

CHESAPEAKE ENERGY CORPORATION

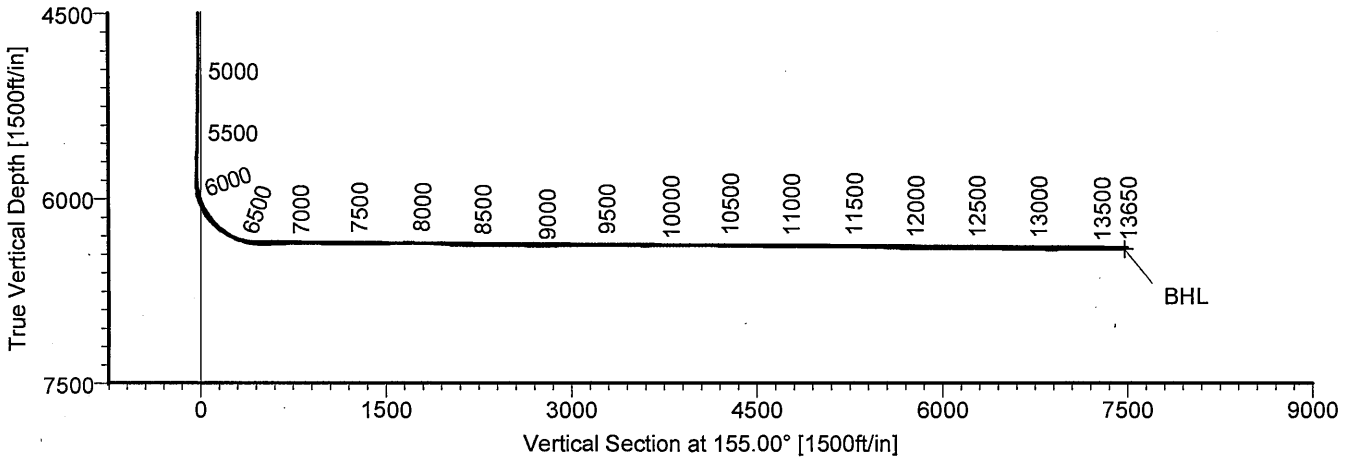
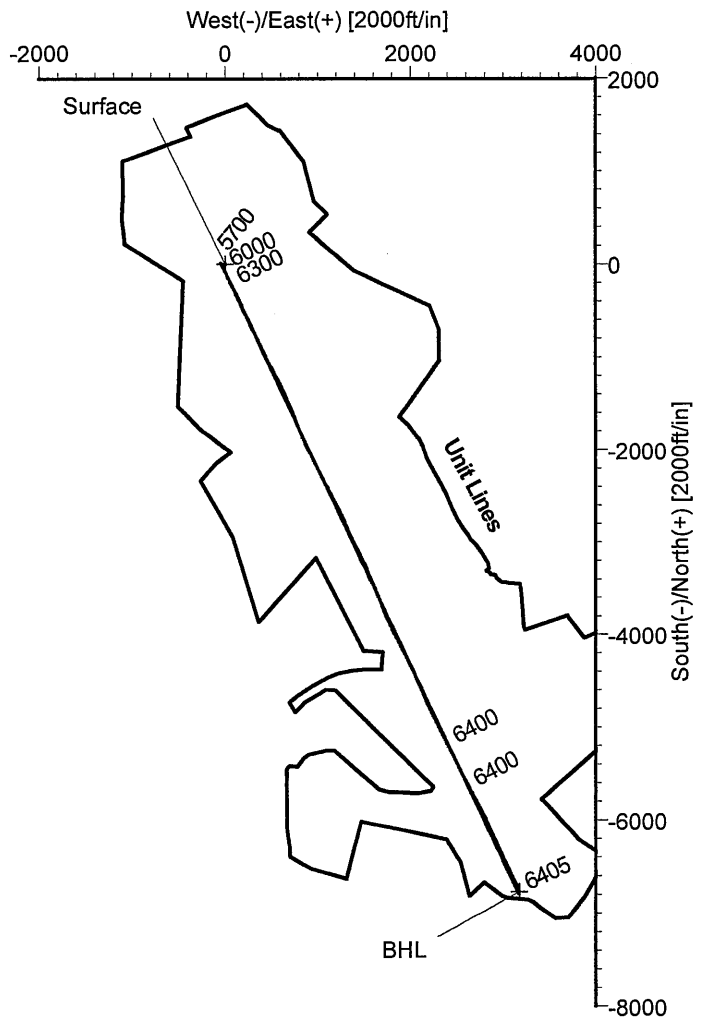
Field: Ohio County, WV
 Site: Mason Cottrell Pad
 Well: 8H
 Wellpath: Lateral



