett	6705	6724	7221	7242	
Tully Limestone	6724	6754	7242	7274	
Hamilton	6754	6871	7274	7400	Gas
Marcellus	6871	6922	7400	not encountered	
Onondaga	6922	6930	not encountered	not encountered	
Huntersville	6930		not encountered	not encountered	

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noble energy

West Virginia Department of Environmental Protection
Mr. John Kearny
Office of Oil & Gas
601 57th street, SE
Charleston, WV 25304-2345

April 15, 2015

To whom it may concern:

Enclosed is the Well Operator's Report of Well; Work, WR-35 for the following Wells, located in Marshall County, District of Webster.

Well	Permit Number
WEB 22 AHS	47-051-01687
WEB 22 BHS	47-051-01721
WEB 22 CHS	47-051-01678
WEB 22 DHS	47-051-01733
WEB 22 EHS	47-051-01734
WEB 22 FHS	47-051-01735
WEB 22 GHS	47-051-01722
WEB 22 HHS	47-051-01728
WEB 22 JHS	47-051-01723
WEB 22 KHS	47-051-01724

If you require any additional information or have questions please feel free to contact me at rlogue@nobleenergyinc.com or by calling my office number 724-820-3559.

Sincerely,

Regina Logue
Regulatory Analyst

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	10/14/2014
Job End Date	11/3/2014
State	West Virginia
County	Marshall
API Number	47-051-01687-00-00
Operator Name	Noble Energy, Inc
Well Name and Number	WEB-22A
Longitude	-80.51999400
Latitude	39.92281900
Datum	NAD27
Federal/Tribal Well	NO
True Vertical Depth	6,819
Total Base Water Volume (gal)	18,591,568
Total Base Non Water Volume	0

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FracFocus Chemical Disclosure Registry

GROUNDWATER Protection Council

Oil & Gas

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Operator	Carrier					
			Water	7732-18-5	100.00000	90.42679	
40/70 White	FTSI	proppant					
			Silica, Quartz	14808-60-7	100.00000	7.00762	
100 Mesh Sand	FTSI	proppant					
			Silica, Quartz	14808-60-7	100.00000	1.80866	
Hydrochloric Acid (HCl)	FTSI	Acid					
			Water	7732-18-5	63.00000	0.36863	
			Hydrogen Chloride	7647-01-0	37.00000	0.21650	
FRW-600	FTSI	Friction Reducer					
			Acrylamide Polymer	Trade Secret	100.00000	0.06890	
			Hydrotreated light distillate	64742-47-8	30.00000	0.02067	
			Ammonium acetate	631-61-8	6.00000	0.00413	
CS-500 SI	FTSI	Scale inhibitor					
			Water	7732-18-5	55.00000	0.02671	
			Acrylic Polymer	Proprietary	24.00000	0.01166	
			Ethylene glycol	107-21-1	10.00000	0.00486	
			Sodium chloride	7647-14-5	6.00000	0.00291	
			Sodium Polyacrylate	9003-04-7	5.00000	0.00243	

CI-3240	FTSI	Biocide					
			Water	7732-18-5	55.00000	0.02208	
			Dazomet (Tetrahydro-3, 5-dimethyl-2H-1, 3, 5-thiadiazine-2-thione.	533-74-4	24.00000	0.00963	
			Sodium Hydroxide	1310-73-2	23.00000	0.00923	
HVG-1	FTSI	Water Gelling Agent					
			Guar Gum	9000-30-0	55.00000	0.00572	
			Petroleum Distillate	64742-47-8	55.00000	0.00572	
			Raffinates (Petroleum), Sorption Process	64741-85-1	50.00000	0.00520	
			Clay	1302-78-9	5.00000	0.00052	
			Surfactant	Proprietary	2.00000	0.00021	
			Clay	14808-60-7	2.00000	0.00021	
			Surfactant	154518-36-2	1.00000	0.00010	
			Surfactant	9043-30-5	1.00000	0.00010	
			Surfactant	24938-91-8	1.00000	0.00010	
FE-100L	FTSI	Iron control					
			Water	7732-18-5	60.00000	0.00112	
			Citric acid	77-92-9	55.00000	0.00103	
CI-150	FTSI	Acid Corrosion Inhibitor					
			Isopropanol	67-63-0	30.00000	0.00031	
			Organic amine resin salt	Proprietary	30.00000	0.00031	
			Ethylene Glycol	107-21-1	30.00000	0.00031	
			Quaternary ammonium compound	Proprietary	10.00000	0.00010	
			Aromatic aldehyde	Proprietary	10.00000	0.00010	
			Dimethylformamide	68-12-2	10.00000	0.00010	
			Alkylene Oxide Block Polymer	Proprietary	10.00000	0.00010	
			Water	7732-18-5	5.00000	0.00005	
			Diethylene glycol	111-46-6	1.00000	0.00001	
			Fatty Acid Salt	Proprietary	0.10000	0.00000	
			Aliphatic alcohol	Proprietary	0.10000	0.00000	
			Fatty Acid	Proprietary	0.10000	0.00000	
NE-100	FTSI	Non-emulsifier					
			Water	7732-18-5	90.00000	0.00047	
			2-Propanol	67-63-0	10.00000	0.00005	
			2-Butoxyethanol	111-76-2	10.00000	0.00005	
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00003	
			Benzene, C10-16 Alkyl Derivatives	68648-87-3	0.04000	0.00000	
			Unsulphonated Matter	Proprietary	0.03000	0.00000	
			Sulfuric Acid	7664-93-9	0.01000	0.00000	
			Sulfur Dioxide	7446-09-5		0.00000	
APB-1	FTSI	Gel breaker					

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			Ammonium Persulfate	7727-54-0	100.00000	0.00035	

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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Actual Wellpath Report

WEB-22A-HS (AWP) Proj: 14804'

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Marshall County, WV	Well	WEB-22A-HS
Field	Marshall	Wellbore	WEB-22A-HS (AWB)
Facility	WEB-22 Pad		

REPORT SETUP INFORMATION

Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 4.0.1
North Reference	Grid	User	Kroschr
Scale	0.999954	Report Generated	17/Jun/2014 at 08:45
Convergence at slot	0.65° West	Database/Source file	WA_Pennsylvania/WEB-22A-HS__AWB_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	1713925.81	519852.54	39°55'22.147"N	80°31'11.977"W
Facility Reference Pt			1713925.81	519852.54	39°55'22.147"N	80°31'11.977"W
Field Reference Pt			609601.22	0.00	38°23'48.753"N	84°21'09.765"W

WELLPATH DATUM

Calculation method	Minimum curvature	Precision 542 (RT) to Facility Vertical Datum	18.60ft
Horizontal Reference Pt	Slot	Precision 542 (RT) to Mean Sea Level	1343.60ft
Vertical Reference Pt	Precision 542 (RT)	Precision 542 (RT) to Mud Line at Slot (Slot A)	18.60ft
MD Reference Pt	Precision 542 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	325.00°

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Area	Marshall County, WV	Well	WEB-22A-HS
Field	Marshall	Wellbore	WEB-22A-HS (AWB)
Facility	WEB-22 Pad		

