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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

December 14, 2011

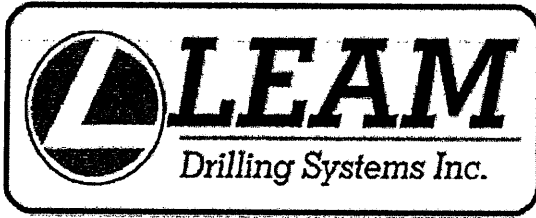
Chesapeake Operating
Well: OE Burge 10H
County/Parish: Marshall County, WV

Leam MWD: from 1,212' MD – 13,950' MD
Projection: 14,000' MD

This Borehole Survey taken between 10/14/2011 and 11/6/2011, has been conducted and calculated according to the highest professional standards and complies with all known State and federal requirements.

Reviewed and Approved:

Date: December 14, 2011



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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Survey Certification Form

State of West Virginia
County of Marshall County

I, Zi Pan, certify that; I am employed by LEAM Drilling Systems, Inc., that I did on the day(s) of 10/14/2011 through 11/6/2011 conduct or supervise the taking of MWD Survey from a depth of 1,212' to 14,000'MD; that the data is true, correct, complete and within the limitations of the tools as set forth by LEAM Drilling Systems, Inc., that I am authorized and qualified to make this report; that this survey was conducted at the request of Chesapeake Operating for the OE Burge 10H in Marshall County, West Virginia; and that I reviewed this report and find that it conforms to the principals and procedures as set forth by LEAM Drilling Systems, Inc.

A handwritten signature in black ink, appearing to be 'Zi Pan', is written above a solid horizontal line.

Zi Pan
MWD Operator

MAY 9 2012

LEAM Drilling Systems, Inc.

Survey Report

 WV GEOLOGICAL SURVEY
 MORGANTOWN WV

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:27	Page: 1
Field: Marshall County , WV	Co-ordinate(NE) Reference: Well: 10H, Grid North		
Site: OE Burge	Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0		
Well: 10H	Section (VS) Reference: Well (0.00N,0.00E,125.38Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Field: Marshall County , WV

Map System: US State Plane Coordinate System 1927
Geo Datum: NAD27 (Clarke 1866)
Sys Datum: Mean Sea Level

Map Zone: West Virginia, Northern Zone
Coordinate System: Well Centre
Geomagnetic Model: IGRF2010

Site: OE Burge
 Site centered on 10H SHL

Site Position:	Northing: 457555.49 ft	Latitude: 39 45 2.682 N
From: Map	Easting: 1681760.44 ft	Longitude: 80 37 54.728 W
Position Uncertainty: 0.00 ft		North Reference: Grid
Ground Level: 1355.00 ft		Grid Convergence: -0.72 deg

Well: 10H

Slot Name:

Well Position:	+N-S 0.00 ft	Northing: 457555.49 ft	Latitude: 39 45 2.682 N
	+E/-W 0.00 ft	Easting: 1681760.44 ft	Longitude: 80 37 54.728 W
Position Uncertainty: 0.00 ft			

Wellpath: OH

Current Datum: GL 1355'+KB 19'	Height 1374.00 ft	Drilled From: Surface
Magnetic Data: 10/5/2011		Tie-on Depth: 0.00 ft
Field Strength: 52849 nT		Above System Datum: Mean Sea Level
Vertical Section: Depth From (TVD)	+N-S	Declination: -8.58 deg
ft	ft	Mag Dip Angle: 67.41 deg
		+E/-W
		ft
		Direction
		deg
0.00	0.00	0.00
		125.38

Survey Program for Definitive Wellpath

Date: 11/8/2011	Validated: No	Version: 0
Actual From	To	Survey
ft	ft	
235.00	1187.00	Survey #1 (235.00-1187.00)
1187.00	13950.00	Survey #2 (1187.00-13950.00)
13950.00	14000.00	Survey #3 (13950.00-14000.00)
		Toolcode
		Tool Name
		Gyroscope
		Std MWD
		Projection

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
235.00	0.13	332.28	235.00	0.24	-0.12	-0.24	0.06	0.06	0.00	Gyroscope
400.00	0.35	7.54	400.00	0.90	-0.14	-0.64	0.15	0.13	21.37	Gyroscope
550.00	0.37	84.21	550.00	1.40	0.40	-0.49	0.30	0.01	51.11	Gyroscope
769.00	0.57	125.80	768.99	0.84	1.98	1.13	0.17	0.09	18.99	Gyroscope
900.00	0.45	82.66	899.98	0.52	3.02	2.16	0.30	-0.09	-32.93	Gyroscope
1050.00	0.31	151.54	1049.98	0.24	3.80	2.96	0.30	-0.09	45.92	Gyroscope
1187.00	0.25	123.52	1186.98	-0.25	4.23	3.59	0.11	-0.04	-20.45	Gyroscope
1212.00	0.40	103.10	1211.98	-0.30	4.36	3.73	0.75	0.60	-81.68	MWD
1255.00	0.40	117.50	1254.98	-0.40	4.64	4.01	0.23	0.00	33.49	MWD
1297.00	0.90	82.10	1296.98	-0.42	5.09	4.40	1.47	1.19	-84.29	MWD
1340.00	1.20	64.20	1339.97	-0.18	5.83	4.86	1.03	0.70	-41.63	MWD
1383.00	2.10	44.70	1382.95	0.57	6.79	5.21	2.44	2.09	-45.35	MWD
1425.00	2.40	42.70	1424.92	1.77	7.93	5.44	0.74	0.71	-4.76	MWD
1468.00	3.00	42.60	1467.87	3.26	9.30	5.70	1.40	1.40	-0.23	MWD
1511.00	4.00	50.20	1510.79	5.04	11.22	6.22	2.56	2.33	17.67	MWD
1553.00	4.30	46.60	1552.68	7.06	13.49	6.90	0.95	0.71	-8.57	MWD
1596.00	4.00	39.50	1595.57	9.33	15.61	7.33	1.38	-0.70	-16.51	MWD
1639.00	4.10	33.50	1638.46	11.77	17.41	7.38	1.01	0.23	-13.95	MWD
1681.00	4.40	32.90	1680.34	14.37	19.12	7.26	0.72	0.71	-1.43	MWD
1724.00	4.40	29.40	1723.22	17.20	20.82	7.02	0.62	0.00	-8.14	MWD

LEAM Drilling Systems, Inc.

Survey Report

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MORGANTOWN, WV

Company: CHESAPEAKE OPERATING Field: Marshall County, WV Site: OE Burge Well: 10H Wellpath: OH	Date: 12/14/2011 Time: 13:52:27 Co-ordinate(NE) Reference: Well: 10H, Grid North Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0 Section (VS) Reference: Well (0.00N,0.00E,125.38Azi) Survey Calculation Method: Minimum Curvature Db: Adapti
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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
1766.00	4.00	25.70	1765.11	19.92	22.25	6.61	1.15	-0.95	-8.81	MWD
1809.00	3.70	26.30	1808.01	22.51	23.51	6.14	0.70	-0.70	1.40	MWD
1852.00	3.40	31.80	1850.93	24.84	24.80	5.84	1.05	-0.70	12.79	MWD
1895.00	3.20	33.10	1893.85	26.93	26.13	5.71	0.50	-0.47	3.02	MWD
1937.00	2.90	30.30	1935.79	28.83	27.30	5.57	0.80	-0.71	-6.67	MWD
1980.00	2.60	29.80	1978.75	30.62	28.34	5.38	0.70	-0.70	-1.16	MWD
2022.00	2.80	35.30	2020.70	32.28	29.40	5.28	0.78	0.48	13.10	MWD
2065.00	2.90	34.50	2063.65	34.03	30.63	5.27	0.25	0.23	-1.86	MWD
2108.00	2.70	35.70	2106.59	35.75	31.83	5.25	0.48	-0.47	2.79	MWD
2150.00	2.70	32.70	2148.55	37.39	32.95	5.21	0.34	0.00	-7.14	MWD
2193.00	2.80	33.50	2191.50	39.12	34.07	5.13	0.25	0.23	1.86	MWD
2235.00	2.80	40.80	2233.45	40.75	35.31	5.20	0.85	0.00	17.38	MWD
2278.00	2.90	38.00	2276.39	42.40	36.66	5.34	0.40	0.23	-6.51	MWD
2321.00	2.80	37.60	2319.34	44.09	37.98	5.43	0.24	-0.23	-0.93	MWD
2364.00	2.50	34.80	2362.30	45.69	39.15	5.47	0.76	-0.70	-6.51	MWD
2406.00	2.70	40.60	2404.25	47.19	40.32	5.55	0.79	0.48	13.81	MWD
2449.00	2.70	33.60	2447.20	48.81	41.54	5.61	0.77	0.00	-16.28	MWD
2491.00	2.30	33.20	2489.16	50.34	42.55	5.54	0.95	-0.95	-0.95	MWD
2534.00	2.10	35.40	2532.13	51.70	43.48	5.51	0.50	-0.47	5.12	MWD
2576.00	1.80	47.60	2574.11	52.77	44.41	5.65	1.22	-0.71	29.05	MWD
2641.00	1.90	45.10	2639.08	54.22	45.93	6.05	0.20	0.15	-3.85	MWD
2684.00	2.90	44.30	2682.04	55.50	47.19	6.34	2.33	2.33	-1.86	MWD
2726.00	4.30	32.90	2723.95	57.59	48.79	6.44	3.73	3.33	-27.14	MWD
2769.00	6.70	20.20	2766.75	61.29	50.53	5.71	6.23	5.58	-29.53	MWD
2811.00	6.90	16.80	2808.46	66.01	52.10	4.26	1.07	0.48	-8.10	MWD
2854.00	7.00	16.00	2851.14	71.00	53.57	2.57	0.32	0.23	-1.86	MWD
2896.00	6.80	14.10	2892.84	75.87	54.88	0.82	0.72	-0.48	-4.52	MWD
2940.00	6.90	12.10	2936.52	80.98	56.07	-1.17	0.59	0.23	-4.55	MWD
2983.00	7.60	13.20	2979.18	86.28	57.26	-3.26	1.66	1.63	2.56	MWD
3026.00	8.50	17.00	3021.76	92.08	58.84	-5.34	2.43	2.09	8.84	MWD
3068.00	9.10	18.60	3063.26	98.20	60.81	-7.28	1.54	1.43	3.81	MWD
3111.00	9.10	16.50	3105.72	104.68	62.86	-9.36	0.77	0.00	-4.88	MWD
3154.00	9.90	16.80	3148.13	111.48	64.89	-11.64	1.86	1.86	0.70	MWD
3196.00	10.90	15.70	3189.44	118.76	67.01	-14.13	2.43	2.38	-2.62	MWD
3239.00	11.90	14.60	3231.59	126.97	69.23	-17.07	2.38	2.33	-2.56	MWD
3291.00	12.00	14.20	3282.46	137.40	71.91	-20.92	0.25	0.19	-0.77	MWD
3329.00	12.00	12.30	3319.63	145.08	73.72	-23.90	1.04	0.00	-5.00	MWD
3367.00	12.30	13.00	3356.78	152.89	75.47	-26.99	0.88	0.79	1.84	MWD
3409.00	13.00	13.50	3397.76	161.84	77.58	-30.45	1.69	1.67	1.19	MWD
3452.00	12.70	13.10	3439.69	171.15	79.78	-34.05	0.73	-0.70	-0.93	MWD
3494.00	12.20	12.60	3480.70	179.97	81.79	-37.52	1.22	-1.19	-1.19	MWD
3537.00	12.70	14.20	3522.69	188.99	83.94	-40.98	1.41	1.16	3.72	MWD
3580.00	13.10	15.50	3564.60	198.27	86.41	-44.35	1.15	0.93	3.02	MWD
3622.00	12.50	15.30	3605.56	207.24	88.88	-47.53	1.43	-1.43	-0.48	MWD
3665.00	11.70	14.60	3647.60	215.95	91.20	-50.67	1.89	-1.86	-1.63	MWD
3707.00	13.70	15.30	3688.57	224.87	93.59	-53.89	4.78	4.76	1.67	MWD
3750.00	12.40	15.00	3730.46	234.24	96.13	-57.25	3.03	-3.02	-0.70	MWD
3793.00	12.20	15.60	3772.47	243.07	98.55	-60.39	0.55	-0.47	1.40	MWD
3835.00	12.40	14.60	3813.51	251.71	100.88	-63.49	0.70	0.48	-2.38	MWD
3878.00	14.00	15.10	3855.37	261.20	103.40	-66.93	3.73	3.72	1.16	MWD
3921.00	13.60	15.00	3897.13	271.11	106.06	-70.50	0.93	-0.93	-0.23	MWD
3964.00	13.20	13.90	3938.96	280.76	108.55	-74.06	1.10	-0.93	-2.56	MWD
4006.00	13.80	12.60	3979.80	290.30	110.79	-77.75	1.60	1.43	-3.10	MWD
4049.00	13.50	11.30	4021.59	300.23	112.89	-81.79	1.00	-0.70	-3.02	MWD

