

LEAM Drilling Systems, Inc.

Survey Report

077-00565

Company: CHESAPEAKE OPERATING	Date: 07/09/2011	Time: 07:49:22	Page: 1
Field: Preston County, WV	Co-ordinate(NE) Reference: Well: 3H, Grid North		
Site: Dellslow Hunting and Fishing Club	Vertical (TVD) Reference: GE 1709' + KB 15' 1724.0		
Well: 3H	Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Field: Preston 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: Dellslow Hunting and Fishing Club			
Site Centered on the 3H			
Site Position:	Northing: 408881.40 ft	Latitude: 39 37 20.521 N	
From: Map	Easting: 1932159.10 ft	Longitude: 79 44 27.006 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 1709.00 ft		Grid Convergence: -0.15 deg	

Well: 3H		Slot Name:	
Well Position:	+N/-S 0.00 ft	Northing: 408881.40 ft	Latitude: 39 37 20.521 N
	+E/-W 0.00 ft	Easting : 1932159.10 ft	Longitude: 79 44 27.006 W
Position Uncertainty:	0.00 ft		

Wellpath: OH		Drilled From: Pilot	
Current Datum: GE 1709' + KB 15'	Height 1724.00 ft	Tie-on Depth: 7200.00 ft	
Magnetic Data: 04/11/2011		Above System Datum: Mean Sea Level	
Field Strength: 52736 nT		Declination: -9.17 deg	
Vertical Section: Depth From (TVD)	+N/-S	Mag Dip Angle: 67.24 deg	
ft	ft	ft	Direction deg
0.00	0.00	0.00	319.00

Survey Program for Definitive Wellpath				
Date: 05/09/2011		Validated: No		Version: 6
Actual From	To	Survey	Toolcode	Tool Name
ft	ft			
0.00	6600.00	Survey #1 (0.00-7750.00) (1)	Gyroscope	Gyroscope
6600.00	13605.00	Survey #1 (6600.00-13605.00)	MWD	Std MWD
13605.00	13670.00	Survey #2 (13605.00-13670.00)	Project	Projection

Survey										
MD	Incl	Azim	TVD	+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
100.00	0.60	113.48	100.00	-0.21	0.48	-0.47	0.60	0.60	0.00	Gyroscope
200.00	0.48	162.37	199.99	-0.82	1.09	-1.33	0.46	-0.12	48.89	Gyroscope
300.00	0.55	183.71	299.99	-1.69	1.18	-2.06	0.20	0.07	21.34	Gyroscope
400.00	0.57	194.76	399.99	-2.65	1.03	-2.68	0.11	0.02	11.05	Gyroscope
500.00	0.79	183.10	499.98	-3.82	0.86	-3.45	0.26	0.22	-11.66	Gyroscope
600.00	0.56	147.00	599.97	-4.92	1.09	-4.43	0.47	-0.23	-36.10	Gyroscope
700.00	0.46	200.24	699.97	-5.71	1.22	-5.11	0.47	-0.10	53.24	Gyroscope
800.00	0.11	165.60	799.97	-6.18	1.10	-5.39	0.37	-0.35	-34.64	Gyroscope
900.00	0.18	200.26	899.97	-6.42	1.07	-5.55	0.11	0.07	34.66	Gyroscope
1000.00	0.33	352.28	999.97	-6.28	0.98	-5.38	0.50	0.15	152.02	Gyroscope
1100.00	0.05	138.69	1099.97	-6.03	0.97	-5.19	0.37	-0.28	146.41	Gyroscope
1200.00	0.17	133.84	1199.97	-6.16	1.10	-5.38	0.12	0.12	-4.85	Gyroscope
1300.00	0.29	220.01	1299.97	-6.46	1.05	-5.56	0.33	0.12	86.17	Gyroscope
1400.00	0.32	353.49	1399.96	-6.38	0.85	-5.37	0.56	0.03	133.48	Gyroscope
1500.00	0.07	138.99	1499.96	-6.15	0.86	-5.20	0.38	-0.25	145.50	Gyroscope
1600.00	0.35	329.69	1599.96	-5.93	0.75	-4.97	0.42	0.28	-169.30	Gyroscope
1700.00	0.04	129.00	1699.96	-5.69	0.62	-4.70	0.39	-0.31	159.31	Gyroscope
1800.00	0.24	170.21	1799.96	-5.91	0.68	-4.91	0.21	0.20	41.21	Gyroscope
1900.00	0.38	244.66	1899.96	-6.26	0.42	-5.00	0.39	0.14	74.45	Gyroscope
2000.00	0.24	127.89	1999.96	-6.53	0.29	-5.12	0.53	-0.14	-116.77	Gyroscope