Azimuths to Grid North
 True North: 0.71°
 Magnetic North: -7.96°

Magnetic Field
 Strength: 53007nT
 Dip Angle: 67.66°
 Date: 10/13/2011
 Model: IGRF2010

LEGEND
 8H, Lateral, Plan #3
 Lateral



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Surface	0.00	0.00	0.00	575919.40	1687176.20	Point
BHL	6404.70	-6770.59	3176.35	569148.81	1690352.55	Point

Wellpath: (8H/Lateral)

Created By: Ivonne Gonzalez

Date: 10/25/2011

ARCHER DIRECTIONAL DRILLING SERVICES
 911 Regional Park Drive Houston, Texas 77060
 Phone: 713-934-9600 Fax: 713-934-9067



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 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV

ARCHER

Survey Report

Company: CHESAPEAKE ENERGY CORPORATION	Date: 10/25/2011	Time: 09:56:56	Page: 1
Field: Ohio County, WV	Co-ordinate(NE) Reference: Well: 8H, Grid North		
Site: Mason Cottrell Pad	Vertical (TYD) Reference: 1300'GL+16'KB 1316.0		
Well: 8H	Section (VS) Reference: Well (0.00N,0.00E,155.00Azi)		
Wellpath: Lateral	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Field: Ohio County, WV

Map System: US State Plane Coordinate System 1927	Map Zone: West Virginia, Northern Zone
Geo Datum: NAD27 (Clarke 1866)	Coordinate System: Well Centre
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010

Site: Mason Cottrell Pad

Site Position:	Northing: 575919.40 ft	Latitude: 40 4 33.065 N	
From: Map	Easting: 1687176.20 ft	Longitude: 80 37 4.249 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 1300.00 ft		Grid Convergence: -0.71 deg	

Well: 8H	Slot Name:
Well Position: +N/-S 0.00 ft	Northing: 575919.40 ft
+E/-W 0.00 ft	Easting: 1687176.20 ft
Position Uncertainty: 0.00 ft	Latitude: 40 4 33.065 N
	Longitude: 80 37 4.249 W

Wellpath: Lateral	Drilled From: Pilot Hole
Current Datum: 1300'GL+16'KB	Tie-on Depth: 5072.00 ft
Magnetic Data: 10/13/2011	Above System Datum: Mean Sea Level
Field Strength: 53007 nT	Declination: -8.67 deg
Vertical Section: Depth From (TYD)	Mag Dip Angle: 67.66 deg
ft	+N/-S
	ft
0.00	0.00
	0.00
	0.00
	155.00
	deg

Survey Program for Definitive Wellpath

Date: 10/25/2011 **Validated:** No **Version:** 0

Actual From	To	Survey	Toolcode	Tool Name
242.00	5072.00	Survey #1 (242.00-5072.00) (1)	MWD	Std MWD
5732.00	13596.00	Survey #1 (5732.00-13596.00)	MWD	Std MWD
13650.00	13650.00	Survey #2 (13650.00-13650.00)	Project	Projection