MAY 9 2012

LEAM Drilling Systems, Inc.

Survey Report

 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV
 Page: 3

Company: CHESAPEAKE OPERATING Field: Marshall County , WV Site: OE Burge Well: 10H Wellpath: OH	Date: 12/14/2011 Time: 13:52:27 Co-ordinate(NE) Reference: Well: 10H, Grid North Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0 Section (VS) Reference: Well (0.00N,0.00E,125.38Azi) Survey Calculation Method: Minimum Curvature Db: Adapti
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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
4091.00	12.90	11.20	4062.48	309.63	114.76	-85.71	1.43	-1.43	-0.24	MWD
4134.00	12.70	12.70	4104.41	318.95	116.74	-89.49	0.90	-0.47	3.49	MWD
4177.00	12.40	11.80	4146.38	328.08	118.72	-93.16	0.83	-0.70	-2.09	MWD
4219.00	12.80	13.70	4187.37	337.02	120.74	-96.69	1.37	0.95	4.52	MWD
4262.00	12.40	12.40	4229.33	346.15	122.86	-100.25	1.14	-0.93	-3.02	MWD
4305.00	14.70	8.70	4271.13	356.06	124.68	-104.50	5.71	5.35	-8.60	MWD
4347.00	13.40	8.80	4311.88	366.14	126.23	-109.07	3.10	-3.10	0.24	MWD
4390.00	12.50	11.50	4353.78	375.62	127.92	-113.19	2.52	-2.09	6.28	MWD
4433.00	11.50	11.80	4395.84	384.38	129.73	-116.78	2.33	-2.33	0.70	MWD
4475.00	12.00	12.50	4436.96	392.74	131.53	-120.16	1.24	1.19	1.67	MWD
4518.00	12.20	11.70	4479.01	401.55	133.42	-123.72	0.61	0.47	-1.86	MWD
4561.00	11.70	12.30	4521.08	410.26	135.27	-127.25	1.20	-1.16	1.40	MWD
4603.00	12.00	13.40	4562.18	418.67	137.18	-130.56	0.89	0.71	2.62	MWD
4646.00	12.30	12.70	4604.22	427.48	139.23	-134.00	0.78	0.70	-1.63	MWD
4688.00	12.70	12.20	4645.22	436.36	141.19	-137.54	0.99	0.95	-1.19	MWD
4731.00	12.40	11.50	4687.19	445.50	143.11	-141.27	0.78	-0.70	-1.63	MWD
4774.00	13.40	12.20	4729.11	454.90	145.08	-145.10	2.35	2.33	1.63	MWD
4816.00	14.20	11.30	4769.90	464.71	147.12	-149.12	1.97	1.90	-2.14	MWD
4859.00	14.20	10.90	4811.58	475.06	149.15	-153.45	0.23	0.00	-0.93	MWD
4901.00	13.50	9.20	4852.36	484.96	150.91	-157.75	1.93	-1.67	-4.05	MWD
4944.00	12.70	9.20	4894.24	494.58	152.46	-162.05	1.86	-1.86	0.00	MWD
4987.00	12.70	8.30	4936.19	503.92	153.90	-166.29	0.46	0.00	-2.09	MWD
5030.00	13.20	13.40	4978.10	513.37	155.72	-170.28	2.90	1.16	11.86	MWD
5072.00	13.00	13.80	5019.00	522.63	157.96	-173.81	0.52	-0.48	0.95	MWD
5115.00	12.50	13.90	5060.94	531.84	160.23	-177.29	1.16	-1.16	0.23	MWD
5157.00	12.00	14.10	5101.99	540.49	162.39	-180.54	1.19	-1.19	0.48	MWD
5200.00	13.00	14.70	5143.97	549.50	164.70	-183.87	2.35	2.33	1.40	MWD
5242.00	13.10	14.10	5184.88	558.69	167.06	-187.27	0.40	0.24	-1.43	MWD
5285.00	12.70	12.90	5226.80	568.02	169.30	-190.84	1.12	-0.93	-2.79	MWD
5328.00	12.40	11.70	5268.77	577.15	171.30	-194.50	0.92	-0.70	-2.79	MWD
5370.00	13.10	13.70	5309.73	586.19	173.34	-198.07	1.97	1.67	4.76	MWD
5413.00	13.70	14.40	5351.56	595.86	175.76	-201.70	1.45	1.40	1.63	MWD
5455.00	14.20	14.60	5392.32	605.66	178.29	-205.31	1.20	1.19	0.48	MWD
5498.00	14.30	13.50	5434.00	615.93	180.86	-209.16	0.67	0.23	-2.56	MWD
5541.00	14.10	13.20	5475.69	626.19	183.30	-213.11	0.50	-0.47	-0.70	MWD
5585.00	14.00	12.30	5518.37	636.61	185.66	-217.22	0.55	-0.23	-2.05	MWD
5627.00	13.80	11.80	5559.14	646.47	187.76	-221.22	0.56	-0.48	-1.19	MWD
5670.00	14.00	10.90	5600.88	656.60	189.80	-225.42	0.68	0.47	-2.09	MWD
5712.00	13.80	10.50	5641.65	666.52	191.67	-229.64	0.53	-0.48	-0.95	MWD
5755.00	14.00	13.60	5683.39	676.61	193.83	-233.72	1.79	0.47	7.21	MWD
5798.00	14.00	17.50	5725.12	686.63	196.61	-237.25	2.19	0.00	9.07	MWD
5840.00	13.80	17.40	5765.89	696.25	199.64	-240.36	0.48	-0.48	-0.24	MWD
5883.00	13.50	16.00	5807.67	705.97	202.56	-243.61	1.04	-0.70	-3.26	MWD
5925.00	13.40	14.60	5848.52	715.40	205.13	-246.96	0.81	-0.24	-3.33	MWD
5968.00	13.10	13.90	5890.38	724.95	207.56	-250.51	0.79	-0.70	-1.63	MWD
6011.00	12.90	13.80	5932.27	734.34	209.88	-254.06	0.47	-0.47	-0.23	MWD
6053.00	13.10	12.80	5973.20	743.53	212.05	-257.61	0.72	0.48	-2.38	MWD
6096.00	13.40	13.00	6015.05	753.14	214.25	-261.38	0.71	0.70	0.47	MWD
6138.00	13.50	11.90	6055.90	762.68	216.36	-265.19	0.65	0.24	-2.62	MWD
6181.00	13.60	11.40	6097.70	772.55	218.39	-269.24	0.36	0.23	-1.16	MWD
6223.00	13.70	10.60	6138.52	782.28	220.28	-273.33	0.51	0.24	-1.90	MWD
6266.00	13.70	14.50	6180.30	792.21	222.49	-277.28	2.15	0.00	9.07	MWD
6309.00	13.80	13.90	6222.06	802.12	225.00	-280.98	0.41	0.23	-1.40	MWD

MAY 9 2012

LEAM Drilling Systems, Inc.

