



Langford Unit 1H
Ritchie County WV
Northing: 14233072.19
Easting: 1668350.52
As Drilled ST1



Scientific Drilling

WELL DETAILS Langford Unit 1H
 Ground Level: 1075.0
 Northing Easting Longitude
 14233072.19 1668350.5239 11° 43.185 N 80° 54' 5.056 W

Genie Lightfoot
 11:50, February 06 2014
 Scientific Drilling
 421 South Eagle Lane
 Oklahoma City, OK 73128

PROJECT DETAILS: Ritchie County WV

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

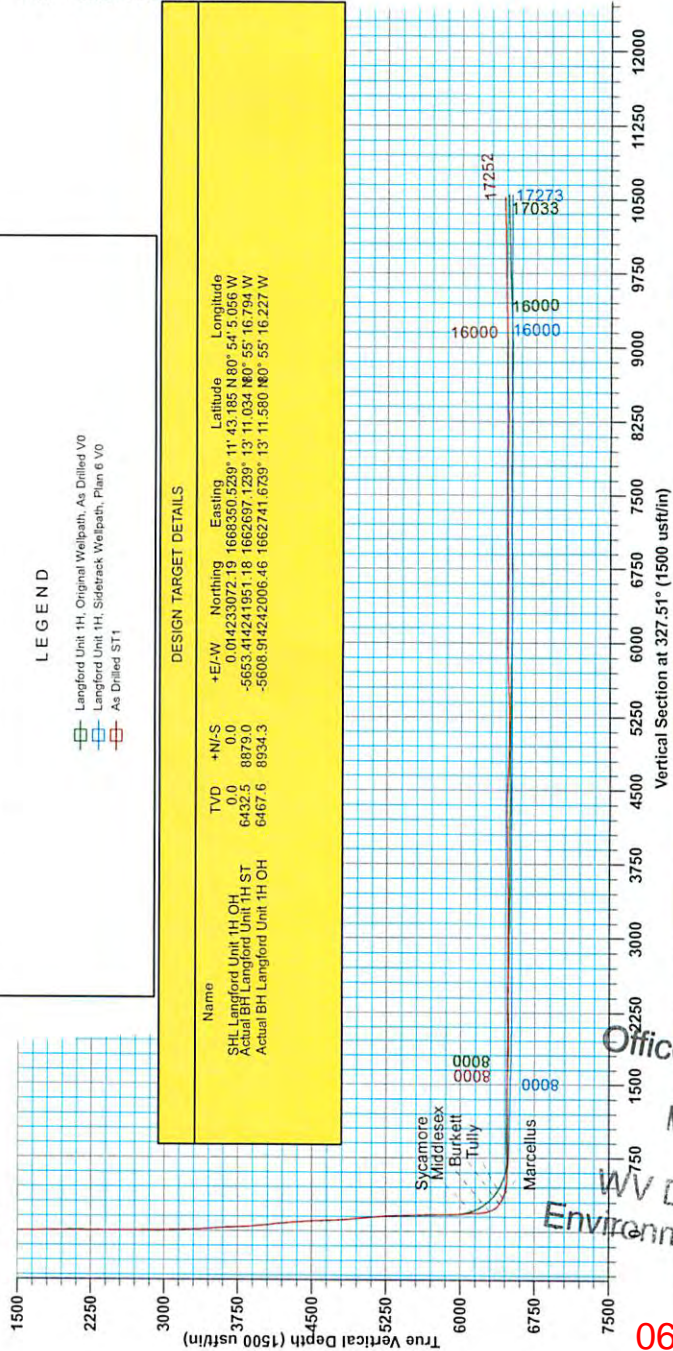
LEGEND

- Langford Unit 1H, Original Wellpath, As Drilled V0
- Langford Unit 1H, Sidetrack Wellpath, Plan 6 V0
- As Drilled ST1

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Langford Unit 1H OH	0.0	0.0	0.0	14233072.19	1668350.5239	11° 43.185 N 80° 54' 5.056 W	
Actual BH Langford Unit 1H ST	6432.5	8879.0	-5653.4	14241951.18	1662697.1239	13° 11' 03.4 N 80° 55' 16.794 W	
Actual BH Langford Unit 1H OH	6467.6	8934.3	-5608.9	14242006.46	1662741.6739	13° 11' 58.0 N 80° 55' 16.227 W	