WELLPATH DATA (197 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
0.00†	0.000	103.280	0.00	0.00	0.00	0.00	1713925.81	519852.54	39°55'22.147"N	80°31'11.977"W	0.00	0.000	0.00
18.60	0.000	103.280	18.60	0.00	0.00	0.00	1713925.81	519852.54	39°55'22.147"N	80°31'11.977"W	0.00	0.000	0.00
100.00	1.300	103.280	99.99	-0.69	-0.21	0.90	1713926.71	519852.33	39°55'22.145"N	80°31'11.965"W	0.92	103.280	1.60
200.00	1.080	101.030	199.97	-2.21	-0.65	2.93	1713928.74	519851.89	39°55'22.140"N	80°31'11.939"W	3.00	102.573	0.22
300.00	0.970	98.150	299.96	-3.47	-0.95	4.69	1713930.50	519851.59	39°55'22.138"N	80°31'11.917"W	4.79	101.488	0.12
400.00	0.730	100.320	399.94	-4.50	-1.19	6.16	1713931.97	519851.35	39°55'22.135"N	80°31'11.898"W	6.27	100.919	0.24
462.00	0.690	99.870	461.94	-5.05	-1.32	6.91	1713932.72	519851.22	39°55'22.134"N	80°31'11.888"W	7.04	100.830	0.07
495.00	2.120	1.170	494.93	-4.69	-0.75	7.12	1713932.93	519851.79	39°55'22.140"N	80°31'11.886"W	7.16	95.981	7.05
525.00	2.720	357.130	524.90	-3.64	0.52	7.10	1713932.91	519853.06	39°55'22.152"N	80°31'11.886"W	7.11	85.810	2.08
556.00	3.050	354.110	555.87	-2.30	2.07	6.97	1713932.78	519854.61	39°55'22.168"N	80°31'11.888"W	7.28	73.432	1.17
585.00	3.800	348.530	584.81	-0.75	3.78	6.70	1713932.51	519856.32	39°55'22.185"N	80°31'11.892"W	7.70	60.557	2.83
617.00	4.150	347.720	616.74	1.29	5.95	6.25	1713932.06	519858.49	39°55'22.206"N	80°31'11.898"W	8.63	46.371	1.11
648.00	4.100	342.860	647.66	3.38	8.11	5.68	1713931.49	519860.65	39°55'22.227"N	80°31'11.905"W	9.90	35.015	1.14
680.00	3.730	336.730	679.58	5.49	10.16	4.93	1713930.74	519862.70	39°55'22.247"N	80°31'11.915"W	11.29	25.901	1.74
711.00	2.890	329.110	710.53	7.26	11.76	4.13	1713929.94	519864.30	39°55'22.263"N	80°31'11.926"W	12.46	19.372	3.05
743.00	2.330	315.080	742.50	8.70	12.91	3.26	1713929.07	519865.45	39°55'22.274"N	80°31'11.937"W	13.31	14.174	2.64
774.00	2.280	290.640	773.47	9.83	13.57	2.24	1713928.05	519866.11	39°55'22.281"N	80°31'11.950"W	13.76	9.364	3.15
806.00	2.080	277.780	805.45	10.75	13.88	1.07	1713926.88	519866.41	39°55'22.284"N	80°31'11.965"W	13.92	4.397	1.65
837.00	1.880	259.630	836.43	11.35	13.86	0.01	1713925.82	519866.40	39°55'22.283"N	80°31'11.979"W	13.86	0.039	2.11
868.00	1.460	229.500	867.42	11.52	13.51	-0.79	1713925.02	519866.05	39°55'22.280"N	80°31'11.989"W	13.54	356.649	3.09
902.00	2.020	205.950	901.40	11.19	12.69	-1.38	1713924.43	519865.23	39°55'22.272"N	80°31'11.997"W	12.77	353.783	2.64
933.00	2.470	186.000	932.38	10.42	11.54	-1.69	1713924.12	519864.08	39°55'22.260"N	80°31'12.000"W	11.66	351.658	2.89
965.00	3.110	179.320	964.34	9.18	9.98	-1.75	1713924.06	519862.52	39°55'22.245"N	80°31'12.001"W	10.14	350.038	2.24
997.00	3.040	178.020	996.30	7.75	8.27	-1.71	1713924.10	519860.81	39°55'22.228"N	80°31'12.000"W	8.44	348.288	0.31
1028.00	2.800	175.400	1027.26	6.41	6.69	-1.62	1713924.19	519859.23	39°55'22.212"N	80°31'11.999"W	6.88	346.351	0.89
1060.00	2.590	163.760	1059.22	5.05	5.22	-1.36	1713924.45	519857.76	39°55'22.198"N	80°31'11.995"W	5.39	345.392	1.83
1091.00	1.960	162.940	1090.20	3.89	4.04	-1.01	1713924.80	519856.58	39°55'22.186"N	80°31'11.991"W	4.16	345.979	2.03
1123.00	1.920	156.090	1122.18	2.84	3.02	-0.63	1713925.18	519855.56	39°55'22.176"N	80°31'11.986"W	3.09	348.225	0.73
1154.00	1.320	140.670	1153.17	1.97	2.27	-0.19	1713925.62	519854.81	39°55'22.169"N	80°31'11.980"W	2.28	355.130	2.38
1186.00	1.320	109.330	1185.16	1.31	1.87	0.39	1713926.20	519854.41	39°55'22.165"N	80°31'11.972"W	1.91	11.734	2.23
1199.00	1.020	102.680	1198.15	1.10	1.79	0.64	1713926.45	519854.33	39°55'22.164"N	80°31'11.969"W	1.90	19.712	2.53
1326.00	1.200	85.040	1325.13	-0.40	1.66	3.07	1713928.88	519854.20	39°55'22.163"N	80°31'11.938"W	3.49	61.619	0.30
1421.00	2.290	25.340	1420.09	0.04	3.46	4.87	1713930.68	519856.00	39°55'22.181"N	80°31'11.915"W	5.98	54.625	2.08
1515.00	4.260	4.690	1513.94	3.66	8.64	5.96	1713931.77	519861.18	39°55'22.233"N	80°31'11.902"W	10.50	34.617	2.41
1609.00	6.340	343.580	1607.54	11.26	17.10	4.78	1713930.59	519869.64	39°55'22.316"N	80°31'11.918"W	17.75	15.622	3.06
1704.00	7.200	330.750	1701.88	22.16	27.32	0.39	1713926.20	519879.86	39°55'22.417"N	80°31'11.976"W	27.33	0.815	1.83
1799.00	6.910	327.720	1796.16	33.79	37.35	-5.57	1713920.24	519889.89	39°55'22.515"N	80°31'12.054"W	37.76	351.514	0.50
1888.00	4.260	326.990	1884.73	42.44	44.65	-10.23	1713915.58	519897.19	39°55'22.587"N	80°31'12.115"W	45.81	347.091	2.98
1978.00	3.820	325.890	1974.51	48.78	49.93	-13.74	1713912.08	519902.47	39°55'22.638"N	80°31'12.161"W	51.79	344.620	0.50
2068.00	1.880	304.440	2064.39	53.16	53.25	-16.63	1713909.18	519905.79	39°55'22.671"N	80°31'12.198"W	55.79	342.052	2.42
2157.00	1.040	283.180	2153.36	55.13	54.26	-18.63	1713907.19	519906.80	39°55'22.681"N	80°31'12.224"W	57.37	341.055	1.11
2247.00	1.050	278.960	2243.35	56.31	54.58	-20.23	1713905.58	519907.11	39°55'22.684"N	80°31'12.245"W	58.21	339.657	0.09
2336.00	0.920	266.740	2332.34	57.25	54.66	-21.75	1713904.06	519907.20	39°55'22.684"N	80°31'12.264"W	58.83	338.299	0.28
2426.00	0.930	300.720	2422.33	58.30	54.99	-23.10	1713902.71	519907.53	39°55'22.687"N	80°31'12.282"W	59.65	337.213	0.60
2515.00	1.200	288.210	2511.31	59.71	55.66	-24.61	1713901.20	519908.19	39°55'22.694"N	80°31'12.301"W	60.85	336.166	0.40