Survey

MD	Incl	Azim	TYD	+N/-S	+E/-W	VS	DLS	Build	Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
242.00	0.68	324.00	241.99	1.16	-0.84	-1.41	0.28	0.28	0.00	MWD
370.00	0.79	312.87	369.98	2.38	-1.94	-2.97	0.14	0.09	-8.70	MWD
600.00	0.95	321.29	599.96	4.94	-4.29	-6.29	0.09	0.07	3.66	MWD
745.00	1.37	150.70	744.95	4.37	-4.20	-5.73	1.59	0.29	-117.65	MWD
1024.00	1.07	154.84	1023.88	-0.90	-1.46	0.20	0.11	-0.11	1.48	MWD
1400.00	0.08	310.25	1399.86	-3.91	-0.16	3.47	0.30	-0.26	41.33	MWD
1605.00	0.37	318.64	1604.86	-3.32	-0.71	2.71	0.14	0.14	4.09	MWD
1915.00	0.68	282.85	1914.85	-2.16	-3.16	0.62	0.14	0.10	-11.55	MWD
2340.00	0.94	258.43	2339.81	-2.29	-9.04	-1.74	0.10	0.06	-5.75	MWD
2567.00	0.89	270.20	2566.78	-2.66	-12.63	-2.92	0.09	-0.02	5.19	MWD
2817.00	1.29	274.83	2816.73	-2.42	-17.37	-5.15	0.16	0.16	1.85	MWD
3066.00	0.72	318.19	3065.70	-1.02	-21.21	-8.04	0.37	-0.23	17.41	MWD
3562.00	0.82	253.64	3561.66	0.31	-26.69	-11.56	0.17	0.02	-13.01	MWD
4065.00	0.65	280.30	4064.62	-0.20	-32.95	-13.75	0.07	-0.03	5.30	MWD
4568.00	0.63	274.30	4567.59	0.52	-38.52	-16.75	0.01	0.00	-1.19	MWD
5072.00	0.79	338.07	5071.56	3.95	-42.58	-21.58	0.15	0.03	12.65	MWD
5732.00	1.10	307.52	5731.47	12.03	-49.30	-31.74	0.09	0.05	-4.63	MWD
5775.00	1.10	311.96	5774.46	12.56	-49.94	-32.49	0.20	0.00	10.33	MWD
5818.00	1.19	171.16	5817.46	12.39	-50.17	-32.44	5.02	0.21	-327.44	MWD
5862.00	5.71	151.96	5861.37	10.01	-49.07	-29.81	10.46	10.27	-43.64	MWD