Langford 1H 1075.GI • 24 KB @ 1009.0usft
 Cr: 1075.0



Azimuths to Grid North
 True North: -0.06°
 Magnetic North: -8.41°
 Magnetic Field
 Strength: 52319.6snT
 Dip Angle: 66.80°
 Date: 12/20/2013
 Model: IGRF2010

To convert Magnetic North to Grid, Subtract 8.41°
 To convert True North to Grid, Subtract 0.06°



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Antero Resources

Ritchie County WV
DeBerry/Rufus/Langford
Langford Unit 1H
Sidetrack Wellpath

Design: As Drilled ST1

EOW Completion Report

06 February, 2014

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Scientific Drilling

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Langford Unit 1H
Project:	Ritchie County WV	TVD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Site:	DeBerry/Rufus/Langford	MD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Well:	Langford Unit 1H	North Reference:	Grid
Wellbore:	Sidetrack Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST1	Database:	Oklahoma District

Project	Ritchie County WV, Ritchie County WV, WV North		
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	DeBerry/Rufus/Langford, Site Center: Deberry 1H				
Site Position:		Northing:	14,233,087.17 usft	Latitude:	39° 11' 43.333 N
From:	Map	Easting:	1,668,409.26 usft	Longitude:	80° 54' 4.310 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.06 °

Well	Langford Unit 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,233,072.19 usft	Latitude:	39° 11' 43.185 N
	+E/-W	0.0 usft	Easting:	1,668,350.52 usft	Longitude:	80° 54' 5.056 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,099.0 usft	Ground Level:	1,075.0 usft

Wellbore	Sidetrack Wellpath
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/20/2013	-8.35	66.80	52,320

Design	As Drilled ST1
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	6,190.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	327.51	

Survey Program	Date	2/6/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	5,355.1	Survey #4 Def Gyro to KOP (Original Well)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
5,531.0	6,190.0	Survey #5 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	
6,285.0	17,252.0	Survey #1 ST1 MWD (Sidetrack Wellpath)	MWD SDI	MWD - Standard ver 1.0.1	

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	0.22	85.53	100.0	0.0	0.2	-0.1	0.22
200.0	0.10	330.56	200.0	0.1	0.3	-0.1	0.28
300.0	0.09	228.90	300.0	0.1	0.2	0.0	0.15
400.0	0.09	226.15	400.0	0.0	0.1	0.0	0.00
500.0	0.15	221.60	500.0	-0.1	0.0	-0.1	0.06
600.0	0.03	197.06	600.0	-0.3	-0.1	-0.1	0.12
700.0	0.13	226.25	700.0	-0.4	-0.2	-0.2	0.10
800.0	0.09	302.16	800.0	-0.4	-0.4	-0.1	0.14
900.0	0.19	301.30	900.0	-0.3	-0.6	0.1	0.10