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Marshall County, WV	Well	WEB-22A-HS
Field	Marshall	Wellbore	WEB-22A-HS (AWB)
Facility	WEB-22 Pad		

WELLPATH DATA (197 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
2604.00	0.980	297.360	2600.29	61.13	56.30	-26.17	1713899.64	519908.83	39°55'22.700"N	80°31'12.321"W	62.08	335.068	0.31
2694.00	0.960	266.170	2690.28	62.20	56.60	-27.61	1713898.21	519909.14	39°55'22.703"N	80°31'12.340"W	62.97	333.999	0.58
2784.00	0.900	308.560	2780.27	63.27	56.99	-28.91	1713896.90	519909.53	39°55'22.706"N	80°31'12.356"W	63.90	333.101	0.75
2873.00	0.980	280.720	2869.26	64.48	57.57	-30.21	1713895.61	519910.10	39°55'22.712"N	80°31'12.373"W	65.01	332.314	0.52
2962.00	1.030	285.790	2958.25	65.65	57.93	-31.72	1713894.09	519910.46	39°55'22.715"N	80°31'12.393"W	66.04	331.293	0.11
3052.00	0.780	277.490	3048.23	66.69	58.23	-33.11	1713892.70	519910.76	39°55'22.718"N	80°31'12.410"W	66.98	330.376	0.31
3141.00	0.800	306.190	3137.23	67.68	58.67	-34.21	1713891.60	519911.21	39°55'22.722"N	80°31'12.425"W	67.92	329.754	0.44
3231.00	0.590	323.110	3227.22	68.74	59.41	-35.00	1713890.82	519911.95	39°55'22.730"N	80°31'12.435"W	68.95	329.501	0.32
3321.00	0.710	310.410	3317.21	69.74	60.15	-35.70	1713890.11	519912.68	39°55'22.737"N	80°31'12.444"W	69.94	329.309	0.21
3361.00	0.660	309.710	3357.21	70.21	60.45	-36.06	1713889.75	519912.99	39°55'22.740"N	80°31'12.449"W	70.39	329.181	0.13
3490.00	0.830	298.880	3486.20	71.76	61.38	-37.45	1713888.36	519913.92	39°55'22.749"N	80°31'12.467"W	71.90	328.608	0.17
3580.00	1.270	301.920	3576.19	73.27	62.22	-38.87	1713886.94	519914.76	39°55'22.757"N	80°31'12.485"W	73.37	328.006	0.49
3625.00	2.360	313.520	3621.16	74.63	63.12	-39.97	1713885.84	519915.66	39°55'22.766"N	80°31'12.499"W	74.71	327.660	2.54
3669.00	2.090	310.950	3665.13	76.30	64.27	-41.23	1713884.58	519916.81	39°55'22.777"N	80°31'12.516"W	76.36	327.321	0.65
3714.00	0.860	270.750	3710.11	77.29	64.82	-42.19	1713883.62	519917.35	39°55'22.782"N	80°31'12.528"W	77.34	326.940	3.42
3759.00	0.800	225.680	3755.11	77.44	64.60	-42.75	1713883.06	519917.14	39°55'22.780"N	80°31'12.535"W	77.46	326.505	1.42
3804.00	0.810	172.890	3800.11	77.11	64.07	-42.94	1713882.88	519916.60	39°55'22.775"N	80°31'12.537"W	77.12	326.171	1.59
3849.00	0.820	170.140	3845.10	76.53	63.43	-42.84	1713882.97	519915.97	39°55'22.769"N	80°31'12.536"W	76.54	325.966	0.09
3938.00	1.410	141.750	3934.08	74.86	61.94	-42.05	1713883.76	519914.48	39°55'22.754"N	80°31'12.526"W	74.87	325.828	0.89
4028.00	2.680	130.780	4024.03	71.72	59.70	-39.78	1713886.04	519912.24	39°55'22.732"N	80°31'12.496"W	71.74	326.327	1.47
4117.00	2.460	116.310	4112.94	68.03	57.50	-36.49	1713889.32	519910.03	39°55'22.711"N	80°31'12.454"W	68.10	327.600	0.77
4207.00	2.210	91.550	4202.86	65.30	56.59	-33.02	1713892.79	519909.13	39°55'22.702"N	80°31'12.409"W	65.52	329.737	1.14
4297.00	2.240	80.050	4292.80	63.52	56.85	-29.55	1713896.26	519909.39	39°55'22.705"N	80°31'12.365"W	64.07	332.532	0.50
4387.00	0.520	46.970	4382.77	62.83	57.43	-27.52	1713898.29	519909.97	39°55'22.711"N	80°31'12.339"W	63.69	334.395	2.03
4476.00	0.540	0.050	4471.77	63.23	58.13	-27.23	1713898.58	519910.66	39°55'22.718"N	80°31'12.335"W	64.19	334.901	0.47
4566.00	0.670	355.340	4561.76	64.03	59.08	-27.27	1713898.54	519911.61	39°55'22.727"N	80°31'12.336"W	65.07	335.222	0.15
4655.00	0.790	343.030	4650.75	65.07	60.18	-27.49	1713898.32	519912.72	39°55'22.738"N	80°31'12.339"W	66.16	335.449	0.22
4745.00	0.650	330.470	4740.75	66.16	61.22	-27.92	1713897.89	519913.76	39°55'22.748"N	80°31'12.344"W	67.29	335.481	0.23
4834.00	0.760	319.660	4829.74	67.25	62.11	-28.55	1713897.26	519914.64	39°55'22.757"N	80°31'12.353"W	68.36	335.309	0.19
4924.00	0.610	320.820	4919.73	68.33	62.93	-29.24	1713896.57	519915.47	39°55'22.765"N	80°31'12.361"W	69.40	335.077	0.17
5013.00	1.220	33.270	5008.72	69.15	64.09	-29.02	1713896.79	519916.63	39°55'22.777"N	80°31'12.359"W	70.36	335.638	1.33
5103.00	1.100	39.890	5098.70	69.73	65.56	-27.94	1713897.87	519918.09	39°55'22.791"N	80°31'12.345"W	71.26	336.914	0.20
5193.00	0.870	21.910	5188.69	70.33	66.85	-27.13	1713898.68	519919.39	39°55'22.804"N	80°31'12.335"W	72.15	337.909	0.43
5283.00	0.660	18.580	5278.68	71.01	67.98	-26.71	1713899.10	519920.52	39°55'22.815"N	80°31'12.330"W	73.04	338.546	0.24
5372.00	0.540	191.450	5367.68	71.02	68.05	-26.63	1713899.18	519920.59	39°55'22.816"N	80°31'12.329"W	73.06	338.626	1.35
5462.00	1.510	153.770	5457.67	69.56	66.57	-26.19	1713899.62	519919.11	39°55'22.801"N	80°31'12.323"W	71.54	338.522	1.26
5551.00	1.660	161.270	5546.63	67.16	64.30	-25.26	1713900.55	519916.84	39°55'22.779"N	80°31'12.311"W	69.09	338.552	0.29
5641.00	1.000	174.410	5636.61	65.23	62.29	-24.77	1713901.04	519914.82	39°55'22.759"N	80°31'12.304"W	67.03	338.315	0.80
5721.00	0.940	165.850	5716.60	64.01	60.95	-24.54	1713901.27	519913.49	39°55'22.746"N	80°31'12.301"W	65.71	338.072	0.20
5766.00	1.820	205.650	5761.58	63.31	59.95	-24.76	1713901.05	519912.49	39°55'22.736"N	80°31'12.303"W	64.86	337.561	2.78
5856.00	8.090	225.950	5851.21	61.61	54.26	-29.93	1713895.88	519906.79	39°55'22.679"N	80°31'12.369"W	61.96	331.114	7.13
5945.00	13.930	218.730	5938.54	57.62	41.53	-41.15	1713884.66	519894.07	39°55'22.552"N	80°31'12.511"W	58.46	315.267	6.73
6035.00	22.700	212.090	6023.90	47.81	18.32	-57.18	1713868.63	519870.86	39°55'22.321"N	80°31'12.714"W	60.05	287.765	10.00
6080.00	27.500	211.130	6064.64	40.22	2.06	-67.17	1713858.64	519854.60	39°55'22.159"N	80°31'12.839"W	67.20	271.758	10.70
6124.00	28.050	211.640	6103.57	32.01	-15.44	-77.85	1713847.96	519837.10	39°55'21.985"N	80°31'12.974"W	79.35	258.781	1.36