Survey Report

 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV
 Page 2

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:27
Field: Marshall County, WV	Co-ordinate(NE) Reference:	Well: 10H, Grid North
Site: OE Burge	Vertical (TVD) Reference:	GL: 1355'+KB 19' 1374.0
Well: 10H	Section (VS) Reference:	Well (0.00N,0.00E,125.38Azi)
Wellpath: OH	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
6351.00	13.80	13.40	6262.85	811.85	227.36	-284.68	0.28	0.00	-1.19	MWD
6394.00	14.00	12.80	6304.59	821.91	229.70	-288.60	0.57	0.47	-1.40	MWD
6437.00	14.40	12.20	6346.28	832.21	231.99	-292.70	0.99	0.93	-1.40	MWD
6479.00	14.70	10.80	6386.93	842.55	234.09	-296.98	1.10	0.71	-3.33	MWD
6522.00	15.00	9.90	6428.50	853.39	236.07	-301.64	0.88	0.70	-2.09	MWD
6564.00	15.20	9.20	6469.05	864.18	237.88	-306.41	0.64	0.48	-1.67	MWD
6610.00	15.70	7.80	6513.38	876.30	239.69	-311.95	1.36	1.09	-3.04	MWD
6653.00	17.50	17.80	6554.60	888.23	242.46	-316.60	7.84	4.19	23.26	MWD
6695.00	19.40	29.70	6594.45	900.30	247.85	-319.19	10.02	4.52	28.33	MWD
6738.00	21.20	40.70	6634.79	912.41	256.46	-319.18	9.79	4.19	25.58	MWD
6781.00	23.00	51.30	6674.65	923.56	268.09	-316.15	10.16	4.19	24.65	MWD
6823.00	23.10	63.70	6713.32	932.34	281.89	-309.99	11.54	0.24	29.52	MWD
6866.00	24.00	79.20	6752.78	937.72	298.06	-299.92	14.51	2.09	36.05	MWD
6909.00	26.10	91.30	6791.75	939.15	316.12	-286.02	12.85	4.88	28.14	MWD
6951.00	29.70	97.10	6828.87	937.65	335.69	-269.20	10.73	8.57	13.81	MWD
6994.00	33.00	101.60	6865.60	933.98	357.74	-249.10	9.41	7.67	10.47	MWD
7036.00	34.30	108.00	6900.57	928.02	380.21	-227.33	8.99	3.10	15.24	MWD
7079.00	40.10	113.10	6934.81	918.83	404.49	-202.21	15.27	13.49	11.86	MWD
7122.00	46.10	116.70	6966.20	906.43	431.10	-173.33	15.08	13.95	8.37	MWD
7164.00	50.60	120.90	6994.11	891.28	458.56	-142.17	13.06	10.71	10.00	MWD
7207.00	53.90	125.70	7020.44	872.60	486.94	-108.21	11.69	7.67	11.16	MWD
7251.00	58.30	125.40	7044.98	851.38	516.65	-71.70	10.02	10.00	-0.68	MWD
7293.00	64.50	127.30	7065.07	829.52	546.32	-34.85	15.29	14.76	4.52	MWD
7336.00	70.00	129.50	7081.70	804.89	577.38	4.73	13.63	12.79	5.12	MWD
7379.00	72.60	134.00	7095.49	777.77	607.74	45.19	11.61	6.05	10.47	MWD
7421.00	79.10	136.00	7105.75	748.98	636.52	85.32	16.15	15.48	4.76	MWD
7441.00	82.70	135.80	7108.92	734.80	650.26	104.73	18.03	18.00	-1.00	MWD
7475.00	88.20	134.10	7111.61	710.87	674.24	138.14	16.93	16.18	-5.00	MWD
7518.00	87.70	133.50	7113.15	681.12	705.25	180.65	1.82	-1.16	-1.40	MWD
7560.00	87.30	133.40	7114.98	652.27	735.71	222.19	0.98	-0.95	-0.24	MWD
7602.00	87.90	133.60	7116.74	623.38	766.15	263.73	1.51	1.43	0.48	MWD
7645.00	89.20	131.90	7117.83	594.20	797.72	306.36	4.98	3.02	-3.95	MWD
7688.00	90.00	132.10	7118.13	565.43	829.67	349.07	1.92	1.86	0.47	MWD
7730.00	90.00	131.50	7118.13	537.44	860.98	390.81	1.43	0.00	-1.43	MWD
7773.00	90.50	130.80	7117.94	509.14	893.36	433.59	2.00	1.16	-1.63	MWD
7816.00	90.10	129.80	7117.72	481.33	926.15	476.43	2.50	-0.93	-2.33	MWD
7858.00	90.80	128.30	7117.39	454.87	958.77	518.34	3.94	1.67	-3.57	MWD
7901.00	91.10	127.20	7116.67	428.55	992.76	561.30	2.65	0.70	-2.56	MWD
7943.00	90.00	126.50	7116.27	403.36	1026.37	603.28	3.10	-2.62	-1.67	MWD
7986.00	89.60	126.30	7116.42	377.85	1060.98	646.28	1.04	-0.93	-0.47	MWD
8028.00	90.40	125.40	7116.42	353.25	1095.02	688.27	2.87	1.90	-2.14	MWD
8071.00	90.80	124.40	7115.97	328.65	1130.29	731.27	2.50	0.93	-2.33	MWD
8114.00	91.50	123.50	7115.11	304.64	1165.95	774.25	2.65	1.63	-2.09	MWD
8156.00	92.50	122.90	7113.64	281.66	1201.07	816.19	2.78	2.38	-1.43	MWD
8199.00	92.60	123.00	7111.73	258.29	1237.12	859.11	0.33	0.23	0.23	MWD
8241.00	92.20	122.70	7109.97	235.53	1272.37	901.03	1.19	-0.95	-0.71	MWD
8284.00	91.80	122.20	7108.47	212.47	1308.63	943.95	1.49	-0.93	-1.16	MWD
8327.00	91.70	122.50	7107.16	189.47	1344.94	986.87	0.74	-0.23	0.70	MWD
8369.00	91.30	122.40	7106.06	166.95	1380.37	1028.80	0.98	-0.95	-0.24	MWD
8412.00	91.20	122.40	7105.12	143.91	1416.67	1071.73	0.23	-0.23	0.00	MWD
8454.00	90.90	122.60	7104.35	121.35	1452.09	1113.67	0.86	-0.71	0.48	MWD
8497.00	90.40	123.40	7103.86	97.93	1488.15	1156.63	2.19	-1.16	1.86	MWD
8539.00	90.20	123.70	7103.64	74.72	1523.15	1198.61	0.86	-0.48	0.71	MWD

LEAM Drilling Systems, Inc.

Survey Report

MAY 9 2012

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Company: CHESAPEAKE OPERATING Field: Marshall County , WV Site: OE Burge Well: 10H Wellpath: OH	Date: 12/14/2011 Time: 13:52:27 Page: 5 Co-ordinate(NE) Reference: Well: 10H, Grid North Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0 Section (VS) Reference: Well (0.00N,0.00E,125.38Azi) Survey Calculation Method: Minimum Curvature Db: Adapti
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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
8582.00	90.00	123.80	7103.57	50.83	1558.90	1241.59	0.52	-0.47	0.23	MWD
8625.00	89.50	124.20	7103.75	26.78	1594.55	1284.58	1.49	-1.16	0.93	MWD
8667.00	89.50	124.00	7104.12	3.24	1629.33	1326.56	0.48	0.00	-0.48	MWD
8710.00	89.00	123.70	7104.68	-20.71	1665.04	1369.54	1.36	-1.16	-0.70	MWD
8752.00	88.30	123.50	7105.67	-43.95	1700.01	1411.51	1.73	-1.67	-0.48	MWD
8795.00	88.00	124.50	7107.06	-67.98	1735.64	1454.48	2.43	-0.70	2.33	MWD
8837.00	88.40	123.50	7108.38	-91.45	1770.44	1496.44	2.56	0.95	-2.38	MWD
8880.00	88.60	123.60	7109.51	-115.21	1806.26	1539.41	0.52	0.47	0.23	MWD
8922.00	89.80	124.10	7110.09	-138.60	1841.14	1581.39	3.10	2.86	1.19	MWD
8965.00	91.20	125.20	7109.72	-163.05	1876.51	1624.38	4.14	3.26	2.56	MWD
9007.00	91.80	125.50	7108.62	-187.34	1910.76	1666.37	1.60	1.43	0.71	MWD
9050.00	91.10	124.80	7107.53	-212.09	1945.90	1709.35	2.30	-1.63	-1.63	MWD
9092.00	89.80	124.10	7107.20	-235.84	1980.54	1751.34	3.52	-3.10	-1.67	MWD
9135.00	89.30	123.60	7107.54	-259.80	2016.25	1794.33	1.64	-1.16	-1.16	MWD
9177.00	90.20	124.10	7107.72	-283.19	2051.13	1836.31	2.45	2.14	1.19	MWD
9220.00	90.80	125.50	7107.35	-307.73	2086.43	1879.30	3.54	1.40	3.26	MWD
9262.00	90.90	125.90	7106.72	-332.23	2120.54	1921.30	0.98	0.24	0.95	MWD
9305.00	91.90	125.60	7105.67	-357.35	2155.42	1964.29	2.43	2.33	-0.70	MWD
9347.00	93.10	125.50	7103.84	-381.75	2189.56	2006.24	2.87	2.86	-0.24	MWD
9390.00	93.20	126.40	7101.48	-406.95	2224.32	2049.18	2.10	0.23	2.09	MWD
9432.00	92.90	125.80	7099.24	-431.66	2258.21	2091.11	1.60	-0.71	-1.43	MWD
9475.00	92.60	125.70	7097.18	-456.76	2293.06	2134.06	0.74	-0.70	-0.23	MWD
9518.00	92.30	125.50	7095.34	-481.76	2327.99	2177.02	0.84	-0.70	-0.47	MWD
9560.00	92.10	125.10	7093.73	-506.02	2362.25	2218.99	1.06	-0.48	-0.95	MWD
9603.00	91.70	124.50	7092.30	-530.54	2397.54	2261.97	1.68	-0.93	-1.40	MWD
9646.00	91.20	124.00	7091.21	-554.74	2433.07	2304.94	1.64	-1.16	-1.16	MWD
9688.00	91.10	123.40	7090.37	-578.04	2468.00	2346.92	1.45	-0.24	-1.43	MWD
9731.00	90.70	123.10	7089.70	-601.61	2503.96	2389.88	1.16	-0.93	-0.70	MWD
9773.00	90.60	122.90	7089.22	-624.48	2539.18	2431.84	0.53	-0.24	-0.48	MWD
9816.00	90.60	123.50	7088.77	-648.03	2575.16	2474.81	1.40	0.00	1.40	MWD
9859.00	90.30	123.50	7088.43	-671.76	2611.02	2517.78	0.70	-0.70	0.00	MWD
9901.00	90.30	123.50	7088.21	-694.94	2646.04	2559.76	0.00	0.00	0.00	MWD
9944.00	91.20	124.60	7087.65	-719.01	2681.66	2602.75	3.31	2.09	2.56	MWD
9987.00	91.00	124.60	7086.82	-743.43	2717.05	2645.73	0.47	-0.47	0.00	MWD
10029.00	91.00	124.20	7086.09	-767.15	2751.70	2687.72	0.95	0.00	-0.95	MWD
10072.00	90.80	123.70	7085.42	-791.16	2787.36	2730.70	1.25	-0.47	-1.16	MWD
10115.00	90.50	123.30	7084.93	-814.89	2823.22	2773.68	1.16	-0.70	-0.93	MWD
10157.00	90.80	124.20	7084.45	-838.23	2858.14	2815.66	2.26	0.71	2.14	MWD
10200.00	90.60	123.40	7083.93	-862.14	2893.87	2858.64	1.92	-0.47	-1.86	MWD
10243.00	91.90	123.80	7082.99	-885.93	2929.67	2901.60	3.16	3.02	0.93	MWD
10285.00	92.60	124.60	7081.34	-909.52	2964.38	2943.56	2.53	1.67	1.90	MWD
10328.00	92.40	123.90	7079.46	-933.70	2999.89	2986.51	1.69	-0.47	-1.63	MWD
10370.00	92.00	124.10	7077.85	-957.17	3034.69	3028.47	1.06	-0.95	0.48	MWD
10413.00	91.50	123.60	7076.54	-981.11	3070.38	3071.43	1.64	-1.16	-1.16	MWD
10456.00	91.40	122.40	7075.45	-1004.52	3106.43	3114.38	2.80	-0.23	-2.79	MWD
10498.00	91.20	122.90	7074.50	-1027.17	3141.79	3156.32	1.28	-0.48	1.19	MWD
10541.00	90.00	123.50	7074.05	-1050.72	3177.76	3199.29	3.12	-2.79	1.40	MWD
10583.00	89.90	123.80	7074.08	-1073.99	3212.73	3241.27	0.75	-0.24	0.71	MWD
10626.00	90.20	123.50	7074.05	-1097.82	3248.52	3284.25	0.99	0.70	-0.70	MWD
10669.00	90.20	123.60	7073.90	-1121.58	3284.36	3327.23	0.23	0.00	0.23	MWD
10711.00	89.10	124.90	7074.15	-1145.22	3319.07	3369.22	4.05	-2.62	3.10	MWD
10754.00	89.30	124.70	7074.75	-1169.76	3354.38	3412.21	0.66	0.47	-0.47	MWD
10797.00	89.70	125.50	7075.13	-1194.48	3389.56	3455.21	2.08	0.93	1.86	MWD
10840.00	89.60	125.80	7075.39	-1219.54	3424.50	3498.21	0.74	-0.23	0.70	MWD