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Company:	Antero Resources	Local Co-ordinate Reference:	Well Langford Unit 1H
Project:	Ritchie County WV	TVD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Site:	DeBerry/Rufus/Langford	MD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Well:	Langford Unit 1H	North Reference:	Grid
Wellbore:	Sidetrack Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST1	Database:	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,000.0	0.22	270.96	1,000.0	-0.2	-0.9	0.3	0.11
1,100.0	0.19	268.49	1,100.0	-0.2	-1.3	0.5	0.03
1,200.0	0.18	254.65	1,200.0	-0.2	-1.6	0.7	0.05
1,300.0	0.24	222.10	1,300.0	-0.4	-1.9	0.6	0.13
1,400.0	0.11	258.59	1,400.0	-0.6	-2.1	0.6	0.17
1,500.0	0.09	274.33	1,500.0	-0.6	-2.3	0.7	0.03
1,600.0	0.07	291.26	1,600.0	-0.6	-2.4	0.8	0.03
1,700.0	0.19	252.22	1,700.0	-0.6	-2.6	0.9	0.14
1,800.0	0.22	308.83	1,800.0	-0.5	-2.9	1.1	0.20
1,900.0	0.26	255.91	1,900.0	-0.5	-3.3	1.4	0.22
2,000.0	0.20	219.72	2,000.0	-0.7	-3.6	1.4	0.15
2,100.0	0.07	187.87	2,100.0	-0.9	-3.7	1.3	0.15
2,200.0	0.08	217.57	2,200.0	-1.0	-3.8	1.2	0.04
2,300.0	0.16	268.61	2,300.0	-1.0	-4.0	1.3	0.13
2,400.0	0.20	243.17	2,400.0	-1.1	-4.3	1.4	0.09
2,500.0	0.14	243.51	2,500.0	-1.2	-4.5	1.4	0.06
2,600.0	0.08	1.73	2,600.0	-1.2	-4.6	1.5	0.19
2,700.0	0.20	242.28	2,700.0	-1.2	-4.8	1.5	0.25
2,800.0	0.87	256.45	2,800.0	-1.5	-5.7	1.8	0.68
2,900.0	2.48	258.26	2,899.9	-2.1	-8.6	2.8	1.61
3,000.0	5.13	245.33	2,999.7	-4.4	-14.7	4.2	2.77
3,100.0	9.00	239.40	3,098.9	-10.3	-25.5	5.0	3.93
3,200.0	11.12	245.82	3,197.4	-18.2	-41.1	6.7	2.40
3,300.0	13.56	249.82	3,295.1	-26.2	-60.9	10.6	2.58
3,400.0	17.55	250.52	3,391.4	-35.3	-86.1	16.5	3.99
3,500.0	21.20	251.06	3,485.7	-46.2	-117.4	24.1	3.65
3,600.0	23.19	244.72	3,578.3	-60.5	-152.3	30.8	3.11
3,700.0	23.59	240.53	3,670.1	-78.7	-187.6	34.3	1.71
3,800.0	22.76	243.62	3,762.0	-97.2	-222.3	37.5	1.47
3,900.0	24.91	246.65	3,853.5	-114.1	-259.0	42.9	2.47
4,000.0	25.22	248.06	3,944.1	-130.4	-298.1	50.1	0.67
4,100.0	26.37	250.10	4,034.1	-145.9	-338.7	58.8	1.45
4,200.0	26.81	250.86	4,123.6	-160.9	-380.9	68.9	0.56
4,300.0	26.87	248.16	4,212.8	-176.7	-423.2	78.3	1.22
4,400.0	26.53	246.98	4,302.1	-193.8	-464.7	86.1	0.63
4,500.0	26.25	246.13	4,391.7	-211.5	-505.5	93.1	0.47
4,600.0	25.52	245.34	4,481.7	-229.4	-545.3	99.3	0.81
4,700.0	23.83	245.77	4,572.5	-246.7	-583.3	105.2	1.70
4,800.0	23.43	239.90	4,664.2	-265.0	-618.9	108.9	2.39
4,900.0	23.86	242.55	4,755.8	-284.3	-654.1	111.5	1.15
5,000.0	23.58	248.73	4,847.3	-300.9	-690.7	112.2	2.50
5,100.0	25.90	248.26	4,938.1	-316.2	-729.5	125.1	2.33
5,200.0	27.25	247.54	5,027.6	-333.0	-771.1	133.2	1.39
5,300.0	27.07	246.87	5,116.6	-350.7	-813.1	140.9	0.35
5,355.1	27.73	247.50	5,165.5	-360.6	-836.5	145.1	1.31

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Langford Unit 1H
Project:	Ritchie County WV	TVD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Site:	DeBerry/Rufus/Langford	MD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Well:	Langford Unit 1H	North Reference:	Grid
Wellbore:	Sidetrack Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST1	Database:	Oklahoma District