Received
APR 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Marshall County, WV	Well	WEB-22A-HS
Field	Marshall	Wellbore	WEB-22A-HS (AWB)
Facility	WEB-22 Pad		

WELLPATH DATA (197 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
6214.00	27.420	219.780	6183.26	18.17	-49.40	-102.22	1713823.59	519803.15	39°55'21.647"N	80°31'13.282"W	113.53	244.209	4.26
6304.00	27.620	221.420	6263.08	7.83	-80.97	-129.28	1713796.53	519771.58	39°55'21.332"N	80°31'13.624"W	152.54	237.942	0.87
6393.00	28.170	238.270	6341.86	4.18	-107.53	-160.85	1713764.97	519745.02	39°55'21.066"N	80°31'14.026"W	193.48	236.238	8.85
6483.00	27.540	256.420	6421.58	13.01	-123.61	-199.21	1713726.61	519728.93	39°55'20.903"N	80°31'14.516"W	234.45	238.180	9.42
6572.00	28.210	270.540	6500.34	32.77	-128.25	-240.29	1713685.53	519724.29	39°55'20.852"N	80°31'15.042"W	272.38	241.910	7.44
6617.00	29.100	277.180	6539.83	46.30	-126.78	-261.79	1713664.03	519725.76	39°55'20.864"N	80°31'15.318"W	290.88	244.159	7.34
6662.00	32.060	281.440	6578.58	62.31	-123.05	-284.36	1713641.46	519729.50	39°55'20.899"N	80°31'15.609"W	309.84	246.601	8.15
6706.00	37.120	286.080	6614.79	81.12	-117.05	-308.58	1713617.24	519735.50	39°55'20.955"N	80°31'15.920"W	330.04	249.228	12.96
6751.00	41.640	288.710	6649.57	103.75	-108.49	-335.81	1713590.02	519744.06	39°55'21.037"N	80°31'16.271"W	352.90	252.097	10.71
6796.00	46.300	290.850	6681.95	129.27	-97.89	-365.19	1713560.64	519754.65	39°55'21.138"N	80°31'16.650"W	378.08	254.994	10.87
6841.00	51.260	292.930	6711.59	157.63	-85.26	-396.57	1713529.26	519767.29	39°55'21.259"N	80°31'17.054"W	405.63	257.867	11.56
6886.00	55.980	295.840	6738.28	188.81	-70.28	-429.54	1713496.29	519782.26	39°55'21.404"N	80°31'17.480"W	435.26	260.708	11.71
6931.00	59.010	299.290	6762.47	222.48	-52.71	-463.17	1713462.67	519799.83	39°55'21.574"N	80°31'17.914"W	466.16	263.508	9.33
6976.00	61.910	301.440	6784.65	258.07	-32.91	-496.93	1713428.90	519819.63	39°55'21.765"N	80°31'18.350"W	498.02	266.211	7.67
7020.00	64.860	304.830	6804.37	294.57	-11.40	-529.86	1713395.98	519841.14	39°55'21.974"N	80°31'18.776"W	529.98	268.767	9.61
7065.00	67.220	308.790	6822.64	333.63	13.24	-562.76	1713363.08	519865.78	39°55'22.214"N	80°31'19.201"W	562.92	271.347	9.60
7110.00	69.150	313.490	6839.37	374.18	40.72	-594.20	1713331.64	519893.26	39°55'22.482"N	80°31'19.609"W	595.60	273.920	10.60
7155.00	72.210	317.930	6854.27	416.07	71.12	-623.83	1713302.01	519923.65	39°55'22.779"N	80°31'19.994"W	627.87	276.503	11.53
7199.00	75.130	320.930	6866.64	458.09	103.19	-651.28	1713274.56	519955.72	39°55'23.093"N	80°31'20.351"W	659.41	279.003	9.32
7244.00	80.450	321.740	6876.15	501.96	137.52	-678.75	1713247.09	519990.05	39°55'23.429"N	80°31'20.708"W	692.54	281.453	11.95
7289.00	83.490	322.570	6882.44	546.46	172.70	-706.08	1713219.76	520025.23	39°55'23.774"N	80°31'21.064"W	726.90	283.744	7.00
7334.00	84.890	323.590	6886.99	591.20	208.49	-732.97	1713192.87	520061.02	39°55'24.124"N	80°31'21.414"W	762.05	285.878	3.84
7378.00	89.350	324.310	6889.21	635.13	244.01	-758.83	1713167.02	520096.54	39°55'24.473"N	80°31'21.751"W	797.10	287.826	10.27
7468.00	91.450	325.660	6888.58	725.12	317.72	-810.46	1713115.39	520170.24	39°55'25.195"N	80°31'22.425"W	870.51	291.406	2.77
7558.00	90.770	324.270	6886.83	815.10	391.39	-862.12	1713063.73	520243.91	39°55'25.917"N	80°31'23.099"W	946.80	294.417	1.72
7647.00	90.770	324.500	6885.64	904.09	463.74	-913.94	1713011.91	520316.25	39°55'26.626"N	80°31'23.774"W	1024.86	296.903	0.26
7737.00	90.650	324.100	6884.52	994.07	536.82	-966.46	1712959.40	520389.33	39°55'27.343"N	80°31'24.459"W	1105.54	299.050	0.46
7827.00	90.580	323.150	6883.56	1084.04	609.28	-1019.83	1712906.03	520461.79	39°55'28.053"N	80°31'25.155"W	1187.97	300.855	1.06
7924.00	90.650	324.350	6882.51	1181.01	687.50	-1077.18	1712848.68	520540.00	39°55'28.819"N	80°31'25.902"W	1277.88	302.548	1.24
8006.00	90.580	325.840	6881.63	1263.00	754.74	-1124.10	1712801.76	520607.24	39°55'29.478"N	80°31'26.514"W	1353.97	303.878	1.82
8095.00	90.580	327.870	6880.73	1351.95	829.25	-1172.76	1712753.11	520681.75	39°55'30.209"N	80°31'27.150"W	1436.32	305.264	2.28
8185.00	90.520	327.320	6879.87	1441.85	905.23	-1220.98	1712704.88	520757.73	39°55'30.955"N	80°31'27.780"W	1519.95	306.553	0.61
8274.00	90.580	324.090	6879.02	1530.83	978.75	-1271.12	1712654.75	520831.24	39°55'31.676"N	80°31'28.434"W	1604.27	307.596	3.63
8364.00	90.580	322.690	6878.10	1620.79	1050.98	-1324.79	1712601.08	520903.47	39°55'32.383"N	80°31'29.133"W	1691.05	308.426	1.56
8454.00	90.280	323.620	6877.43	1710.74	1123.00	-1378.76	1712547.12	520975.49	39°55'33.089"N	80°31'29.836"W	1778.23	309.162	1.09
8543.00	90.550	325.760	6876.78	1799.73	1195.63	-1430.20	1712495.68	521048.11	39°55'33.801"N	80°31'30.507"W	1864.13	309.895	2.42
8633.00	90.620	327.470	6875.86	1889.68	1270.77	-1479.72	1712446.17	521123.25	39°55'34.538"N	80°31'31.154"W	1950.49	310.656	1.90
8723.00	91.020	327.370	6874.58	1979.59	1346.60	-1528.17	1712397.71	521199.07	39°55'35.282"N	80°31'31.787"W	2036.82	311.386	0.46
8812.00	90.680	325.200	6873.26	2068.56	1420.62	-1577.57	1712348.32	521273.09	39°55'36.008"N	80°31'32.432"W	2122.94	312.003	2.47
8902.00	90.680	324.320	6872.19	2158.55	1494.12	-1629.49	1712296.40	521346.59	39°55'36.728"N	80°31'33.109"W	2210.80	312.518	0.98
8991.00	90.890	322.550	6870.97	2247.50	1565.59	-1682.50	1712243.39	521418.06	39°55'37.428"N	80°31'33.800"W	2298.24	312.939	2.00
9081.00	90.520	321.570	6869.86	2337.38	1636.56	-1737.83	1712188.06	521489.03	39°55'38.123"N	80°31'34.520"W	2387.13	313.281	1.16
9170.00	90.340	323.880	6869.19	2426.30	1707.38	-1791.73	1712134.16	521559.84	39°55'38.817"N	80°31'35.223"W	2474.96	313.619	2.60
9260.00	90.460	329.110	6868.56	2516.23	1782.39	-1841.39	1712084.50	521634.85	39°55'39.553"N	80°31'35.871"W	2562.75	314.067	5.81
9349.00	91.750	330.540	6866.85	2604.90	1859.32	-1886.12	1712039.78	521711.77	39°55'40.308"N	80°31'36.456"W	2648.49	314.590	2.16