MAY 9 2012

LEAM Drilling Systems, Inc.

Survey Report

 WV GEOLOGICAL SURVEY
 MORCANTOWN, WV
 Page: 6

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:27	
Field: Marshall County, WV	Co-ordinate(NE) Reference: Well: 10H, Grid North		
Site: OE Burge	Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0		
Well: 10H	Section (VS) Reference: Well (0.00N,0.00E,125.38Azi)		
Wellpath: OH	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
10882.00	89.90	125.40	7075.57	-1243.99	3458.65	3540.21	1.19	0.71	-0.95	MWD
10925.00	89.80	125.20	7075.69	-1268.84	3493.74	3583.21	0.52	-0.23	-0.47	MWD
10967.00	89.80	125.00	7075.83	-1292.99	3528.10	3625.20	0.48	0.00	-0.48	MWD
11010.00	90.10	124.50	7075.87	-1317.50	3563.43	3668.20	1.36	0.70	-1.16	MWD
11052.00	90.20	124.60	7075.76	-1341.32	3598.03	3710.20	0.34	0.24	0.24	MWD
11095.00	90.20	125.40	7075.61	-1365.98	3633.25	3753.20	1.86	0.00	1.86	MWD
11138.00	90.30	125.60	7075.42	-1390.95	3668.26	3796.20	0.52	0.23	0.47	MWD
11180.00	90.40	125.70	7075.17	-1415.43	3702.38	3838.19	0.34	0.24	0.24	MWD
11223.00	90.50	126.10	7074.83	-1440.64	3737.22	3881.19	0.96	0.23	0.93	MWD
11265.00	90.70	126.10	7074.39	-1465.39	3771.15	3923.19	0.48	0.48	0.00	MWD
11307.00	90.20	125.50	7074.06	-1489.96	3805.21	3965.18	1.86	-1.19	-1.43	MWD
11350.00	89.40	123.50	7074.21	-1514.31	3840.65	4008.17	5.01	-1.86	-4.65	MWD
11393.00	89.40	122.90	7074.66	-1537.85	3876.63	4051.14	1.40	0.00	-1.40	MWD
11435.00	89.50	122.70	7075.06	-1560.60	3911.93	4093.10	0.53	0.24	-0.48	MWD
11478.00	89.30	122.10	7075.51	-1583.64	3948.23	4136.04	1.47	-0.47	-1.40	MWD
11521.00	89.30	122.80	7076.04	-1606.71	3984.52	4178.98	1.63	0.00	1.63	MWD
11563.00	88.30	122.90	7076.92	-1629.49	4019.79	4220.93	2.39	-2.38	0.24	MWD
11606.00	88.60	123.00	7078.08	-1652.87	4055.86	4263.87	0.74	0.70	0.23	MWD
11649.00	88.70	122.80	7079.09	-1676.22	4091.95	4306.82	0.52	0.23	-0.47	MWD
11691.00	88.90	122.90	7079.97	-1699.00	4127.23	4348.77	0.53	0.48	0.24	MWD
11734.00	88.80	122.70	7080.84	-1722.29	4163.37	4391.72	0.52	-0.23	-0.47	MWD
11777.00	88.90	123.00	7081.70	-1745.61	4199.48	4434.67	0.74	0.23	0.70	MWD
11819.00	89.00	122.80	7082.47	-1768.42	4234.74	4476.62	0.53	0.24	-0.48	MWD
11862.00	89.00	122.60	7083.22	-1791.64	4270.92	4519.57	0.47	0.00	-0.47	MWD
11905.00	89.00	124.00	7083.97	-1815.25	4306.86	4562.53	3.26	0.00	3.26	MWD
11947.00	88.90	123.50	7084.74	-1838.58	4341.77	4604.51	1.21	-0.24	-1.19	MWD
11990.00	88.20	125.50	7085.83	-1862.92	4377.20	4647.48	4.93	-1.63	4.65	MWD
12033.00	88.60	125.70	7087.03	-1887.94	4412.14	4690.47	1.04	0.93	0.47	MWD
12075.00	88.40	125.90	7088.13	-1912.50	4446.20	4732.45	0.67	-0.48	0.48	MWD
12118.00	88.80	125.70	7089.18	-1937.65	4481.06	4775.44	1.04	0.93	-0.47	MWD
12160.00	89.00	126.60	7089.98	-1962.42	4514.97	4817.43	2.19	0.48	2.14	MWD
12203.00	89.30	126.40	7090.62	-1987.99	4549.53	4860.41	0.84	0.70	-0.47	MWD
12246.00	89.60	127.10	7091.04	-2013.72	4583.98	4903.40	1.77	0.70	1.63	MWD
12288.00	89.80	127.70	7091.26	-2039.23	4617.35	4945.37	1.51	0.48	1.43	MWD
12331.00	89.70	128.10	7091.44	-2065.64	4651.28	4988.33	0.96	-0.23	0.93	MWD
12374.00	89.40	127.90	7091.78	-2092.12	4685.16	5031.28	0.84	-0.70	-0.47	MWD
12416.00	89.60	127.50	7092.15	-2117.80	4718.39	5073.25	1.06	0.48	-0.95	MWD
12459.00	89.90	127.20	7092.33	-2143.89	4752.58	5116.22	0.99	0.70	-0.70	MWD
12501.00	89.90	126.90	7092.41	-2169.19	4786.10	5158.20	0.71	0.00	-0.71	MWD
12544.00	90.10	127.40	7092.41	-2195.16	4820.37	5201.18	1.25	0.47	1.16	MWD
12587.00	90.00	127.20	7092.37	-2221.22	4854.57	5244.16	0.52	-0.23	-0.47	MWD
12629.00	89.80	125.70	7092.44	-2246.17	4888.36	5286.15	3.60	-0.48	-3.57	MWD
12672.00	89.90	126.40	7092.56	-2271.48	4923.12	5329.15	1.64	0.23	1.63	MWD
12714.00	90.30	126.50	7092.48	-2296.43	4956.91	5371.14	0.98	0.95	0.24	MWD
12757.00	90.30	126.40	7092.26	-2321.98	4991.49	5414.13	0.23	0.00	-0.23	MWD
12800.00	90.30	126.10	7092.03	-2347.40	5026.17	5457.12	0.70	0.00	-0.70	MWD
12842.00	90.30	125.50	7091.81	-2371.97	5060.23	5499.12	1.43	0.00	-1.43	MWD
12885.00	90.00	125.70	7091.70	-2397.00	5095.20	5542.12	0.84	-0.70	0.47	MWD
12928.00	90.20	125.40	7091.63	-2422.00	5130.18	5585.12	0.84	0.47	-0.70	MWD
12970.00	89.70	124.70	7091.66	-2446.12	5164.57	5627.12	2.05	-1.19	-1.67	MWD
13013.00	89.80	124.40	7091.85	-2470.51	5199.98	5670.12	0.74	0.23	-0.70	MWD
13055.00	88.60	125.60	7092.44	-2494.59	5234.38	5712.11	4.04	-2.86	2.86	MWD
13098.00	88.80	125.90	7093.41	-2519.71	5269.27	5755.10	0.84	0.47	0.70	MWD

MAY 9 2012

LEAM Drilling Systems, Inc.

Survey Report

 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV
 Page:

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:27
Field: Marshall County, WV	Co-ordinate(NE) Reference: Well: 10H, Grid North	
Site: OE Burge	Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0	
Well: 10H	Section (VS) Reference: Well (0.00N,0.00E,125.38Azi)	
Wellpath: OH	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
13141.00	88.60	126.00	7094.39	-2544.95	5304.07	5798.08	0.52	-0.47	0.23	MWD
13183.00	88.80	125.90	7095.34	-2569.60	5338.06	5840.07	0.53	0.48	-0.24	MWD
13226.00	88.80	126.10	7096.24	-2594.87	5372.84	5883.06	0.47	0.00	0.47	MWD
13269.00	89.00	126.80	7097.07	-2620.41	5407.42	5926.04	1.69	0.47	1.63	MWD
13311.00	88.70	126.30	7097.91	-2645.42	5441.16	5968.03	1.39	-0.71	-1.19	MWD
13354.00	88.40	125.40	7099.00	-2670.59	5476.00	6011.01	2.21	-0.70	-2.09	MWD
13396.00	88.80	125.80	7100.02	-2695.03	5510.14	6053.00	1.35	0.95	0.95	MWD
13439.00	88.80	126.80	7100.92	-2720.48	5544.79	6095.98	2.33	0.00	2.33	MWD
13482.00	88.80	128.10	7101.82	-2746.63	5578.91	6138.94	3.02	0.00	3.02	MWD
13524.00	89.10	128.90	7102.59	-2772.77	5611.78	6180.87	2.03	0.71	1.90	MWD
13567.00	89.40	128.70	7103.16	-2799.71	5645.29	6223.79	0.84	0.70	-0.47	MWD
13609.00	88.60	127.00	7103.89	-2825.47	5678.44	6265.75	4.47	-1.90	-4.05	MWD
13652.00	87.50	125.50	7105.35	-2850.88	5713.10	6308.71	4.32	-2.56	-3.49	MWD
13695.00	86.70	121.40	7107.53	-2874.55	5748.92	6351.63	9.70	-1.86	-9.53	MWD
13737.00	86.80	121.30	7109.91	-2896.37	5784.73	6393.45	0.34	0.24	-0.24	MWD
13780.00	87.20	121.70	7112.16	-2918.80	5821.35	6436.30	1.31	0.93	0.93	MWD
13822.00	87.20	122.30	7114.21	-2941.03	5856.92	6478.17	1.43	0.00	1.43	MWD
13865.00	86.90	122.00	7116.43	-2963.89	5893.28	6521.05	0.99	-0.70	-0.70	MWD
13908.00	87.10	122.00	7118.68	-2986.64	5929.70	6563.91	0.47	0.47	0.00	MWD
13950.00	87.00	122.00	7120.84	-3008.87	5965.27	6605.79	0.24	-0.24	0.00	MWD
14000.00	87.00	122.00	7123.45	-3035.33	6007.61	6655.63	0.00	0.00	0.00	Project

LEAM Drilling Systems, Inc.