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,531.0	24.75	244.38	5,323.2	-392.1	-907.5	156.6	1.87
5,626.0	24.21	238.37	5,409.7	-411.0	-942.1	159.3	2.68
5,720.0	23.82	239.47	5,495.6	-430.7	-974.8	160.2	0.63
5,814.0	24.48	242.54	5,581.4	-449.3	-1,008.5	162.6	1.51
5,908.0	24.87	242.82	5,666.8	-467.4	-1,043.3	166.1	0.43
6,002.0	25.24	239.97	5,751.9	-486.4	-1,078.3	168.8	1.34
6,096.0	25.38	239.06	5,836.9	-506.8	-1,112.9	170.2	0.44
6,190.0	25.32	241.82	5,921.9	-526.6	-1,147.9	172.3	1.26
6,285.0	26.77	245.38	6,007.2	-545.2	-1,185.3	176.7	2.24
6,332.0	25.59	249.39	6,049.4	-553.1	-1,204.4	180.3	4.52
6,400.0	22.73	247.49	6,111.4	-563.3	-1,230.3	185.6	4.36
6,421.0	22.72	240.21	6,130.8	-566.9	-1,237.5	186.5	13.40
Sycamore							
6,430.0	22.81	237.09	6,139.1	-568.7	-1,240.5	186.5	13.40
6,476.0	24.88	236.61	6,181.2	-578.9	-1,256.1	186.3	4.52
6,523.0	27.56	251.21	6,223.4	-587.9	-1,274.6	188.7	14.82
6,570.0	30.66	260.88	6,264.5	-593.3	-1,296.8	196.1	11.97
6,607.0	33.70	267.07	6,295.8	-595.3	-1,316.4	204.9	12.11
Middlesex							
6,617.0	34.57	268.57	6,304.1	-595.5	-1,322.0	207.7	12.11
6,664.0	43.83	276.81	6,340.5	-593.9	-1,351.5	224.9	22.57
6,711.0	54.77	283.79	6,371.1	-587.4	-1,386.5	249.2	25.83
6,758.0	61.55	287.61	6,395.9	-576.5	-1,424.9	279.0	15.99
6,765.0	62.11	287.93	6,399.2	-574.6	-1,430.7	283.7	8.93
Burkett							
6,805.0	65.30	289.72	6,416.9	-563.1	-1,464.7	311.7	8.93
6,836.0	68.46	291.10	6,429.1	-553.1	-1,491.4	334.4	11.00
Tully							
6,852.0	70.10	291.79	6,434.7	-547.6	-1,505.3	346.5	11.00
6,899.0	74.00	294.20	6,449.2	-530.2	-1,546.5	383.4	9.62
6,902.0	74.28	294.32	6,450.0	-529.0	-1,549.1	385.8	10.02
Marcellus							
6,946.0	78.34	296.08	6,460.4	-510.8	-1,587.8	421.9	10.02
6,993.0	82.07	298.35	6,468.4	-489.6	-1,628.9	461.9	9.25
7,041.0	85.73	298.99	6,473.5	-466.7	-1,670.8	503.7	7.74
7,087.0	89.53	302.06	6,475.4	-443.4	-1,710.4	544.6	10.62
7,134.0	88.42	309.08	6,476.3	-416.0	-1,748.6	588.2	15.12
7,182.0	85.78	313.86	6,478.7	-384.3	-1,784.5	634.2	11.36
7,229.0	85.66	319.37	6,482.2	-350.3	-1,816.7	680.3	11.69
7,276.0	87.78	324.12	6,484.9	-313.4	-1,845.7	726.9	11.05
7,323.0	91.01	328.82	6,485.4	-274.3	-1,871.1	773.9	12.13
7,370.0	90.77	334.03	6,484.7	-233.0	-1,894.1	820.8	11.10
7,417.0	90.07	338.87	6,484.3	-189.9	-1,912.9	867.2	10.40
7,512.0	92.78	349.27	6,482.0	-98.8	-1,938.9	958.1	11.31
7,606.0	91.21	347.93	6,478.7	-6.7	-1,957.3	1,045.7	2.20

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EOW Completion Report



Company: Antero Resources
 Project: Ritchie County WV
 Site: DeBerry/Rufus/Langford
 Well: Langford Unit 1H
 Wellbore: Sidetrack Wellpath
 Design: As Drilled ST1

Local Co-ordinate Reference: Well Langford Unit 1H
 TVD Reference: Langford 1H 1075 GL @ 1099.0usft
 MD Reference: Langford 1H 1075 GL + 24 KB @ 1099.0usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Oklahoma District