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Marshall County, WV	Well	WEB-22A-HS
Field	Marshall	Wellbore	WEB-22A-HS (AWB)
Facility	WEB-22 Pad		

WELLPATH DATA (197 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
9439.00	91.390	327.460	6864.38	2694.63	1936.42	-1932.45	1711993.45	521788.87	39°55'41.065"N	80°31'37.062"W	2735.71	315.059	3.44
9529.00	90.740	325.100	6862.71	2784.59	2011.26	-1982.40	1711943.51	521863.71	39°55'41.799"N	80°31'37.714"W	2824.02	315.414	2.72
9618.00	91.140	324.630	6861.25	2873.58	2084.04	-2033.61	1711892.30	521936.48	39°55'42.512"N	80°31'38.382"W	2911.84	315.702	0.69
9708.00	91.200	322.600	6859.41	2963.53	2156.47	-2086.99	1711838.92	522008.91	39°55'43.222"N	80°31'39.078"W	3000.98	315.938	2.26
9797.00	90.220	323.960	6858.31	3052.48	2227.80	-2140.19	1711785.72	522080.24	39°55'43.921"N	80°31'39.771"W	3089.26	316.149	1.88
9887.00	89.660	328.230	6858.40	3142.44	2302.48	-2190.39	1711735.53	522154.91	39°55'44.653"N	80°31'40.427"W	3177.93	316.429	4.79
9976.00	91.260	331.790	6857.69	3231.08	2379.55	-2234.86	1711691.05	522231.98	39°55'45.409"N	80°31'41.009"W	3264.49	316.796	4.39
10066.00	91.260	329.010	6855.71	3320.65	2457.78	-2279.30	1711646.62	522310.20	39°55'46.177"N	80°31'41.591"W	3352.00	317.158	3.09
10156.00	91.140	325.680	6853.82	3410.54	2533.52	-2327.85	1711598.07	522385.94	39°55'46.920"N	80°31'42.225"W	3440.58	317.423	3.70
10245.00	91.110	321.660	6852.07	3499.48	2605.20	-2380.55	1711545.37	522457.61	39°55'47.623"N	80°31'42.912"W	3529.03	317.580	4.52
10335.00	90.650	319.990	6850.69	3589.23	2674.95	-2437.40	1711488.53	522527.37	39°55'48.306"N	80°31'43.652"W	3618.88	317.660	1.92
10425.00	90.890	321.490	6849.48	3678.97	2744.63	-2494.35	1711431.58	522597.04	39°55'48.988"N	80°31'44.393"W	3708.74	317.735	1.69
10514.00	90.340	320.840	6848.53	3767.76	2813.95	-2550.15	1711375.78	522666.36	39°55'49.667"N	80°31'45.119"W	3797.58	317.815	0.96
10604.00	89.570	324.160	6848.60	3857.66	2885.35	-2604.93	1711321.00	522737.75	39°55'50.366"N	80°31'45.833"W	3887.27	317.924	3.79
10693.00	90.340	329.670	6848.67	3946.58	2959.89	-2653.50	1711272.44	522812.28	39°55'51.097"N	80°31'46.467"W	3975.17	318.124	6.25
10783.00	90.150	329.350	6848.28	4036.30	3037.44	-2699.16	1711226.78	522889.83	39°55'51.858"N	80°31'47.065"W	4063.44	318.375	0.41
10873.00	90.120	329.090	6848.07	4126.06	3114.76	-2745.22	1711180.72	522967.15	39°55'52.617"N	80°31'47.667"W	4151.86	318.608	0.29
10963.00	90.580	327.600	6847.52	4215.90	3191.37	-2792.45	1711133.50	523043.76	39°55'53.369"N	80°31'48.285"W	4240.59	318.814	1.73
11052.00	89.720	324.660	6847.29	4304.87	3265.26	-2842.04	1711083.90	523117.64	39°55'54.093"N	80°31'48.932"W	4328.87	318.964	3.44
11142.00	89.690	322.140	6847.75	4394.83	3337.50	-2895.70	1711030.25	523189.88	39°55'54.801"N	80°31'49.632"W	4418.60	319.054	2.80
11232.00	89.690	321.100	6848.24	4484.67	3408.05	-2951.57	1710974.38	523260.43	39°55'55.492"N	80°31'50.359"W	4508.50	319.106	1.16
11321.00	89.690	320.110	6848.72	4573.40	3476.83	-3008.06	1710917.90	523329.20	39°55'56.165"N	80°31'51.095"W	4597.47	319.135	1.11
11411.00	90.180	323.180	6848.82	4663.24	3547.40	-3063.90	1710862.06	523399.77	39°55'56.856"N	80°31'51.822"W	4687.38	319.183	3.45
11500.00	90.460	323.990	6848.33	4752.21	3619.02	-3116.73	1710809.23	523471.38	39°55'57.558"N	80°31'52.510"W	4776.12	319.265	0.96
11590.00	90.400	324.390	6847.65	4842.20	3692.00	-3169.39	1710756.57	523544.36	39°55'58.273"N	80°31'53.197"W	4865.79	319.356	0.45
11680.00	90.460	323.630	6846.97	4932.18	3764.82	-3222.27	1710703.69	523617.18	39°55'58.987"N	80°31'53.887"W	4955.49	319.440	0.85
11769.00	90.490	324.420	6846.24	5021.16	3836.84	-3274.55	1710651.41	523689.20	39°55'59.693"N	80°31'54.568"W	5044.21	319.521	0.89
11859.00	90.280	325.490	6845.63	5111.16	3910.52	-3326.23	1710599.74	523762.87	39°56'00.415"N	80°31'55.242"W	5133.81	319.616	1.21
11949.00	89.940	329.350	6845.46	5201.06	3986.34	-3374.68	1710551.29	523838.69	39°56'01.159"N	80°31'55.876"W	5222.97	319.750	4.31
12038.00	90.580	328.750	6845.06	5289.84	4062.67	-3420.46	1710505.52	523915.02	39°56'01.908"N	80°31'56.474"W	5310.82	319.905	0.99
12128.00	90.430	325.990	6844.26	5379.75	4138.46	-3468.98	1710457.00	523990.80	39°56'02.651"N	80°31'57.108"W	5400.06	320.029	3.07
12217.00	90.520	324.630	6843.52	5468.74	4211.63	-3519.63	1710406.35	524063.97	39°56'03.368"N	80°31'57.769"W	5488.68	320.115	1.53
12307.00	90.460	322.300	6842.75	5558.70	4283.94	-3573.20	1710352.78	524136.27	39°56'04.077"N	80°31'58.468"W	5578.52	320.169	2.59
12396.00	90.370	325.360	6842.11	5647.67	4355.77	-3625.72	1710300.26	524208.11	39°56'04.781"N	80°31'59.152"W	5667.33	320.226	3.44
12486.00	90.620	327.440	6841.33	5737.63	4430.73	-3675.52	1710250.47	524283.06	39°56'05.516"N	80°31'59.803"W	5756.81	320.323	2.33
12575.00	90.550	326.700	6840.42	5826.57	4505.43	-3723.90	1710202.09	524357.75	39°56'06.248"N	80°32'00.435"W	5845.19	320.425	0.84
12665.00	91.020	324.000	6839.19	5916.55	4579.45	-3775.06	1710150.93	524431.77	39°56'06.974"N	80°32'01.102"W	5934.85	320.500	3.04
12755.00	90.550	322.940	6837.96	6006.51	4651.76	-3828.63	1710097.37	524504.08	39°56'07.683"N	80°32'01.801"W	6024.72	320.544	1.29
12844.00	90.580	324.120	6837.08	6095.47	4723.33	-3881.52	1710044.47	524575.64	39°56'08.384"N	80°32'02.490"W	6113.60	320.587	1.33
12934.00	90.620	326.600	6836.14	6185.46	4797.37	-3932.67	1709993.32	524649.68	39°56'09.110"N	80°32'03.158"W	6203.28	320.657	2.76
13023.00	90.650	327.110	6835.15	6274.41	4871.88	-3981.33	1709944.67	524724.19	39°56'09.840"N	80°32'03.793"W	6291.76	320.744	0.57
13113.00	90.710	325.420	6834.08	6364.38	4946.72	-4031.31	1709894.69	524799.02	39°56'10.574"N	80°32'04.446"W	6381.34	320.822	1.88
13202.00	90.490	323.540	6833.15	6453.37	5019.24	-4082.89	1709843.12	524871.54	39°56'11.285"N	80°32'05.119"W	6470.14	320.873	1.90
13292.00	90.460	321.860	6832.40	6543.29	5090.92	-4137.30	1709788.71	524943.22	39°56'11.987"N	80°32'05.828"W	6560.08	320.900	2.09
13381.00	89.880	320.790	6832.14	6632.11	5160.40	-4192.91	1709733.10	525012.69	39°56'12.667"N	80°32'06.552"W	6649.08	320.906	1.37