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Well: 3H	Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)		
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
2100.00	0.31	7.61	2099.96	-6.39	0.49	-5.15	0.48	0.07	-120.28	Gyroscope
2200.00	0.19	121.14	2199.96	-6.21	0.67	-5.12	0.42	-0.12	113.53	Gyroscope
2300.00	0.35	14.78	2299.96	-6.00	0.89	-5.11	0.44	0.16	-106.36	Gyroscope
2400.00	0.10	65.51	2399.96	-5.67	1.04	-4.96	0.30	-0.25	50.73	Gyroscope
2500.00	0.35	122.53	2499.96	-5.80	1.38	-5.28	0.31	0.25	57.02	Gyroscope
2600.00	0.41	332.96	2599.96	-5.64	1.47	-5.23	0.73	0.06	-149.57	Gyroscope
2700.00	0.32	2.13	2699.95	-5.05	1.32	-4.68	0.20	-0.09	29.17	Gyroscope
2800.00	0.43	37.15	2799.95	-4.47	1.56	-4.39	0.25	0.11	35.02	Gyroscope
2900.00	0.62	40.84	2899.95	-3.76	2.14	-4.24	0.19	0.19	3.69	Gyroscope
3000.00	0.55	44.11	2999.94	-3.01	2.83	-4.12	0.08	-0.07	3.27	Gyroscope
3100.00	0.49	355.30	3099.94	-2.23	3.13	-3.74	0.43	-0.06	-48.81	Gyroscope
3200.00	0.44	356.37	3199.94	-1.43	3.07	-3.09	0.05	-0.05	1.07	Gyroscope
3300.00	0.22	38.97	3299.93	-0.89	3.16	-2.75	0.32	-0.22	42.60	Gyroscope
3400.00	0.32	62.70	3399.93	-0.62	3.53	-2.78	0.15	0.10	23.73	Gyroscope
3500.00	0.68	85.49	3499.93	-0.44	4.37	-3.20	0.40	0.36	22.79	Gyroscope
3600.00	0.66	92.73	3599.92	-0.42	5.54	-3.95	0.09	-0.02	7.24	Gyroscope
3700.00	0.81	103.71	3699.91	-0.62	6.80	-4.93	0.21	0.15	10.98	Gyroscope
3800.00	0.80	84.91	3799.90	-0.72	8.18	-5.91	0.26	-0.01	-18.80	Gyroscope
3900.00	0.78	69.65	3899.90	-0.42	9.52	-6.56	0.21	-0.02	-15.26	Gyroscope
4000.00	0.80	81.80	3999.89	-0.09	10.85	-7.18	0.17	0.02	12.15	Gyroscope
4100.00	1.04	101.11	4099.87	-0.16	12.43	-8.28	0.39	0.24	19.31	Gyroscope
4200.00	1.06	101.95	4199.86	-0.53	14.22	-9.73	0.03	0.02	0.84	Gyroscope
4300.00	1.23	99.74	4299.84	-0.90	16.19	-11.30	0.18	0.17	-2.21	Gyroscope
4400.00	1.25	102.26	4399.81	-1.32	18.31	-13.00	0.06	0.02	2.52	Gyroscope
4500.00	1.07	92.31	4499.79	-1.58	20.31	-14.52	0.27	-0.18	-9.95	Gyroscope
4600.00	1.14	91.45	4599.77	-1.65	22.24	-15.83	0.07	0.07	-0.86	Gyroscope