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Company: CHESAPEAKE ENERGY CORPORATION	Date: 10/25/2011	Time: 09:56:56	Page: 2
Field: Ohio County, WV	Co-ordinate(NE) Reference: Well: 8H, Grid North		
Site: Mason Cottrell Pad	Vertical (TVD) Reference: 1300'GL+16"KB 1316.0		
Well: 8H	Section (VS) Reference: Well (0.00N,0.00E,155.00Azi)		
Wellpath: Lateral	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Survey										
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
5905.00	10.59	148.13	5903.92	4.76	-45.98	-23.75	11.41	11.35	-8.91	MWD
5949.00	13.89	150.73	5946.92	-3.28	-41.26	-14.46	7.60	7.50	5.91	MWD
5992.00	17.89	153.32	5988.26	-13.69	-35.77	-2.71	9.45	9.30	6.02	MWD
6036.00	21.31	155.25	6029.71	-26.99	-29.39	12.04	7.91	7.77	4.39	MWD
6079.00	26.41	154.46	6069.02	-42.73	-21.99	29.43	11.88	11.86	-1.84	MWD
6123.00	31.82	153.63	6107.45	-61.96	-12.61	50.83	12.33	12.30	-1.89	MWD
6159.00	35.80	152.50	6137.35	-79.81	-3.53	70.84	11.19	11.06	-3.14	MWD
6202.00	38.50	153.60	6171.62	-102.96	8.23	96.79	6.47	6.28	2.56	MWD
6246.00	44.00	150.90	6204.70	-128.60	21.77	125.75	13.14	12.50	-6.14	MWD
6289.00	50.20	151.90	6233.95	-156.25	36.82	157.17	14.52	14.42	2.33	MWD
6333.00	52.29	154.20	6261.50	-186.84	52.36	191.46	6.26	4.75	5.23	MWD
6376.00	56.00	154.10	6286.68	-218.20	67.56	226.30	8.63	8.63	-0.23	MWD
6419.00	61.50	153.30	6308.98	-251.14	83.84	263.04	12.89	12.79	-1.86	MWD
6463.00	67.60	152.40	6327.88	-286.47	101.97	302.72	13.99	13.86	-2.05	MWD
6506.00	72.80	153.80	6342.44	-322.54	120.26	343.14	12.47	12.09	3.26	MWD
6550.00	76.60	154.90	6354.05	-360.79	138.63	385.57	8.97	8.64	2.50	MWD
6593.00	81.50	156.10	6362.21	-399.19	156.13	427.77	11.72	11.40	2.79	MWD
6636.00	88.80	155.30	6365.85	-438.22	173.75	470.59	17.08	16.98	-1.86	MWD
6680.00	92.70	155.10	6365.27	-478.15	192.20	514.58	8.88	8.86	-0.45	MWD
6723.00	93.20	153.90	6363.06	-516.91	210.68	557.52	3.02	1.16	-2.79	MWD
6768.00	93.30	152.90	6360.51	-557.08	230.80	602.43	2.23	0.22	-2.22	MWD
6811.00	91.40	153.20	6358.74	-595.38	250.27	645.36	4.47	-4.42	0.70	MWD
6855.00	90.80	154.30	6357.90	-634.83	269.73	689.34	2.85	-1.36	2.50	MWD
6898.00	90.90	156.90	6357.26	-673.98	287.49	732.33	6.05	0.23	6.05	MWD