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Marshall County, WV	Well	WEB-22A-HS
Field	Marshall	Wellbore	WEB-22A-HS (AWB)
Facility	WEB-22 Pad		

WELLPATH DATA (197 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
13471.00	90.460	324.160	6831.87	6722.01	5231.77	-4247.72	1709678.29	525084.06	39°56'13.366"N	80°32'07.266"W	6739.03	320.927	3.80
13561.00	90.650	324.420	6831.00	6812.00	5304.84	-4300.25	1709625.76	525157.13	39°56'14.083"N	80°32'07.951"W	6828.87	320.971	0.36
13651.00	90.620	322.750	6830.00	6901.96	5377.26	-4353.67	1709572.35	525229.54	39°56'14.792"N	80°32'08.648"W	6918.77	321.005	1.86
13740.00	89.780	325.350	6829.69	6990.94	5449.30	-4405.92	1709520.10	525301.58	39°56'15.498"N	80°32'09.329"W	7007.64	321.043	3.07
13830.00	90.860	329.520	6829.19	7080.83	5525.13	-4454.35	1709471.67	525377.41	39°56'16.242"N	80°32'09.962"W	7097.06	321.124	4.79
13919.00	90.580	327.470	6828.07	7169.66	5601.01	-4500.85	1709425.17	525453.28	39°56'16.986"N	80°32'10.570"W	7185.33	321.215	2.32
14009.00	90.550	325.750	6827.18	7259.61	5676.14	-4550.38	1709375.65	525528.41	39°56'17.723"N	80°32'11.217"W	7274.93	321.282	1.91
14099.00	90.520	326.030	6826.34	7349.60	5750.66	-4600.85	1709325.18	525602.92	39°56'18.454"N	80°32'11.876"W	7364.63	321.338	0.31
14188.00	90.650	324.490	6825.43	7438.59	5823.79	-4651.56	1709274.47	525676.05	39°56'19.171"N	80°32'12.538"W	7453.42	321.385	1.74
14278.00	90.650	324.750	6824.41	7528.58	5897.16	-4703.66	1709222.37	525749.42	39°56'19.890"N	80°32'13.218"W	7543.27	321.424	0.29
14368.00	90.550	325.620	6823.47	7618.58	5971.05	-4755.04	1709170.99	525823.30	39°56'20.614"N	80°32'13.888"W	7633.08	321.468	0.97
14457.00	90.580	326.270	6822.59	7707.56	6044.78	-4804.88	1709121.16	525897.03	39°56'21.337"N	80°32'14.539"W	7721.80	321.519	0.73
14547.00	90.520	325.380	6821.73	7797.55	6119.23	-4855.43	1709070.61	525971.48	39°56'22.067"N	80°32'15.199"W	7811.55	321.569	0.99
14637.00	90.620	323.380	6820.83	7887.53	6192.39	-4907.84	1709018.20	526044.63	39°56'22.784"N	80°32'15.882"W	7901.43	321.601	2.22
14726.00	90.680	321.660	6819.82	7976.44	6263.01	-4961.99	1708964.05	526115.25	39°56'23.476"N	80°32'16.586"W	7990.41	321.611	1.93
14781.00	90.650	320.680	6819.19	8031.31	6305.85	-4996.48	1708929.57	526158.09	39°56'23.895"N	80°32'17.037"W	8045.40	321.608	1.78
14804.00	90.650	320.680	6818.92	8054.24	6323.64	-5011.05	1708915.00	526175.88	39°56'24.069"N	80°32'17.227"W	8068.40	321.606	0.00

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
WEB-22A-HS BHL:Rev-1		6888.00	6324.51	-5010.91	1708915.14	526176.75	39°56'24.078"N	80°32'17.225"W	point
WEB-22A-HS LP:Rev-2		6888.00	243.95	-753.25	1713172.60	520096.47	39°55'24.473"N	80°31'21.680"W	point
WEB-22A-HS BHL Plat		6913.00	6324.51	-5010.91	1708915.14	526176.75	39°56'24.078"N	80°32'17.225"W	point
WEB-22A-HS LP:Rev-1		6913.00	243.95	-753.25	1713172.60	520096.47	39°55'24.473"N	80°31'21.680"W	point

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot A
Area	Marshall County, WV	Well	WEB-22A-HS
Field	Marshall	Wellbore	WEB-22A-HS (AWB)
Facility	WEB-22 Pad		