Survey Report - Geographic

MAY 9 2012

WV GEOLOGICAL SURVEY

MORGANTOWN, WV
Page: 1

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:44
Field: Marshall County , WV	Co-ordinate(NE) Reference: Well: 10H, Grid North	
Site: OE Burge	Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0	
Well: 10H	Section (VS) Reference: Well (0.00N,0.00E,125.38Azi)	
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Adapti

Field: Marshall County , WV

Map System: US State Plane Coordinate System 1927
Geo Datum: NAD27 (Clarke 1866)
Sys Datum: Mean Sea Level

Map Zone: West Virginia, Northern Zone
Coordinate System: Well Centre
Geomagnetic Model: IGRF2010

Site: OE Burge
 Site centered on 10H SHL

Site Position:	Northing: 457555.49 ft	Latitude: 39 45 2.682 N
From: Map	Easting: 1681760.44 ft	Longitude: 80 37 54.728 W
Position Uncertainty: 0.00 ft		North Reference: Grid
Ground Level: 1355.00 ft		Grid Convergence: -0.72 deg

Well: 10H

Slot Name:

Well Position:	+N/-S 0.00 ft	Northing: 457555.49 ft	Latitude: 39 45 2.682 N
	+E/-W 0.00 ft	Easting: 1681760.44 ft	Longitude: 80 37 54.728 W
Position Uncertainty:	0.00 ft		

Wellpath: OH

Current Datum: GL 1355'+KB 19'	Height 1374.00 ft	Drilled From: Surface	
Magnetic Data: 10/5/2011		Tie-on Depth: 0.00 ft	
Field Strength: 52849 nT		Above System Datum: Mean Sea Level	
Vertical Section:		Declination: -8.58 deg	
Depth From (TVD)	+N/-S	Mag Dip Angle: 67.41 deg	
ft	ft	+E/-W	
		ft	
		Direction	
		deg	
0.00	0.00	0.00	125.38

Survey Program for Definitive Wellpath

Date: 11/8/2011	Validated: No	Version: 0		
Actual From	To	Survey	Toolcode	Tool Name
ft	ft			
235.00	1187.00	Survey #1 (235.00-1187.00)	Gyroscope	Gyroscope
1187.00	13950.00	Survey #2 (1187.00-13950.00)	MWD	Std MWD
13950.00	14000.00	Survey #3 (13950.00-14000.00)	Project	Projection

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →	
								Deg	Min Sec	Deg	Min Sec
0.00	0.00	0.00	0.00	0.00	0.00	457555.49	1681760.44	39 45	2.682 N	80 37	54.728 W
235.00	0.13	332.28	235.00	0.24	-0.12	457555.73	1681760.32	39 45	2.684 N	80 37	54.730 W
400.00	0.35	7.54	400.00	0.90	-0.14	457556.39	1681760.30	39 45	2.691 N	80 37	54.730 W
550.00	0.37	84.21	550.00	1.40	0.40	457556.90	1681760.84	39 45	2.696 N	80 37	54.723 W
769.00	0.57	125.80	768.99	0.84	1.98	457556.33	1681762.43	39 45	2.690 N	80 37	54.703 W
900.00	0.45	82.66	899.98	0.52	3.02	457556.01	1681763.46	39 45	2.688 N	80 37	54.689 W
1050.00	0.31	151.54	1049.98	0.24	3.80	457555.73	1681764.24	39 45	2.685 N	80 37	54.679 W
1187.00	0.25	123.52	1186.98	-0.25	4.23	457555.24	1681764.67	39 45	2.680 N	80 37	54.674 W
1212.00	0.40	103.10	1211.98	-0.30	4.36	457555.19	1681764.80	39 45	2.680 N	80 37	54.672 W
1255.00	0.40	117.50	1254.98	-0.40	4.64	457555.09	1681765.08	39 45	2.679 N	80 37	54.669 W
1297.00	0.90	82.10	1296.98	-0.42	5.09	457555.07	1681765.53	39 45	2.678 N	80 37	54.663 W
1340.00	1.20	64.20	1339.97	-0.18	5.83	457555.31	1681766.27	39 45	2.681 N	80 37	54.653 W
1383.00	2.10	44.70	1382.95	0.57	6.79	457556.06	1681767.23	39 45	2.688 N	80 37	54.641 W
1425.00	2.40	42.70	1424.92	1.77	7.93	457557.26	1681768.37	39 45	2.700 N	80 37	54.627 W
1468.00	3.00	42.60	1467.87	3.26	9.30	457558.75	1681769.74	39 45	2.715 N	80 37	54.609 W
1511.00	4.00	50.20	1510.79	5.04	11.22	457560.54	1681771.66	39 45	2.733 N	80 37	54.585 W
1553.00	4.30	46.60	1552.68	7.06	13.49	457562.56	1681773.93	39 45	2.753 N	80 37	54.556 W
1596.00	4.00	39.50	1595.57	9.33	15.61	457564.82	1681776.05	39 45	2.776 N	80 37	54.530 W
1639.00	4.10	33.50	1638.46	11.77	17.41	457567.26	1681777.85	39 45	2.800 N	80 37	54.507 W
1681.00	4.40	32.90	1680.34	14.37	19.12	457569.86	1681779.56	39 45	2.826 N	80 37	54.486 W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:44	Page: 2
Field: Marshall County, WV	Co-ordinate(NE) Reference: Well: 10H, Grid North		
Site: OE Burge	Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0		
Well: 10H	Section (VS) Reference: Well (0.00N,0.00E,125.38Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →					
								Deg	Min	Sec	Deg	Min	Sec		
1724.00	4.40	29.40	1723.22	17.20	20.82	457572.69	1681781.26	39	45	2.854	N	80	37	54.464	W
1766.00	4.00	25.70	1765.11	19.92	22.25	457575.41	1681782.69	39	45	2.882	N	80	37	54.446	W
1809.00	3.70	26.30	1808.01	22.51	23.51	457578.01	1681783.96	39	45	2.907	N	80	37	54.431	W
1852.00	3.40	31.80	1850.93	24.84	24.80	457580.33	1681785.24	39	45	2.931	N	80	37	54.414	W
1895.00	3.20	33.10	1893.85	26.93	26.13	457582.42	1681786.57	39	45	2.951	N	80	37	54.398	W
1937.00	2.90	30.30	1935.79	28.83	27.30	457584.32	1681787.75	39	45	2.970	N	80	37	54.383	W
1980.00	2.60	29.80	1978.75	30.62	28.34	457586.11	1681788.78	39	45	2.988	N	80	37	54.370	W
2022.00	2.80	35.30	2020.70	32.28	29.40	457587.77	1681789.85	39	45	3.005	N	80	37	54.357	W
2065.00	2.90	34.50	2063.65	34.03	30.63	457589.52	1681791.07	39	45	3.022	N	80	37	54.341	W
2108.00	2.70	35.70	2106.59	35.75	31.83	457591.24	1681792.28	39	45	3.039	N	80	37	54.326	W
2150.00	2.70	32.70	2148.55	37.39	32.95	457592.88	1681793.39	39	45	3.056	N	80	37	54.312	W
2193.00	2.80	33.50	2191.50	39.12	34.07	457594.61	1681794.51	39	45	3.073	N	80	37	54.298	W
2235.00	2.80	40.80	2233.45	40.75	35.31	457596.24	1681795.75	39	45	3.089	N	80	37	54.283	W
2278.00	2.90	38.00	2276.39	42.40	36.66	457597.89	1681797.11	39	45	3.106	N	80	37	54.265	W
2321.00	2.80	37.60	2319.34	44.09	37.98	457599.58	1681798.42	39	45	3.122	N	80	37	54.249	W
2364.00	2.50	34.80	2362.30	45.69	39.15	457601.18	1681799.59	39	45	3.138	N	80	37	54.234	W
2406.00	2.70	40.60	2404.25	47.19	40.32	457602.69	1681800.76	39	45	3.153	N	80	37	54.219	W
2449.00	2.70	33.60	2447.20	48.81	41.54	457604.30	1681801.98	39	45	3.169	N	80	37	54.204	W
2491.00	2.30	33.20	2489.16	50.34	42.55	457605.83	1681802.99	39	45	3.185	N	80	37	54.191	W
2534.00	2.10	35.40	2532.13	51.70	43.48	457607.19	1681803.92	39	45	3.198	N	80	37	54.180	W
2576.00	1.80	47.60	2574.11	52.77	44.41	457608.26	1681804.85	39	45	3.209	N	80	37	54.168	W
2641.00	1.90	45.10	2639.08	54.22	45.93	457609.71	1681806.37	39	45	3.224	N	80	37	54.149	W
2684.00	2.90	44.30	2682.04	55.50	47.19	457610.99	1681807.63	39	45	3.236	N	80	37	54.133	W
2726.00	4.30	32.90	2723.95	57.59	48.79	457613.08	1681809.23	39	45	3.257	N	80	37	54.113	W
2769.00	6.70	20.20	2766.75	61.29	50.53	457616.79	1681810.97	39	45	3.294	N	80	37	54.091	W
2811.00	6.90	16.80	2808.46	66.01	52.10	457621.50	1681812.55	39	45	3.341	N	80	37	54.072	W
2854.00	7.00	16.00	2851.14	71.00	53.57	457626.49	1681814.02	39	45	3.390	N	80	37	54.054	W
2896.00	6.80	14.10	2892.84	75.87	54.88	457631.36	1681815.33	39	45	3.439	N	80	37	54.038	W
2940.00	6.90	12.10	2936.52	80.98	56.07	457636.47	1681816.51	39	45	3.489	N	80	37	54.023	W
2983.00	7.60	13.20	2979.18	86.28	57.26	457641.77	1681817.71	39	45	3.542	N	80	37	54.009	W
3026.00	8.50	17.00	3021.76	92.08	58.84	457647.58	1681819.28	39	45	3.599	N	80	37	53.990	W
3068.00	9.10	18.60	3063.26	98.20	60.81	457653.69	1681821.25	39	45	3.660	N	80	37	53.965	W
3111.00	9.10	16.50	3105.72	104.68	62.86	457660.17	1681823.30	39	45	3.724	N	80	37	53.940	W
3154.00	9.90	16.80	3148.13	111.48	64.89	457666.97	1681825.34	39	45	3.792	N	80	37	53.915	W
3196.00	10.90	15.70	3189.44	118.76	67.01	457674.25	1681827.45	39	45	3.864	N	80	37	53.889	W
3239.00	11.90	14.60	3231.59	126.97	69.23	457682.46	1681829.67	39	45	3.945	N	80	37	53.862	W
3291.00	12.00	14.20	3282.46	137.40	71.91	457692.89	1681832.35	39	45	4.049	N	80	37	53.830	W
3329.00	12.00	12.30	3319.63	145.08	73.72	457700.58	1681834.16	39	45	4.125	N	80	37	53.808	W
3367.00	12.30	13.00	3356.78	152.89	75.47	457708.38	1681835.91	39	45	4.202	N	80	37	53.786	W
3409.00	13.00	13.50	3397.76	161.84	77.58	457717.33	1681838.02	39	45	4.291	N	80	37	53.761	W
3452.00	12.70	13.10	3439.69	171.15	79.78	457726.64	1681840.22	39	45	4.383	N	80	37	53.734	W
3494.00	12.20	12.60	3480.70	179.97	81.79	457735.47	1681842.24	39	45	4.471	N	80	37	53.710	W
3537.00	12.70	14.20	3522.69	188.99	83.94	457744.48	1681844.39	39	45	4.560	N	80	37	53.684	W
3580.00	13.10	15.50	3564.60	198.27	86.41	457753.76	1681846.85	39	45	4.652	N	80	37	53.654	W
3622.00	12.50	15.30	3605.56	207.24	88.88	457762.73	1681849.32	39	45	4.741	N	80	37	53.624	W
3665.00	11.70	14.60	3647.60	215.95	91.20	457771.44	1681851.65	39	45	4.827	N	80	37	53.595	W
3707.00	13.70	15.30	3688.57	224.87	93.59	457780.36	1681854.03	39	45	4.916	N	80	37	53.566	W
3750.00	12.40	15.00	3730.46	234.24	96.13	457789.73	1681856.57	39	45	5.009	N	80	37	53.535	W
3793.00	12.20	15.60	3772.47	243.07	98.55	457798.57	1681858.99	39	45	5.096	N	80	37	53.506	W
3835.00	12.40	14.60	3813.51	251.71	100.88	457807.20	1681861.32	39	45	5.182	N	80	37	53.477	W
3878.00	14.00	15.10	3855.37	261.20	103.40	457816.69	1681863.84	39	45	5.276	N	80	37	53.446	W
3921.00	13.60	15.00	3897.13	271.11	106.06	457826.60	1681866.50	39	45	5.374	N	80	37	53.414	W
3964.00	13.20	13.90	3938.96	280.76	108.55	457836.25	1681868.99	39	45	5.470	N	80	37	53.384	W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