4700.00	1.08	76.72	4699.76	-1.46	24.15	-16.94	0.29	-0.06	-14.73	Gyroscope
4800.00	1.12	76.41	4799.74	-1.01	26.01	-17.83	0.04	0.04	-0.31	Gyroscope
4900.00	1.22	61.73	4899.72	-0.28	27.90	-18.51	0.31	0.10	-14.68	Gyroscope
5000.00	1.02	66.32	4999.70	0.59	29.65	-19.01	0.22	-0.20	4.59	Gyroscope
5100.00	1.38	76.59	5099.68	1.22	31.64	-19.84	0.42	0.36	10.27	Gyroscope
5200.00	1.46	77.42	5199.64	1.78	34.06	-21.00	0.08	0.08	0.83	Gyroscope
5300.00	1.66	73.57	5299.61	2.47	36.69	-22.21	0.23	0.20	-3.85	Gyroscope
5400.00	1.50	81.47	5399.57	3.07	39.37	-23.51	0.27	-0.16	7.90	Gyroscope
5500.00	1.16	90.97	5499.54	3.25	41.68	-24.89	0.40	-0.34	9.50	Gyroscope
5600.00	1.08	97.84	5599.52	3.10	43.62	-26.28	0.16	-0.08	6.87	Gyroscope
5700.00	0.95	107.03	5699.51	2.73	45.35	-27.69	0.21	-0.13	9.19	Gyroscope
5800.00	0.88	117.88	5799.49	2.13	46.82	-29.11	0.19	-0.07	10.85	Gyroscope
5900.00	0.96	123.82	5899.48	1.30	48.20	-30.64	0.12	0.08	5.94	Gyroscope
6000.00	1.04	117.83	5999.47	0.41	49.69	-32.29	0.13	0.08	-5.99	Gyroscope
6100.00	1.17	123.84	6099.45	-0.58	51.35	-34.12	0.17	0.13	6.01	Gyroscope
6200.00	1.15	126.98	6199.43	-1.75	52.99	-36.09	0.07	-0.02	3.14	Gyroscope
6300.00	0.97	146.78	6299.41	-3.06	54.26	-37.91	0.41	-0.18	19.80	Gyroscope
6400.00	1.31	175.39	6399.39	-4.91	54.82	-39.67	0.65	0.34	28.61	Gyroscope
6500.00	1.58	179.88	6499.36	-7.43	54.91	-41.63	0.29	0.27	4.49	Gyroscope
6600.00	2.00	179.17	6599.31	-10.55	54.94	-44.01	0.42	0.42	-0.71	Gyroscope
6665.00	2.50	179.17	6664.26	-13.10	54.98	-45.96	0.77	0.77	0.00	MWD
6727.00	2.50	192.50	6726.20	-15.78	54.70	-47.79	0.94	0.00	21.50	MWD
6791.00	2.70	195.80	6790.14	-18.59	53.99	-49.45	0.39	0.31	5.16	MWD
6854.00	2.50	186.30	6853.07	-21.38	53.44	-51.19	0.75	-0.32	-15.08	MWD
6917.00	2.90	205.50	6916.00	-24.19	52.60	-52.76	1.56	0.63	30.48	MWD
6981.00	3.80	215.70	6979.89	-27.37	50.66	-53.90	1.68	1.41	15.94	MWD
7044.00	4.70	222.00	7042.72	-30.98	47.72	-54.69	1.61	1.43	10.00	MWD
7107.00	8.50	246.60	7105.30	-34.75	41.72	-53.60	7.39	6.03	39.05	MWD