WELLPATH COMPOSITION - Ref Wellbore: WEB-22A-HS (AWB) Ref Wellpath: WEB-22A-HS (AWP) Proj: 14804'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.60	462.00	Generic gyro - northseeking (Standard)	01_Gyro Surveys 17 1/2" (100'-462')	WEB-22A-HS (AWB)
462.00	1199.00	NaviTrak (MagCorr)	02_BHI APS Surveys 17 1/2" (462')(495'-1199') Proj:1254'	WEB-22A-HS (AWB)
1199.00	3361.00	ISCWSA MWD, Rev. 2 (Standard)	03_BHI APS Surveys 12-1/4" (1199')(1326'-3361')Proj:3418'	WEB-22A-HS (AWB)
3361.00	4566.00	NaviTrak (MagCorr)	04_BHI MWD MagCorr <8-3/4"> (3361')(3490'-4566')	WEB-22A-HS (AWB)
4566.00	5641.00	NaviTrak (Standard)	05_BHI MWD Std <8-3/4"> (4566')(4655'-5641')Proj:5692'	WEB-22A-HS (AWB)
5641.00	14781.00	NaviTrak (AT Curve Short Spaced)	06_BHI ATCurve <8-3/4"> (5721'-14781')	WEB-22A-HS (AWB)
14781.00	14804.00	Blind Drilling (std)	Projection to bit	WEB-22A-HS (AWB)

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot A
Area	Marshall County, WV	Well	WEB-22A-HS
Field	Marshall	Wellbore	WEB-22A-HS (AWB)
Facility	WEB-22 Pad		

COMMENTS

Wellpath general comments
API: 47-051-01687-0000
Rig: Precision 542
BHI Job #: 6217772
Duration: 06/02/2014-06/16/2014
Gyro Surveys (100'-462')
BHI APS Surveys (462')(495'-1199')
BHI APS Surveys (1199')(1326'-3361')
BHI MWD MagCorr (3361')(3490'-4566')
BHI MWD Std (4566')(4655'-5641')
BHI ATCurve (5721'-14781')
TD Projected to MD: 14804'

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NOBLE ENERGY

Location: Marshall County, WV
Field: Marshall
Facility: WEB-22 Pad

Slot: Slot A
Well: WEB-22A-HS
Wellbore: WEB-22A-HS PWB

Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
WEB-22 Pad			1713925.810	519852.540	39°55'22.147"N	80°31'11.977"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot A	0.00	0.00	1713925.810	519852.540	39°55'22.147"N	80°31'11.977"W

Precision 542 (RT) to Mud line (At Slot: Slot A)	16.6ft
Mean Sea Level to Mud line (At Slot: Slot A)	-1325ft
Precision 542 (RT) to Mean Sea Level	1343.6ft

Plot reference wellpath is WEB-22A-HS PWP Rev-E.0

True vertical depths are referenced to Precision 542 (RT)	Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet
Measured depths are referenced to Precision 542 (RT)	North Reference: Grid north
Precision 542 (RT) to Mean Sea Level: 1343.6 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot A): -1325 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: kraschr on 17/Jun/2014

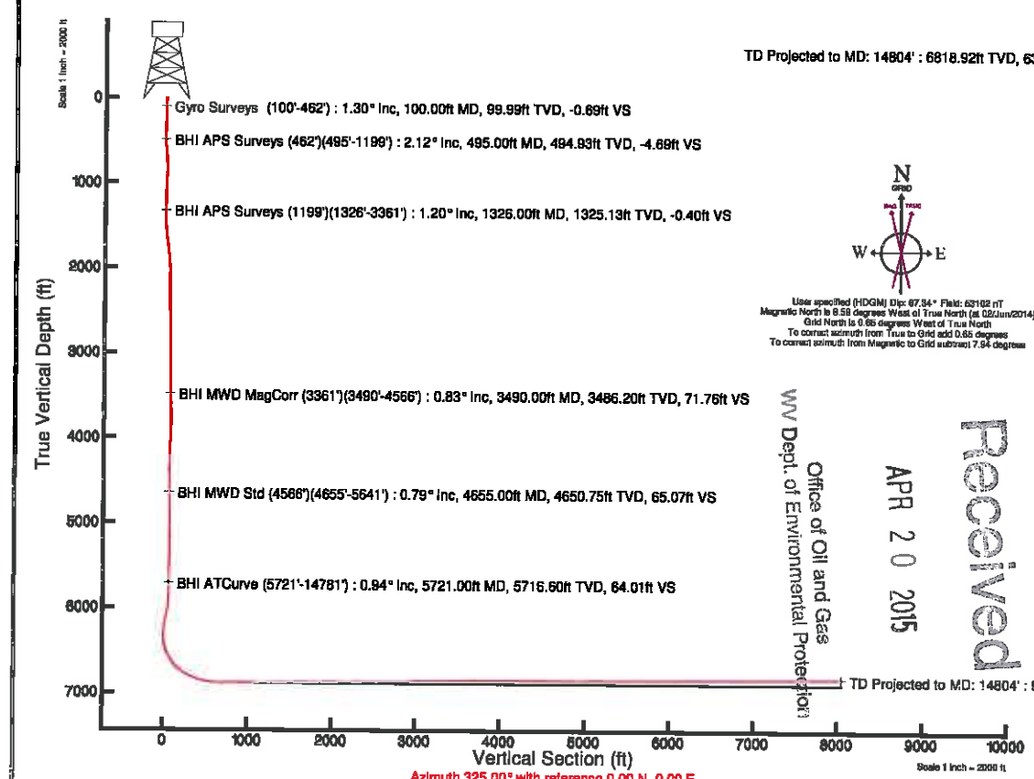
Targets

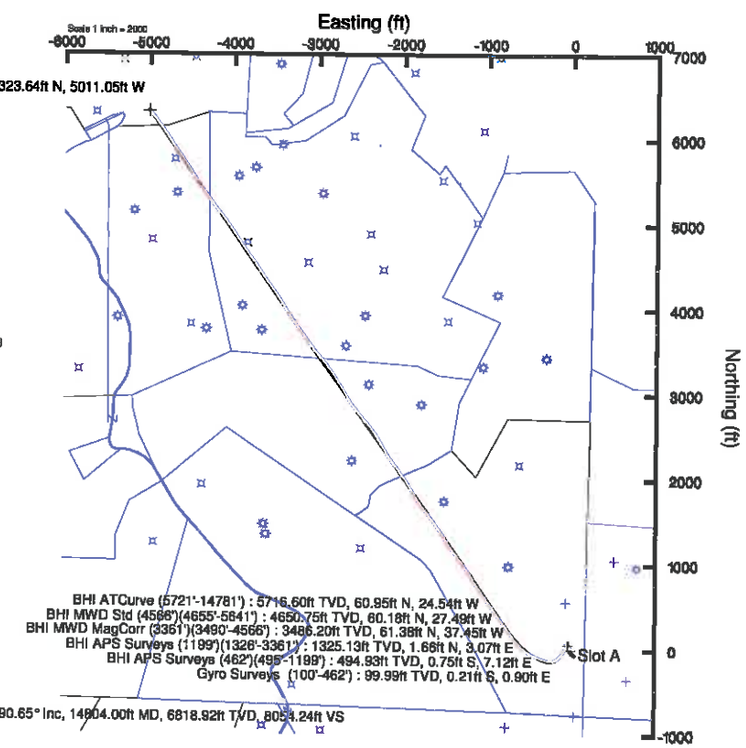
Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
WEB-22A-HS BHL:Rev-1	14794.43	6888.00	6324.51	-5010.91	1708915.14	526176.75	39°56'24.078"N	80°32'17.235"W
WEB-22A-HS LP:Rev-2	7371.42	6888.00	243.95	-753.25	1713172.60	520096.47	39°55'24.473"N	80°31'21.680"W
WEB-22A-HS BHL:Plan		6913.00	6324.51	-5010.91	1708915.14	526176.75	39°56'24.078"N	80°32'17.235"W
WEB-22A-HS LP:Rev-1		6913.00	243.95	-753.25	1713172.60	520096.47	39°55'24.473"N	80°31'21.680"W