MAY 9 2012

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:44	Page: 3
Field: Marshall County, WV	Co-ordinate(NE) Reference:	Well: 10H, Grid North	
Site: OE Burge	Vertical (TVD) Reference:	GL 1355'+KB 19' 1374.0	
Well: 10H	Section (VS) Reference:	Well (0.00N,0.00E,125.38Azi)	
Wellpath: OH	Survey Calculation Method:	Minimum Curvature	Db: Adapti

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →					
								Deg	Min	Sec	Deg	Min	Sec		
4006.00	13.80	12.60	3979.80	290.30	110.79	457845.79	1681871.23	39	45	5.565	N	80	37	53.356	W
4049.00	13.50	11.30	4021.59	300.23	112.89	457855.72	1681873.34	39	45	5.663	N	80	37	53.331	W
4091.00	12.90	11.20	4062.48	309.63	114.76	457865.12	1681875.21	39	45	5.756	N	80	37	53.309	W
4134.00	12.70	12.70	4104.41	318.95	116.74	457874.44	1681877.18	39	45	5.849	N	80	37	53.285	W
4177.00	12.40	11.80	4146.38	328.08	118.72	457883.57	1681879.16	39	45	5.939	N	80	37	53.261	W
4219.00	12.80	13.70	4187.37	337.02	120.74	457892.51	1681881.19	39	45	6.028	N	80	37	53.237	W
4262.00	12.40	12.40	4229.33	346.15	122.86	457901.65	1681883.30	39	45	6.118	N	80	37	53.211	W
4305.00	14.70	8.70	4271.13	356.06	124.68	457911.55	1681885.12	39	45	6.216	N	80	37	53.189	W
4347.00	13.40	8.80	4311.88	366.14	126.23	457921.63	1681886.67	39	45	6.316	N	80	37	53.171	W
4390.00	12.50	11.50	4353.78	375.62	127.92	457931.11	1681888.36	39	45	6.410	N	80	37	53.151	W
4433.00	11.50	11.80	4395.84	384.38	129.73	457939.87	1681890.17	39	45	6.497	N	80	37	53.129	W
4475.00	12.00	12.50	4436.96	392.74	131.53	457948.23	1681891.97	39	45	6.580	N	80	37	53.107	W
4518.00	12.20	11.70	4479.01	401.55	133.42	457957.04	1681893.86	39	45	6.667	N	80	37	53.085	W
4561.00	11.70	12.30	4521.08	410.26	135.27	457965.75	1681895.71	39	45	6.753	N	80	37	53.062	W
4603.00	12.00	13.40	4562.18	418.67	137.18	457974.16	1681897.63	39	45	6.837	N	80	37	53.039	W
4646.00	12.30	12.70	4604.22	427.48	139.23	457982.98	1681899.67	39	45	6.924	N	80	37	53.014	W
4688.00	12.70	12.20	4645.22	436.36	141.19	457991.85	1681901.63	39	45	7.012	N	80	37	52.991	W
4731.00	12.40	11.50	4687.19	445.50	143.11	458001.00	1681903.55	39	45	7.103	N	80	37	52.968	W
4774.00	13.40	12.20	4729.11	454.90	145.08	458010.39	1681905.52	39	45	7.196	N	80	37	52.944	W
4816.00	14.20	11.30	4769.90	464.71	147.12	458020.20	1681907.56	39	45	7.293	N	80	37	52.919	W
4859.00	14.20	10.90	4811.58	475.06	149.15	458030.55	1681909.59	39	45	7.395	N	80	37	52.895	W
4901.00	13.50	9.20	4852.36	484.96	150.91	458040.45	1681911.35	39	45	7.493	N	80	37	52.874	W
4944.00	12.70	9.20	4894.24	494.58	152.46	458050.07	1681912.91	39	45	7.589	N	80	37	52.856	W
4987.00	12.70	8.30	4936.19	503.92	153.90	458059.41	1681914.34	39	45	7.681	N	80	37	52.839	W
5030.00	13.20	13.40	4978.10	513.37	155.72	458068.86	1681916.16	39	45	7.775	N	80	37	52.817	W
5072.00	13.00	13.80	5019.00	522.63	157.96	458078.12	1681918.40	39	45	7.867	N	80	37	52.790	W
5115.00	12.50	13.90	5060.94	531.84	160.23	458087.33	1681920.67	39	45	7.958	N	80	37	52.762	W
5157.00	12.00	14.10	5101.99	540.49	162.39	458095.98	1681922.83	39	45	8.044	N	80	37	52.738	W
5200.00	13.00	14.70	5143.97	549.50	164.70	458104.99	1681925.15	39	45	8.133	N	80	37	52.706	W
5242.00	13.10	14.10	5184.88	558.69	167.06	458114.18	1681927.50	39	45	8.224	N	80	37	52.679	W
5285.00	12.70	12.90	5226.80	568.02	169.30	458123.51	1681929.75	39	45	8.317	N	80	37	52.652	W
5328.00	12.40	11.70	5268.77	577.15	171.30	458132.64	1681931.74	39	45	8.407	N	80	37	52.628	W
5370.00	13.10	13.70	5309.73	586.19	173.34	458141.68	1681933.78	39	45	8.497	N	80	37	52.603	W
5413.00	13.70	14.40	5351.56	595.86	175.76	458151.35	1681936.20	39	45	8.593	N	80	37	52.574	W
5455.00	14.20	14.60	5392.32	605.66	178.29	458161.15	1681938.74	39	45	8.690	N	80	37	52.543	W
5498.00	14.30	13.50	5434.00	615.93	180.86	458171.42	1681941.30	39	45	8.791	N	80	37	52.512	W
5541.00	14.10	13.20	5475.69	626.19	183.30	458181.68	1681943.74	39	45	8.893	N	80	37	52.482	W
5585.00	14.00	12.30	5518.37	636.61	185.66	458192.10	1681946.10	39	45	8.996	N	80	37	52.454	W
5627.00	13.80	11.80	5559.14	646.47	187.76	458201.96	1681948.20	39	45	9.094	N	80	37	52.428	W
5670.00	14.00	10.90	5600.88	656.60	189.80	458212.09	1681950.24	39	45	9.195	N	80	37	52.404	W
5712.00	13.80	10.50	5641.65	666.52	191.67	458222.01	1681952.11	39	45	9.293	N	80	37	52.382	W
5755.00	14.00	13.60	5683.39	676.61	193.83	458232.10	1681954.27	39	45	9.393	N	80	37	52.356	W
5798.00	14.00	17.50	5725.12	686.63	196.61	458242.12	1681957.06	39	45	9.492	N	80	37	52.322	W
5840.00	13.80	17.40	5765.89	696.25	199.64	458251.75	1681960.08	39	45	9.588	N	80	37	52.284	W
5883.00	13.50	16.00	5807.67	705.97	202.56	458261.46	1681963.00	39	45	9.684	N	80	37	52.249	W
5925.00	13.40	14.60	5848.52	715.40	205.13	458270.89	1681965.58	39	45	9.778	N	80	37	52.217	W
5968.00	13.10	13.90	5890.38	724.95	207.56	458280.44	1681968.00	39	45	9.872	N	80	37	52.188	W
6011.00	12.90	13.80	5932.27	734.34	209.88	458289.83	1681970.32	39	45	9.965	N	80	37	52.159	W
6053.00	13.10	12.80	5973.20	743.53	212.05	458299.02	1681972.49	39	45	10.056	N	80	37	52.133	W
6096.00	13.40	13.00	6015.05	753.14	214.25	458308.63	1681974.69	39	45	10.152	N	80	37	52.106	W
6138.00	13.50	11.90	6055.90	762.68	216.36	458318.17	1681976.80	39	45	10.246	N	80	37	52.081	W
6181.00	13.60	11.40	6097.70	772.55	218.39	458328.04	1681978.83	39	45	10.344	N	80	37	52.057	W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