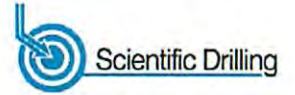
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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	Decl (°/100usft)
7,700.0	92.28	349.95	6,475.8	85.5	-1,975.5	1,133.2	2.43
7,794.0	89.83	348.19	6,474.1	177.8	-1,993.3	1,220.6	3.21
7,888.0	89.70	348.50	6,474.5	269.9	-2,012.3	1,308.4	0.36
7,983.0	89.53	348.81	6,475.1	363.0	-2,031.0	1,397.0	0.37
8,077.0	88.82	348.71	6,476.5	455.2	-2,049.3	1,484.6	0.76
8,171.0	88.92	348.50	6,478.3	547.3	-2,067.9	1,572.3	0.25
8,265.0	91.04	348.30	6,478.4	639.4	-2,086.8	1,660.1	2.27
8,359.0	90.60	346.57	6,477.0	731.1	-2,107.3	1,748.5	1.90
8,453.0	89.53	345.20	6,476.9	822.3	-2,130.2	1,837.7	1.85
8,548.0	88.45	345.66	6,478.6	914.2	-2,154.1	1,928.1	1.24
8,642.0	89.26	342.45	6,480.5	1,004.6	-2,179.9	2,018.2	3.52
8,736.0	91.65	342.16	6,479.7	1,094.1	-2,208.5	2,109.1	2.56
8,830.0	91.58	341.80	6,477.1	1,183.5	-2,237.5	2,200.0	0.39
8,924.0	89.73	337.49	6,476.0	1,271.6	-2,270.2	2,291.9	4.99
9,018.0	89.40	335.02	6,476.7	1,357.6	-2,308.1	2,384.8	2.65
9,112.0	88.89	334.51	6,478.1	1,442.6	-2,348.1	2,478.0	0.77
9,206.0	88.62	335.43	6,480.2	1,527.8	-2,387.9	2,571.2	1.02
9,300.0	90.00	335.69	6,481.3	1,613.3	-2,426.8	2,664.3	1.49
9,394.0	90.47	336.57	6,480.9	1,699.3	-2,464.8	2,757.2	1.06
9,488.0	89.73	336.55	6,480.7	1,785.5	-2,502.2	2,850.1	0.79
9,582.0	90.27	335.63	6,480.7	1,871.5	-2,540.3	2,943.0	1.13
9,676.0	89.90	336.31	6,480.6	1,957.3	-2,578.6	3,036.0	0.82
9,770.0	89.90	335.40	6,480.8	2,043.1	-2,617.0	3,129.0	0.97
9,864.0	89.97	336.09	6,480.9	2,128.8	-2,655.6	3,222.0	0.74
9,958.0	91.14	335.15	6,480.0	2,214.4	-2,694.4	3,315.1	1.60
10,052.0	91.17	336.21	6,478.1	2,300.1	-2,733.1	3,408.1	1.13
10,143.0	91.04	335.81	6,476.3	2,383.2	-2,770.1	3,498.1	0.46
10,237.0	90.87	335.78	6,474.7	2,468.9	-2,808.7	3,591.1	0.18
10,331.0	90.00	334.59	6,474.0	2,554.2	-2,848.1	3,684.2	1.57
10,425.0	89.60	336.36	6,474.4	2,639.7	-2,887.1	3,777.3	1.93
10,519.0	90.37	337.92	6,474.4	2,726.3	-2,923.7	3,870.0	1.85
10,613.0	90.34	336.72	6,473.8	2,813.1	-2,959.9	3,962.6	1.28
10,707.0	91.38	336.75	6,472.4	2,899.4	-2,997.0	4,055.4	1.11
10,801.0	91.41	335.97	6,470.1	2,985.5	-3,034.7	4,148.3	0.83
10,895.0	90.13	333.92	6,468.8	3,070.6	-3,074.5	4,241.5	2.57
10,990.0	89.90	335.54	6,468.8	3,156.6	-3,115.1	4,335.7	1.72
11,084.0	89.83	335.14	6,469.0	3,242.0	-3,154.3	4,428.8	0.43
11,178.0	88.96	335.19	6,470.0	3,327.3	-3,193.8	4,522.0	0.93
11,269.0	87.76	335.07	6,472.6	3,409.8	-3,232.0	4,612.1	1.33
11,360.0	87.92	336.78	6,476.1	3,492.8	-3,269.1	4,702.1	1.89
11,451.0	87.48	336.47	6,479.7	3,576.3	-3,305.2	4,791.9	0.59
11,542.0	88.49	337.73	6,482.9	3,660.1	-3,340.6	4,881.5	1.77
11,633.0	88.46	337.83	6,485.3	3,744.3	-3,375.0	4,971.1	0.11
11,724.0	89.46	336.55	6,487.0	3,828.1	-3,410.2	5,060.7	1.78
11,814.0	90.10	336.51	6,487.3	3,910.7	-3,446.1	5,149.6	0.71



EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Langford Unit 1H
Project:	Ritchie County WV	TVD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Site:	DeBerry/Rufus/Langford	MD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Well:	Langford Unit 1H	North Reference:	Grid
Wellbore:	Sidetrack Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST1	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
11,906.0	90.57	336.58	6,486.8	3,995.1	-3,482.7	5,240.5	0.52	
11,997.0	90.57	336.90	6,485.9	4,078.7	-3,518.6	5,330.3	0.35	
12,087.0	91.51	336.18	6,484.3	4,161.2	-3,554.5	5,419.2	1.32	
12,178.0	90.92	335.16	6,482.3	4,244.1	-3,591.9	5,509.2	1.29	
12,270.0	92.65	336.65	6,479.5	4,328.1	-3,629.5	5,600.2	2.48	
12,364.0	92.86	336.51	6,474.9	4,414.2	-3,666.8	5,692.9	0.27	
12,458.0	90.47	335.06	6,472.2	4,499.9	-3,705.3	5,785.9	2.97	
12,551.0	90.75	334.72	6,471.2	4,584.1	-3,744.8	5,878.1	0.47	
12,646.0	90.00	335.56	6,470.6	4,670.3	-3,784.7	5,972.3	1.19	
12,740.0	90.07	335.80	6,470.5	4,756.0	-3,823.4	6,065.3	0.27	
12,834.0	89.60	336.02	6,470.8	4,841.8	-3,861.8	6,158.3	0.55	
12,928.0	90.50	336.23	6,470.7	4,927.7	-3,899.9	6,251.2	0.98	
13,022.0	90.54	335.34	6,469.9	5,013.5	-3,938.4	6,344.3	0.95	
13,116.0	89.93	336.93	6,469.5	5,099.4	-3,976.4	6,437.2	1.81	
13,210.0	89.66	336.28	6,469.8	5,185.7	-4,013.8	6,530.0	0.75	
13,304.0	89.13	336.04	6,470.8	5,271.7	-4,051.8	6,622.9	0.62	
13,398.0	89.53	337.42	6,471.9	5,358.0	-4,088.9	6,715.7	1.53	
13,493.0	90.20	337.71	6,472.1	5,445.8	-4,125.1	6,809.3	0.77	
13,587.0	90.81	337.59	6,471.3	5,532.8	-4,160.9	6,901.8	0.66	
13,681.0	91.07	335.91	6,469.8	5,619.1	-4,198.0	6,994.6	0.81	
13,775.0	91.36	335.25	6,467.8	5,704.7	-4,236.8	7,087.5	0.77	
13,869.0	89.19	335.92	6,467.3	5,790.3	-4,275.7	7,180.7	2.42	
13,963.0	90.30	335.86	6,467.7	5,876.1	-4,314.1	7,273.7	1.18	
14,057.0	90.91	336.18	6,466.8	5,961.9	-4,352.3	7,366.6	0.73	
14,151.0	90.84	335.43	6,465.3	6,047.7	-4,390.8	7,459.6	0.80	
14,245.0	90.10	334.39	6,464.5	6,132.8	-4,430.7	7,552.8	1.36	
14,339.0	89.13	334.14	6,465.2	6,217.5	-4,471.5	7,646.2	1.07	
14,433.0	89.43	337.11	6,466.4	6,303.1	-4,510.3	7,739.2	3.18	
14,528.0	90.03	336.38	6,466.8	6,390.4	-4,547.8	7,833.0	0.99	
14,621.0	90.07	335.56	6,466.7	6,475.3	-4,585.6	7,925.0	0.88	
14,715.0	89.63	337.31	6,467.0	6,561.5	-4,623.2	8,017.8	1.92	
14,809.0	89.36	338.07	6,467.8	6,648.4	-4,658.9	8,110.4	0.86	
14,903.0	89.29	337.41	6,468.9	6,735.4	-4,694.5	8,202.9	0.71	
14,997.0	89.60	338.19	6,469.8	6,822.4	-4,730.0	8,295.3	0.89	
15,091.0	92.28	338.04	6,468.3	6,909.6	-4,765.1	8,387.7	2.86	
15,185.0	91.71	334.98	6,465.0	6,995.8	-4,802.5	8,480.5	3.31	
15,279.0	91.11	334.43	6,462.7	7,080.8	-4,842.7	8,573.7	0.87	
15,373.0	90.03	334.69	6,461.8	7,165.6	-4,883.0	8,667.0	1.18	
15,467.0	89.70	334.49	6,462.0	7,250.5	-4,923.4	8,760.3	0.41	
15,561.0	89.80	335.70	6,462.4	7,335.8	-4,962.9	8,853.5	1.29	
15,655.0	91.07	337.09	6,461.7	7,421.9	-5,000.6	8,946.3	2.00	
15,749.0	91.14	336.14	6,459.9	7,508.2	-5,037.9	9,039.1	1.01	
15,843.0	91.41	336.39	6,457.8	7,594.2	-5,075.7	9,132.0	0.39	
15,937.0	91.28	335.69	6,455.6	7,680.1	-5,113.9	9,225.0	0.76	