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6304.00	27.620	221.420	6263.08	-80.97	-129.28	0.00	7.83
Projection	6329.00	27.620	221.420	6285.23	-89.66	-136.95	0.00	5.11
End of 3D Arc	7117.62	71.362	314.419	6842.36	56.16	-591.43	9.50	385.23
End of Tangent	7146.80	71.362	314.419	6851.69	75.51	-611.17	0.00	412.41
LP	7371.42	90.000	325.000	6888.00	243.95	-753.25	9.50	631.67
BHL	14794.43	90.000	325.000	6888.00	6324.52	-5010.91	0.00	8054.88

API: 47-051-01687-0000
Rig: Precision 542
BHI Job #: 6217772
Duration: 06/02/2014-06/16/2014





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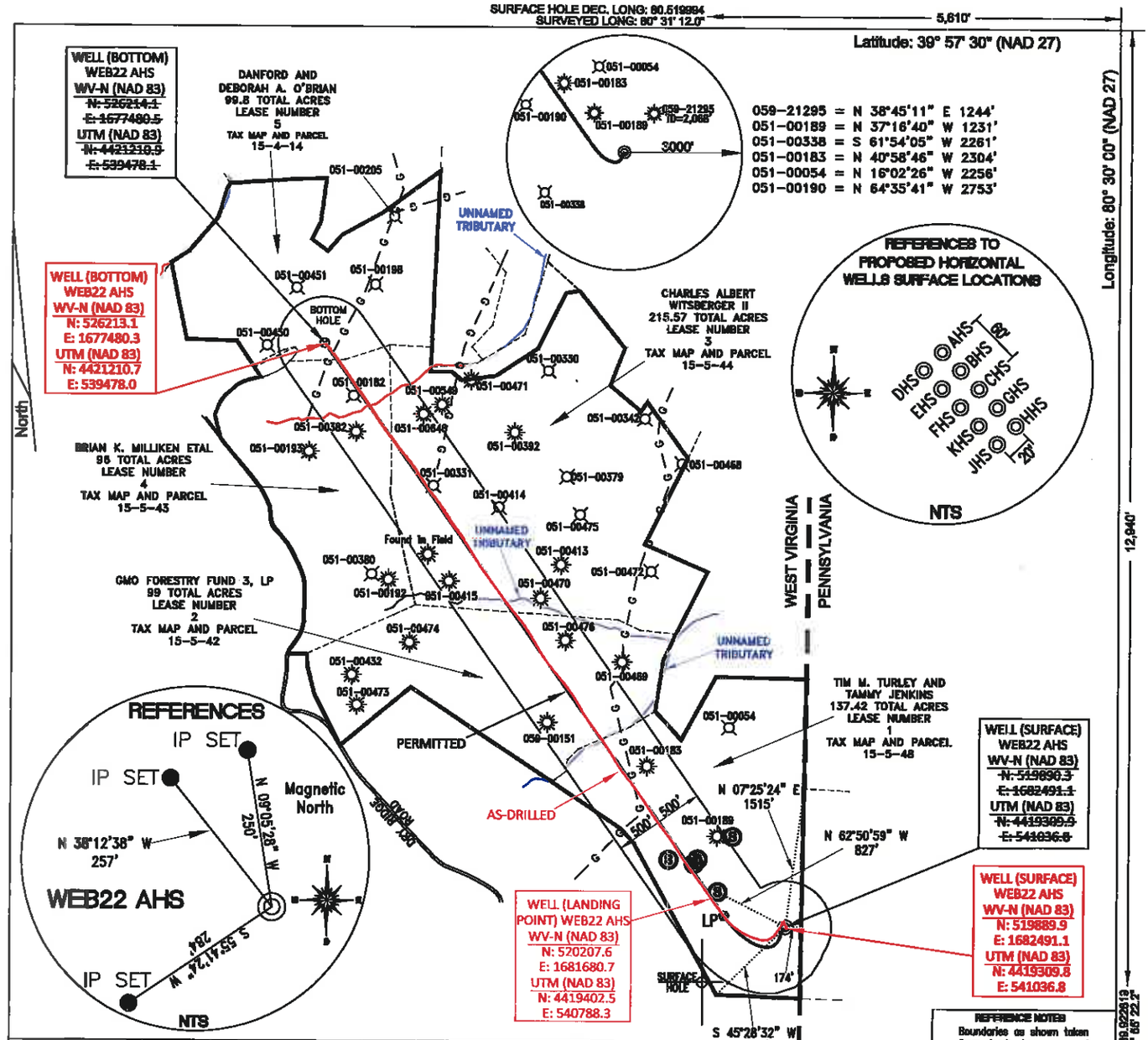

SURFACE HOLE LOCATION	LANDING POINT LOCATION	BOTTOM HOLE LOCATION
UTM 17-NAD 83	UTM 17-NAD 83	UTM 17-NAD 83
N) ~~4419309.92~~	N) ~~4419343.29~~	N) ~~4421210.93~~
E) ~~541036.83~~	E) ~~540832.98~~	E) ~~539478.09~~
NAD 27, WV NORTH	NAD 27, WV NORTH	NAD 27, WV NORTH
N) ~~519852.88~~	N) ~~519973.61~~	N) ~~526176.75~~
E) ~~1713925.71~~	E) ~~1713258.63~~	E) ~~1708915.14~~

FILE #: NOB 001
DRAWING #: 2168
SCALE: PLAT - 1"=1600' TICK MARK - 1"=2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed:

L.L.S. #2124 : Ernest J. Benchek III

ERNEST J. BENCHEK III
LICENSED
No. 2124
STATE OF WEST VIRGINIA
PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: JANUARY 27, 2015

OPERATOR'S WELL #: WEB22 AHS AS-DRILLED PLAT

API WELL #: 47 (STATE) 51 (COUNTY) 01687 (PERMIT)

Well Type: ☐ Oil ☐ Waste Diposal ☒ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: WHEELING CREEK
ELEVATION: 1,338.56'
COUNTY/DISTRICT: MARSHALL / WEBSTER
QUADRANGLE: MAJORSVILLE WV-PA
SURFACE OWNER: TIM M. TURLEY AND TAMMY JENKINS
ACREAGE: 137.42 +/-
OIL & GAS ROYALTY OWNER: TIM M. TURLEY AND TAMMY JENKINS
ACREAGE: 647.79 +/-
LEASE NUMBERS:

DRILL ☒ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒
PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON ☐
CLEAN OUT & REPLUG ☐ OTHER CHANGE ☐ (SPECIFY):

TARGET FORMATION: MARCELLUS
ESTIMATED DEPTH: TVD: 6,913' TMD: 14,938'
WELL OPERATOR: NOBLE ENERGY, INC.
DESIGNATED AGENT: STEVEN M. GREEN
ADDRESS: 333 TECHNOLOGY DRIVE SUITE 116
ADDRESS: 500 VIRGINIA STREET EAST
CITY: CANONSBURG STATE: PA ZIP CODE: 15317
CITY: CHARLESTON STATE: WV ZIP CODE: 25301