051-01323

MAY 9 2012

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:44	Page: 5
Field: Marshall County, WV	Co-ordinate(NE) Reference: Well: 10H, Grid North		
Site: OE Burge	Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0		
Well: 10H	Section (VS) Reference: Well (0.00N,0.00E,125.38Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →	
								Deg	Min Sec	Deg	Min Sec
8454.00	90.90	122.60	7104.35	121.35	1452.09	457676.84	1683212.53	39 45	4.062 N	80 37	36.157 W
8497.00	90.40	123.40	7103.86	97.93	1488.15	457653.42	1683248.59	39 45	3.835 N	80 37	35.692 W
8539.00	90.20	123.70	7103.64	74.72	1523.15	457630.21	1683283.59	39 45	3.610 N	80 37	35.240 W
8582.00	90.00	123.80	7103.57	50.83	1558.90	457606.32	1683319.34	39 45	3.378 N	80 37	34.778 W
8625.00	89.50	124.20	7103.75	26.78	1594.55	457582.28	1683354.99	39 45	3.145 N	80 37	34.318 W
8667.00	89.50	124.00	7104.12	3.24	1629.33	457558.73	1683389.77	39 45	2.916 N	80 37	33.869 W
8710.00	89.00	123.70	7104.68	-20.71	1665.04	457534.78	1683425.48	39 45	2.684 N	80 37	33.408 W
8752.00	88.30	123.50	7105.67	-43.95	1700.01	457511.54	1683460.45	39 45	2.459 N	80 37	32.956 W
8795.00	88.00	124.50	7107.06	-67.98	1735.64	457487.51	1683496.08	39 45	2.226 N	80 37	32.496 W
8837.00	88.40	123.50	7108.38	-91.45	1770.44	457464.04	1683530.88	39 45	1.998 N	80 37	32.047 W
8880.00	88.60	123.60	7109.51	-115.21	1806.26	457440.28	1683566.71	39 45	1.768 N	80 37	31.585 W
8922.00	89.80	124.10	7110.09	-138.60	1841.14	457416.89	1683601.58	39 45	1.541 N	80 37	31.134 W
8965.00	91.20	125.20	7109.72	-163.05	1876.51	457392.44	1683636.95	39 45	1.304 N	80 37	30.678 W
9007.00	91.80	125.50	7108.62	-187.34	1910.76	457368.15	1683671.20	39 45	1.068 N	80 37	30.235 W
9050.00	91.10	124.80	7107.53	-212.09	1945.90	457343.40	1683706.34	39 45	0.828 N	80 37	29.781 W
9092.00	89.80	124.10	7107.20	-235.84	1980.54	457319.65	1683740.98	39 45	0.597 N	80 37	29.334 W
9135.00	89.30	123.60	7107.54	-259.80	2016.25	457295.70	1683776.69	39 45	0.365 N	80 37	28.873 W
9177.00	90.20	124.10	7107.72	-283.19	2051.13	457272.30	1683811.57	39 45	0.138 N	80 37	28.423 W
9220.00	90.80	125.50	7107.35	-307.73	2086.43	457247.76	1683846.87	39 44	59.900 N	80 37	27.967 W
9262.00	90.90	125.90	7106.72	-332.23	2120.54	457223.26	1683880.98	39 44	59.662 N	80 37	27.526 W
9305.00	91.90	125.60	7105.67	-357.35	2155.42	457198.14	1683915.86	39 44	59.418 N	80 37	27.076 W
9347.00	93.10	125.50	7103.84	-381.75	2189.56	457173.75	1683950.00	39 44	59.181 N	80 37	26.635 W
9390.00	93.20	126.40	7101.48	-406.95	2224.32	457148.54	1683984.76	39 44	58.936 N	80 37	26.186 W
9432.00	92.90	125.80	7099.24	-431.66	2258.21	457123.83	1684018.65	39 44	58.696 N	80 37	25.748 W
9475.00	92.60	125.70	7097.18	-456.76	2293.06	457098.73	1684053.50	39 44	58.452 N	80 37	25.298 W
9518.00	92.30	125.50	7095.34	-481.76	2327.99	457073.73	1684088.44	39 44	58.210 N	80 37	24.846 W
9560.00	92.10	125.10	7093.73	-506.02	2362.25	457049.47	1684122.69	39 44	57.974 N	80 37	24.404 W
9603.00	91.70	124.50	7092.30	-530.54	2397.54	457024.95	1684157.98	39 44	57.736 N	80 37	23.948 W
9646.00	91.20	124.00	7091.21	-554.74	2433.07	457000.75	1684193.51	39 44	57.501 N	80 37	23.490 W
9688.00	91.10	123.40	7090.37	-578.04	2468.00	456977.46	1684228.44	39 44	57.276 N	80 37	23.039 W
9731.00	90.70	123.10	7089.70	-601.61	2503.96	456953.88	1684264.40	39 44	57.047 N	80 37	22.574 W
9773.00	90.60	122.90	7089.22	-624.48	2539.18	456931.01	1684299.62	39 44	56.825 N	80 37	22.120 W
9816.00	90.60	123.50	7088.77	-648.03	2575.16	456907.47	1684335.60	39 44	56.597 N	80 37	21.656 W
9859.00	90.30	123.50	7088.43	-671.76	2611.02	456883.73	1684371.46	39 44	56.367 N	80 37	21.193 W
9901.00	90.30	123.50	7088.21	-694.94	2646.04	456860.55	1684406.48	39 44	56.142 N	80 37	20.741 W
9944.00	91.20	124.60	7087.65	-719.01	2681.66	456836.48	1684442.10	39 44	55.909 N	80 37	20.281 W
9987.00	91.00	124.60	7086.82	-743.43	2717.05	456812.07	1684477.49	39 44	55.672 N	80 37	19.824 W
10029.00	91.00	124.20	7086.09	-767.15	2751.70	456788.34	1684512.14	39 44	55.442 N	80 37	19.376 W
10072.00	90.80	123.70	7085.42	-791.16	2787.36	456764.33	1684547.81	39 44	55.209 N	80 37	18.916 W
10115.00	90.50	123.30	7084.93	-814.89	2823.22	456740.60	1684583.66	39 44	54.979 N	80 37	18.453 W
10157.00	90.80	124.20	7084.45	-838.23	2858.14	456717.27	1684618.58	39 44	54.752 N	80 37	18.002 W
10200.00	90.60	123.40	7083.93	-862.14	2893.87	456693.35	1684654.31	39 44	54.520 N	80 37	17.541 W
10243.00	91.90	123.80	7082.99	-885.93	2929.67	456669.56	1684690.12	39 44	54.290 N	80 37	17.079 W
10285.00	92.60	124.60	7081.34	-909.52	2964.38	456645.97	1684724.83	39 44	54.061 N	80 37	16.631 W
10328.00	92.40	123.90	7079.46	-933.70	2999.89	456621.79	1684760.34	39 44	53.826 N	80 37	16.172 W
10370.00	92.00	124.10	7077.85	-957.17	3034.69	456598.32	1684795.13	39 44	53.599 N	80 37	15.723 W
10413.00	91.50	123.60	7076.54	-981.11	3070.38	456574.38	1684830.82	39 44	53.366 N	80 37	15.262 W
10456.00	91.40	122.40	7075.45	-1004.52	3106.43	456550.97	1684866.87	39 44	53.139 N	80 37	14.797 W
10498.00	91.20	122.90	7074.50	-1027.17	3141.79	456528.32	1684902.23	39 44	52.920 N	80 37	14.341 W
10541.00	90.00	123.50	7074.05	-1050.72	3177.76	456504.77	1684938.21	39 44	52.692 N	80 37	13.876 W
10583.00	89.90	123.80	7074.08	-1073.99	3212.73	456481.50	1684973.17	39 44	52.466 N	80 37	13.425 W
10626.00	90.20	123.50	7074.05	-1097.82	3248.52	456457.67	1685008.96	39 44	52.235 N	80 37	12.963 W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV

Company: CHESAPEAKE OPERATING	Date: 12/14/2011	Time: 13:52:44	Page: 6
Field: Marshall County, WV	Co-ordinate(NE) Reference:	Well: 10H, Grid North	
Site: OE Burge	Vertical (TVD) Reference:	GL 1355'+KB 19' 1374.0	
Well: 10H	Section (VS) Reference:	Well (0.00N,0.00E,125.38Azi)	
Wellpath: OH	Survey Calculation Method:	Minimum Curvature	Db: Adapti