6941.00	90.90	157.40	6356.58	-713.60	304.18	775.30	1.16	0.00	1.16	MWD
6985.00	90.90	156.60	6355.89	-754.10	321.37	819.26	1.82	0.00	-1.82	MWD
7028.00	89.80	154.80	6355.63	-793.29	339.07	862.26	4.91	-2.56	-4.19	MWD
7115.00	88.60	154.20	6356.85	-871.80	376.52	949.24	1.54	-1.38	-0.69	MWD
7202.00	88.40	153.60	6359.12	-949.90	414.78	1036.20	0.73	-0.23	-0.69	MWD
7289.00	90.90	153.90	6359.65	-1027.92	453.25	1123.17	2.89	2.87	0.34	MWD
7376.00	90.60	152.80	6358.52	-1105.67	492.27	1210.12	1.31	-0.34	-1.26	MWD
7462.00	88.40	149.20	6359.27	-1180.87	533.96	1295.89	4.91	-2.56	-4.19	MWD
7549.00	90.10	153.10	6360.41	-1257.05	575.92	1382.67	4.89	1.95	4.48	MWD
7593.00	90.70	154.40	6360.10	-1296.51	595.38	1426.65	3.25	1.36	2.95	MWD
7636.00	91.10	154.40	6359.42	-1335.28	613.96	1469.65	0.93	0.93	0.00	MWD
7722.00	92.70	156.40	6356.57	-1413.43	649.74	1555.59	2.98	1.86	2.33	MWD
7809.00	92.50	156.30	6352.62	-1493.04	684.60	1642.48	0.26	-0.23	-0.11	MWD
7896.00	87.60	158.00	6352.55	-1573.18	718.37	1729.39	5.96	-5.63	1.95	MWD
7982.00	87.00	158.90	6356.60	-1653.08	749.93	1815.13	1.26	-0.70	1.05	MWD
8069.00	87.10	158.90	6361.08	-1734.14	781.20	1901.82	0.11	0.11	0.00	MWD
8156.00	87.10	158.70	6365.48	-1815.15	812.63	1988.51	0.23	0.00	-0.23	MWD
8243.00	86.80	155.80	6370.11	-1895.26	846.22	2075.31	3.35	-0.34	-3.33	MWD
8330.00	87.90	153.90	6374.13	-1973.92	883.15	2162.22	2.52	1.26	-2.18	MWD
8417.00	89.80	153.50	6375.88	-2051.90	921.69	2249.17	2.23	2.18	-0.46	MWD
8503.00	89.50	152.90	6376.40	-2128.66	960.46	2335.13	0.78	-0.35	-0.70	MWD
8590.00	90.40	153.20	6376.48	-2206.21	999.89	2422.08	1.09	1.03	0.34	MWD
8677.00	89.60	152.90	6376.48	-2283.76	1039.32	2509.03	0.98	-0.92	-0.34	MWD
8763.00	89.60	152.40	6377.08	-2360.14	1078.83	2594.95	0.58	0.00	-0.58	MWD
8850.00	89.00	152.60	6378.14	-2437.31	1119.00	2681.86	0.73	-0.69	0.23	MWD
8937.00	90.60	152.30	6378.45	-2514.44	1159.24	2768.77	1.87	1.84	-0.34	MWD
9024.00	90.30	152.40	6377.76	-2591.50	1199.61	2855.68	0.36	-0.34	0.11	MWD
9110.00	91.40	154.40	6376.49	-2668.39	1238.11	2941.63	2.65	1.28	2.33	MWD
9197.00	91.60	156.10	6374.21	-2747.36	1274.52	3028.59	1.97	0.23	1.95	MWD
9284.00	91.40	157.10	6371.93	-2827.18	1309.06	3115.53	1.17	-0.23	1.15	MWD