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Company:	Antero Resources	Local Co-ordinate Reference:	Well Langford Unit 1H
Project:	Ritchie County WV	TVD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Site:	DeBerry/Rufus/Langford	MD Reference:	Langford 1H 1075 GL + 24 KB @ 1099.0usft
Well:	Langford Unit 1H	North Reference:	Grid
Wellbore:	Sidetrack Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST1	Database:	Oklahoma District

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
16,031.0	90.97	337.17	6,453.7	7,766.2	-5,151.5	9,317.8	1.61
16,125.0	91.44	336.45	6,451.7	7,852.6	-5,188.5	9,410.5	0.91
16,219.0	91.01	335.98	6,449.7	7,938.6	-5,226.4	9,503.4	0.68
16,313.0	90.97	336.30	6,448.1	8,024.6	-5,264.4	9,596.4	0.34
16,407.0	91.08	336.40	6,446.4	8,110.7	-5,302.1	9,689.2	0.16
16,501.0	91.11	335.81	6,444.6	8,196.6	-5,340.2	9,782.2	0.63
16,595.0	91.24	335.78	6,442.7	8,282.3	-5,378.7	9,875.2	0.14
16,690.0	91.21	335.80	6,440.7	8,368.9	-5,417.6	9,969.1	0.04
16,784.0	91.31	335.40	6,438.6	8,454.5	-5,456.5	10,062.2	0.44
16,877.0	90.54	335.44	6,437.1	8,539.1	-5,495.1	10,154.3	0.83
16,971.0	91.18	334.94	6,435.7	8,624.4	-5,534.6	10,247.4	0.86
17,065.0	91.14	335.36	6,433.8	8,709.7	-5,574.1	10,340.6	0.45
17,159.0	90.27	334.56	6,432.6	8,794.8	-5,613.8	10,433.8	1.26
17,196.0	89.83	334.74	6,432.6	8,828.3	-5,629.7	10,470.5	1.28
17,252.0	90.34	335.17	6,432.5	8,879.0	-5,653.4	10,526.0	1.19

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,421.0	6,130.8	-566.9	-1,237.5	Sycamore
6,607.0	6,295.8	-595.3	-1,316.4	Middlesex
6,765.0	6,399.2	-574.6	-1,430.7	Burkett
6,836.0	6,429.1	-553.1	-1,491.4	Tully
6,902.0	6,450.0	-529.0	-1,549.1	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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