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →	
								Deg	Min Sec	Deg	Min Sec
10669.00	90.20	123.60	7073.90	-1121.58	3284.36	456433.91	1685044.80	39 44	52.005 N	80 37	12.501 W
10711.00	89.10	124.90	7074.15	-1145.22	3319.07	456410.27	1685079.51	39 44	51.775 N	80 37	12.052 W
10754.00	89.30	124.70	7074.75	-1169.76	3354.38	456385.73	1685114.82	39 44	51.537 N	80 37	11.596 W
10797.00	89.70	125.50	7075.13	-1194.48	3389.56	456361.01	1685150.00	39 44	51.297 N	80 37	11.142 W
10840.00	89.60	125.80	7075.39	-1219.54	3424.50	456335.95	1685184.94	39 44	51.054 N	80 37	10.691 W
10882.00	89.90	125.40	7075.57	-1243.99	3458.65	456311.50	1685219.09	39 44	50.816 N	80 37	10.250 W
10925.00	89.80	125.20	7075.69	-1268.84	3493.74	456286.65	1685254.18	39 44	50.575 N	80 37	9.796 W
10967.00	89.80	125.00	7075.83	-1292.99	3528.10	456262.50	1685288.55	39 44	50.341 N	80 37	9.353 W
11010.00	90.10	124.50	7075.87	-1317.50	3563.43	456237.99	1685323.88	39 44	50.103 N	80 37	8.897 W
11052.00	90.20	124.60	7075.76	-1341.32	3598.03	456214.17	1685358.47	39 44	49.872 N	80 37	8.450 W
11095.00	90.20	125.40	7075.61	-1365.98	3633.25	456189.51	1685393.69	39 44	49.632 N	80 37	7.995 W
11138.00	90.30	125.60	7075.42	-1390.95	3668.26	456164.54	1685428.70	39 44	49.390 N	80 37	7.543 W
11180.00	90.40	125.70	7075.17	-1415.43	3702.38	456140.06	1685462.83	39 44	49.152 N	80 37	7.102 W
11223.00	90.50	126.10	7074.83	-1440.64	3737.22	456114.85	1685497.66	39 44	48.907 N	80 37	6.652 W
11265.00	90.70	126.10	7074.39	-1465.39	3771.15	456090.10	1685531.59	39 44	48.667 N	80 37	6.214 W
11307.00	90.20	125.50	7074.06	-1489.96	3805.21	456065.54	1685565.65	39 44	48.428 N	80 37	5.774 W
11350.00	89.40	123.50	7074.21	-1514.31	3840.65	456041.18	1685601.09	39 44	48.192 N	80 37	5.316 W
11393.00	89.40	122.90	7074.66	-1537.85	3876.63	456017.64	1685637.07	39 44	47.964 N	80 37	4.852 W
11435.00	89.50	122.70	7075.06	-1560.60	3911.93	455994.89	1685672.37	39 44	47.743 N	80 37	4.396 W
11478.00	89.30	122.10	7075.51	-1583.64	3948.23	455971.85	1685708.67	39 44	47.520 N	80 37	3.928 W
11521.00	89.30	122.80	7076.04	-1606.71	3984.52	455948.78	1685744.96	39 44	47.296 N	80 37	3.460 W
11563.00	88.30	122.90	7076.92	-1629.49	4019.79	455926.00	1685780.23	39 44	47.075 N	80 37	3.005 W
11606.00	88.60	123.00	7078.08	-1652.87	4055.86	455902.62	1685816.30	39 44	46.849 N	80 37	2.539 W
11649.00	88.70	122.80	7079.09	-1676.22	4091.95	455879.27	1685852.40	39 44	46.623 N	80 37	2.073 W
11691.00	88.90	122.90	7079.97	-1699.00	4127.23	455856.49	1685887.67	39 44	46.402 N	80 37	1.618 W
11734.00	88.80	122.70	7080.84	-1722.29	4163.37	455833.21	1685923.81	39 44	46.176 N	80 37	1.152 W
11777.00	88.90	123.00	7081.70	-1745.61	4199.48	455809.88	1685959.93	39 44	45.950 N	80 37	0.686 W
11819.00	89.00	122.80	7082.47	-1768.42	4234.74	455787.08	1685995.18	39 44	45.729 N	80 37	0.231 W
11862.00	89.00	122.60	7083.22	-1791.64	4270.92	455763.85	1686031.36	39 44	45.504 N	80 36	59.764 W
11905.00	89.00	124.00	7083.97	-1815.25	4306.86	455740.24	1686067.30	39 44	45.275 N	80 36	59.300 W
11947.00	88.90	123.50	7084.74	-1838.58	4341.77	455716.91	1686102.21	39 44	45.049 N	80 36	58.849 W
11990.00	88.20	125.50	7085.83	-1862.92	4377.20	455692.57	1686137.64	39 44	44.812 N	80 36	58.392 W
12033.00	88.60	125.70	7087.03	-1887.94	4412.14	455667.55	1686172.59	39 44	44.569 N	80 36	57.941 W
12075.00	88.40	125.90	7088.13	-1912.50	4446.20	455642.99	1686206.64	39 44	44.331 N	80 36	57.501 W
12118.00	88.80	125.70	7089.18	-1937.65	4481.06	455617.84	1686241.50	39 44	44.087 N	80 36	57.050 W
12160.00	89.00	126.60	7089.98	-1962.42	4514.97	455593.07	1686275.41	39 44	43.846 N	80 36	56.612 W
12203.00	89.30	126.40	7090.62	-1987.99	4549.53	455567.50	1686309.97	39 44	43.598 N	80 36	56.166 W
12246.00	89.60	127.10	7091.04	-2013.72	4583.98	455541.77	1686344.43	39 44	43.348 N	80 36	55.721 W
12288.00	89.80	127.70	7091.26	-2039.23	4617.35	455516.26	1686377.79	39 44	43.100 N	80 36	55.290 W
12331.00	89.70	128.10	7091.44	-2065.64	4651.28	455489.85	1686411.72	39 44	42.843 N	80 36	54.851 W
12374.00	89.40	127.90	7091.78	-2092.12	4685.16	455463.37	1686445.60	39 44	42.585 N	80 36	54.413 W
12416.00	89.60	127.50	7092.15	-2117.80	4718.39	455437.69	1686478.83	39 44	42.335 N	80 36	53.984 W
12459.00	89.90	127.20	7092.33	-2143.89	4752.58	455411.60	1686513.02	39 44	42.082 N	80 36	53.542 W
12501.00	89.90	126.90	7092.41	-2169.19	4786.10	455386.30	1686546.54	39 44	41.836 N	80 36	53.109 W
12544.00	90.10	127.40	7092.41	-2195.16	4820.37	455360.33	1686580.81	39 44	41.583 N	80 36	52.666 W
12587.00	90.00	127.20	7092.37	-2221.22	4854.57	455334.27	1686615.02	39 44	41.330 N	80 36	52.224 W
12629.00	89.80	125.70	7092.44	-2246.17	4888.36	455309.32	1686648.80	39 44	41.088 N	80 36	51.787 W
12672.00	89.90	126.40	7092.56	-2271.48	4923.12	455284.02	1686683.56	39 44	40.842 N	80 36	51.338 W
12714.00	90.30	126.50	7092.48	-2296.43	4956.91	455259.06	1686717.35	39 44	40.599 N	80 36	50.902 W
12757.00	90.30	126.40	7092.26	-2321.98	4991.49	455233.52	1686751.94	39 44	40.351 N	80 36	50.455 W
12800.00	90.30	126.10	7092.03	-2347.40	5026.17	455208.09	1686786.61	39 44	40.104 N	80 36	50.007 W
12842.00	90.30	125.50	7091.81	-2371.97	5060.23	455183.52	1686820.68	39 44	39.865 N	80 36	49.567 W
12885.00	90.00	125.70	7091.70	-2397.00	5095.20	455158.49	1686855.64	39 44	39.622 N	80 36	49.116 W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

051-01323

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MAY 9 2012

WV GEOLOGICAL SURV

MORGANTOWN, WV

Company: CHESAPEAKE OPERATING Field: Marshall County, WV Site: OE Burge Well: 10H Wellpath: OH	Date: 12/14/2011 Time: 13:52:44 Co-ordinate(NE) Reference: Well: 10H, Grid North Vertical (TVD) Reference: GL 1355'+KB 19' 1374.0 Section (VS) Reference: Well (0.00N,0.00E,125.38Azi) Survey Calculation Method: Minimum Curvature Db: Adapti
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Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →	
								Deg	Min Sec	Deg	Min Sec
12928.00	90.20	125.40	7091.63	-2422.00	5130.18	455133.49	1686890.62	39 44	39.380 N	80 36	48.664 W
12970.00	89.70	124.70	7091.66	-2446.12	5164.57	455109.37	1686925.01	39 44	39.145 N	80 36	48.220 W
13013.00	89.80	124.40	7091.85	-2470.51	5199.98	455084.98	1686960.42	39 44	38.909 N	80 36	47.763 W
13055.00	88.60	125.60	7092.44	-2494.59	5234.38	455060.90	1686994.82	39 44	38.675 N	80 36	47.318 W
13098.00	88.80	125.90	7093.41	-2519.71	5269.27	455035.78	1687029.71	39 44	38.431 N	80 36	46.868 W
13141.00	88.60	126.00	7094.39	-2544.95	5304.07	455010.54	1687064.51	39 44	38.186 N	80 36	46.418 W
13183.00	88.80	125.90	7095.34	-2569.60	5338.06	454985.89	1687098.50	39 44	37.946 N	80 36	45.979 W
13226.00	88.80	126.10	7096.24	-2594.87	5372.84	454960.62	1687133.28	39 44	37.701 N	80 36	45.530 W
13269.00	89.00	126.80	7097.07	-2620.41	5407.42	454935.08	1687167.87	39 44	37.453 N	80 36	45.083 W
13311.00	88.70	126.30	7097.91	-2645.42	5441.16	454910.07	1687201.60	39 44	37.210 N	80 36	44.647 W
13354.00	88.40	125.40	7099.00	-2670.59	5476.00	454884.90	1687236.44	39 44	36.965 N	80 36	44.197 W
13396.00	88.80	125.80	7100.02	-2695.03	5510.14	454860.46	1687270.58	39 44	36.728 N	80 36	43.756 W
13439.00	88.80	126.80	7100.92	-2720.48	5544.79	454835.01	1687305.23	39 44	36.480 N	80 36	43.309 W
13482.00	88.80	128.10	7101.82	-2746.63	5578.91	454808.87	1687339.36	39 44	36.226 N	80 36	42.868 W
13524.00	89.10	128.90	7102.59	-2772.77	5611.78	454782.72	1687372.22	39 44	35.972 N	80 36	42.443 W
13567.00	89.40	128.70	7103.16	-2799.71	5645.29	454755.78	1687405.73	39 44	35.710 N	80 36	42.010 W
13609.00	88.60	127.00	7103.89	-2825.47	5678.44	454730.02	1687438.89	39 44	35.459 N	80 36	41.581 W
13652.00	87.50	125.50	7105.35	-2850.88	5713.10	454704.61	1687473.54	39 44	35.212 N	80 36	41.134 W
13695.00	86.70	121.40	7107.53	-2874.55	5748.92	454680.94	1687509.37	39 44	34.983 N	80 36	40.671 W
13737.00	86.80	121.30	7109.91	-2896.37	5784.73	454659.12	1687545.18	39 44	34.772 N	80 36	40.209 W
13780.00	87.20	121.70	7112.16	-2918.80	5821.35	454636.69	1687581.79	39 44	34.554 N	80 36	39.737 W
13822.00	87.20	122.30	7114.21	-2941.03	5856.92	454614.46	1687617.36	39 44	34.339 N	80 36	39.278 W
13865.00	86.90	122.00	7116.43	-2963.89	5893.28	454591.61	1687653.72	39 44	34.118 N	80 36	38.809 W
13908.00	87.10	122.00	7118.68	-2986.64	5929.70	454568.85	1687690.14	39 44	33.897 N	80 36	38.339 W
13950.00	87.00	122.00	7120.84	-3008.87	5965.27	454546.62	1687725.71	39 44	33.682 N	80 36	37.881 W
14000.00	87.00	122.00	7123.45	-3035.33	6007.61	454520.16	1687768.05	39 44	33.426 N	80 36	37.334 W