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Company: CHESAPEAKE ENERGY CORPORATION	Date: 10/25/2011	Time: 09:56:56	Page: 3
Field: Ohio County, WV	Co-ordinate(NE) Reference: Well: 8H, Grid North		
Site: Mason Cottrell Pad	Vertical (TVD) Reference: 1300'GL+16'KB 1316.0		
Well: 8H	Section (VS) Reference: Well (0.00N,0.00E,155.00Azi)		
Wellpath: Lateral	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
9371.00	91.10	156.70	6370.03	-2907.19	1343.18	3202.46	0.57	-0.34	-0.46	MWD
9458.00	90.20	154.60	6369.05	-2986.44	1379.05	3289.44	2.63	-1.03	-2.41	MWD
9545.00	88.20	151.40	6370.26	-3063.93	1418.54	3376.36	4.34	-2.30	-3.68	MWD
9632.00	87.20	153.00	6373.75	-3140.82	1459.08	3463.19	2.17	-1.15	1.84	MWD
9718.00	88.40	154.80	6377.06	-3217.99	1496.88	3549.10	2.51	1.40	2.09	MWD
9805.00	91.20	157.40	6377.36	-3297.52	1532.12	3636.07	4.39	3.22	2.99	MWD
9892.00	91.50	157.70	6375.31	-3377.90	1565.34	3722.96	0.49	0.34	0.34	MWD
9979.00	89.80	156.40	6374.32	-3458.01	1599.26	3809.89	2.46	-1.95	-1.49	MWD
10065.00	90.70	157.70	6373.95	-3537.20	1632.79	3895.83	1.84	1.05	1.51	MWD
10152.00	88.60	157.90	6374.48	-3617.74	1665.66	3982.72	2.42	-2.41	0.23	MWD
10239.00	89.10	159.70	6376.22	-3698.83	1697.11	4069.51	2.15	0.57	2.07	MWD
10326.00	89.50	158.10	6377.29	-3779.99	1728.43	4156.30	1.90	0.46	-1.84	MWD
10413.00	89.40	155.20	6378.12	-3859.85	1762.91	4243.25	3.34	-0.11	-3.33	MWD
10500.00	89.50	154.60	6378.96	-3938.63	1799.81	4330.25	0.70	0.11	-0.69	MWD
10586.00	88.70	153.00	6380.31	-4015.79	1837.77	4416.21	2.08	-0.93	-1.86	MWD
10673.00	89.10	152.70	6381.98	-4093.18	1877.46	4503.14	0.57	0.46	-0.34	MWD
10760.00	89.80	152.70	6382.81	-4170.49	1917.37	4590.06	0.80	0.80	0.00	MWD
10847.00	89.80	153.10	6383.12	-4247.94	1957.00	4677.00	0.46	0.00	0.46	MWD
10934.00	89.60	153.80	6383.57	-4325.76	1995.88	4763.97	0.84	-0.23	0.80	MWD
11021.00	89.80	155.00	6384.03	-4404.22	2033.47	4850.96	1.40	0.23	1.38	MWD
11107.00	90.00	155.70	6384.18	-4482.38	2069.34	4936.96	0.85	0.23	0.81	MWD
11194.00	90.00	156.60	6384.18	-4561.95	2104.52	5023.94	1.03	0.00	1.03	MWD
11281.00	89.90	156.60	6384.25	-4641.80	2139.07	5110.91	0.11	-0.11	0.00	MWD
11367.00	89.50	157.10	6384.71	-4720.87	2172.88	5196.86	0.74	-0.47	0.58	MWD
11453.00	88.60	154.60	6386.13	-4799.33	2208.06	5282.83	3.09	-1.05	-2.91	MWD
11540.00	88.70	153.90	6388.18	-4877.66	2245.84	5369.80	0.81	0.11	-0.80	MWD
11627.00	88.40	153.30	6390.38	-4955.57	2284.51	5456.74	0.77	-0.34	-0.69	MWD
11714.00	88.10	153.10	6393.04	-5033.18	2323.72	5543.66	0.41	-0.34	-0.23	MWD
11800.00	87.60	154.40	6396.27	-5110.26	2361.73	5629.58	1.62	-0.58	1.51	MWD
11887.00	88.50	152.60	6399.23	-5188.07	2400.53	5716.49	2.31	1.03	-2.07	MWD
11974.00	88.70	152.90	6401.35	-5265.39	2440.35	5803.40	0.41	0.23	0.34	MWD
12061.00	90.30	153.30	6402.11	-5342.97	2479.71	5890.35	1.90	1.84	0.46	MWD
12148.00	91.00	153.10	6401.12	-5420.62	2518.93	5977.30	0.84	0.80	-0.23	MWD
12234.00	90.40	153.10	6400.07	-5497.31	2557.84	6063.24	0.70	-0.70	0.00	MWD
12321.00	90.20	152.60	6399.62	-5574.72	2597.54	6150.18	0.62	-0.23	-0.57	MWD
12408.00	89.50	152.00	6399.85	-5651.75	2637.98	6237.08	1.06	-0.80	-0.69	MWD
12494.00	89.70	151.70	6400.45	-5727.57	2678.55	6322.95	0.42	0.23	-0.35	MWD
12581.00	89.20	153.00	6401.28	-5804.63	2718.92	6409.85	1.60	-0.57	1.49	MWD
12668.00	88.90	152.30	6402.72	-5881.90	2758.89	6496.77	0.88	-0.34	-0.80	MWD
12755.00	88.60	153.40	6404.62	-5959.29	2798.58	6583.68	1.31	-0.34	1.26	MWD
12842.00	89.50	155.50	6406.06	-6037.77	2836.09	6670.66	2.63	1.03	2.41	MWD
12928.00	89.60	155.30	6406.74	-6115.96	2871.89	6756.66	0.26	0.12	-0.23	MWD
13015.00	89.20	155.00	6407.65	-6194.90	2908.45	6843.65	0.57	-0.46	-0.34	MWD
13102.00	90.90	155.20	6407.58	-6273.81	2945.08	6930.65	1.97	1.95	0.23	MWD
13189.00	90.50	155.20	6406.51	-6352.78	2981.57	7017.64	0.46	-0.46	0.00	MWD
13275.00	90.30	155.00	6405.91	-6430.78	3017.78	7103.64	0.33	-0.23	-0.23	MWD
13362.00	90.20	154.30	6405.53	-6509.41	3055.02	7190.63	0.81	-0.11	-0.80	MWD
13449.00	89.80	155.00	6405.53	-6588.03	3092.27	7277.63	0.93	-0.46	0.80	MWD
13536.00	90.50	155.10	6405.30	-6666.91	3128.97	7364.63	0.81	0.80	0.11	MWD
13596.00	90.30	155.50	6404.89	-6721.42	3154.04	7424.63	0.75	-0.33	0.67	MWD
13650.00	90.10	155.70	6404.70	-6770.59	3176.35	7478.62	0.52	-0.37	0.37	PROJECTED to TD

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Field: Ohio County, WV	Co-ordinate(NE) Reference: Well: 8H, Grid North		
Site: Mason Cottrell Pad	Vertical (TVD) Reference: 1300'GL+16'KB 1316.0		
Well: 8H	Section (VS) Reference: Well (0.00N,0.00E,155.00Azi)		
Wellpath: Lateral	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Targets

Name	Description		TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude --->			<--- Longitude --->				
	Dip.	Dir.						Deg	Min	Sec	Deg	Min	Sec		
Surface			0.00	0.00	0.00	575919.40	1687176.20	40	4	33.065	N	80	37	4.249	W
BHL			6404.70	-6770.59	3176.35	569148.81	1690352.55	40	3	26.547	N	80	36	22.319	W

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	9/26/2012
State:	WEST VIRGINIA
County:	OHIO
API Number:	4706900083
Operator Name:	CHESAPEAKE APPALACHIA LLC
Well Name and Number:	MASON COTRELL OH 8H
Longitude:	-80.617847
Latitude:	40.075851
Long/Lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	6,405
Total Water Volume (gal):	5,509,812

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
Fresh Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	75.02131%	
Recycled Produced Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	11.17011%	
EC6486A	NALCO	Scale Inhibitor	Ethylene Glycol	000107-21-1	30.00%	0.00159%	
EC6110A	NALCO	Anti-Bacterial Agent	Ethanol	000064-17-5	5.00%	0.00139%	
			Glutaraldehyde	000111-30-8	60.00%	0.01665%	
			Quaternary Ammonium Compounds	NA	10.00%	0.00277%	
Northern White Sand	SCHLUMBERGER	Proppant - Natural	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	8.84268%	
100 Mesh Sand	SCHLUMBERGER	Proppant - Natural	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	3.80167%	
Acid, Hydrochloric 15pct	SCHLUMBERGER	Acid	Hydrogen Chloride	007647-01-0	15.00%	0.15531%	
J580	SCHLUMBERGER	Gelling Agent	Water	007732-18-5	85.00%	0.88008%	
J609	SCHLUMBERGER	Friction Reducer	Carbohydrate polymer	NA	100.00%	0.03578%	
			Aliphatic amine polymer	NA	30.00%	0.01678%	

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			Ammonium Sulfate	007783-20-2	30.00%	0.01678%	
J218	SCHLUMBERGER	Breaker	Ammonium Persulfate	007727-54-0	100.00%	0.00179%	
L058	SCHLUMBERGER	Iron Control Agent	Sodium Erythorbate	006381-77-7	100.00%	0.00066%	
A264	SCHLUMBERGER	Corrosion Inhibitor	Aliphatic acid	NA	30.00%	0.00050%	
			Aliphatic alcohols, ethoxylated # 1	NA	30.00%	0.00050%	
			Methanol (Methyl Alcohol)	000067-56-1	40.00%	0.00066%	
			Propargyl Alcohol (2-Propynol)	000107-19-7	10.00%	0.00017%	

* 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%

"Additional Ingredients Not Listed on MSDS" component information were obtained directly from the supplier. As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of this information should be directed to the supplier who provided it.

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