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Well: 3H	Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)		
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
7169.00	9.20	248.70	7166.56	-38.37	32.89	-50.54	1.24	1.13	3.39	MWD
7200.00	9.40	248.20	7197.16	-40.21	28.23	-48.87	0.70	0.65	-1.61	MWD
7232.00	11.70	249.90	7228.61	-42.30	22.76	-46.85	7.25	7.19	5.31	MWD
7263.00	14.80	252.20	7258.78	-44.59	16.04	-44.17	10.14	10.00	7.42	MWD
7295.00	16.40	256.30	7289.61	-46.91	7.75	-40.49	6.07	5.00	12.81	MWD
7326.00	16.70	260.00	7319.32	-48.72	-0.88	-36.19	3.53	0.97	11.94	MWD
7359.00	15.50	261.20	7351.03	-50.22	-9.91	-31.40	3.77	-3.64	3.64	MWD
7389.00	17.70	264.50	7379.78	-51.27	-18.41	-26.61	7.98	7.33	11.00	MWD
7421.00	19.60	266.80	7410.10	-52.03	-28.62	-20.50	6.37	5.94	7.19	MWD
7453.00	20.10	267.50	7440.19	-52.57	-39.47	-13.78	1.73	1.56	2.19	MWD
7485.00	19.50	270.70	7470.30	-52.75	-50.30	-6.81	3.87	-1.87	10.00	MWD
7517.00	20.90	274.70	7500.34	-52.22	-61.33	0.83	6.14	4.37	12.50	MWD
7548.00	24.40	277.00	7528.94	-50.98	-73.20	9.55	11.64	11.29	7.42	MWD
7579.00	30.50	278.20	7556.44	-49.08	-87.36	20.27	19.76	19.68	3.87	MWD
7610.00	35.50	279.30	7582.43	-46.50	-104.04	33.16	16.24	16.13	3.55	MWD
7642.00	42.10	282.10	7607.36	-42.75	-123.72	48.91	21.34	20.62	8.75	MWD
7674.00	47.70	283.20	7630.01	-37.79	-145.75	67.10	17.67	17.50	3.44	MWD
7706.00	54.10	286.90	7650.19	-31.31	-169.70	87.70	21.91	20.00	11.56	MWD
7737.00	59.00	291.10	7667.28	-22.87	-194.13	110.10	19.43	15.81	13.55	MWD
7768.00	63.50	296.20	7682.19	-11.95	-219.00	134.65	20.46	14.52	16.45	MWD
7800.00	66.90	300.60	7695.62	1.87	-244.53	161.84	16.39	10.62	13.75	MWD
7831.00	71.50	304.80	7706.63	17.53	-268.89	189.64	19.51	14.84	13.55	MWD
7863.00	77.80	305.80	7715.09	35.36	-294.06	219.61	19.92	19.69	3.12	MWD
7895.00	83.60	306.70	7720.26	54.02	-319.52	250.40	18.34	18.12	2.81	MWD
7926.00	86.90	308.10	7722.83	72.79	-344.06	280.65	11.56	10.65	4.52	MWD
7957.00	88.90	312.90	7723.97	92.90	-367.60	311.28	16.76	6.45	15.48	MWD
7989.00	89.40	315.70	7724.44	115.24	-390.50	343.17	8.89	1.56	8.75	MWD
8051.00	90.00	317.30	7724.77	160.21	-433.18	405.11	2.76	0.97	2.58	MWD
8115.00	92.80	321.50	7723.20	208.78	-474.80	469.06	7.88	4.37	6.56	MWD
8179.00	93.30	321.50	7719.80	258.79	-514.59	532.91	0.78	0.78	0.00	MWD
8241.00	93.80	321.70	7715.96	307.29	-553.02	594.73	0.87	0.81	0.32	MWD
8304.00	92.90	322.40	7712.28	356.88	-591.70	657.53	1.81	-1.43	1.11	MWD
8367.00	92.80	322.00	7709.14	406.60	-630.27	720.36	0.65	-0.16	-0.63	MWD
8431.00	92.50	321.80	7706.18	456.91	-669.71	784.20	0.56	-0.47	-0.31	MWD
8495.00	92.00	323.80	7703.67	507.84	-708.38	848.01	3.22	-0.78	3.12	MWD
8559.00	91.90	323.80	7701.49	559.46	-746.15	911.75	0.16	-0.16	0.00	MWD
8622.00	91.90	323.20	7699.40	610.07	-783.61	974.52	0.95	0.00	-0.95	MWD
8686.00	92.80	322.70	7696.78	661.11	-822.13	1038.31	1.61	1.41	-0.78	MWD
8750.00	91.40	322.90	7694.43	712.05	-860.80	1102.13	2.21	-2.19	0.31	MWD
8814.00	90.50	323.20	7693.37	763.19	-899.27	1165.96	1.48	-1.41	0.47	MWD
8877.00	91.00	322.50	7692.55	813.40	-937.31	1228.81	1.37	0.79	-1.11	MWD
8941.00	91.30	322.20	7691.26	864.06	-976.39	1292.69	0.66	0.47	-0.47	MWD
9005.00	92.00	323.10	7689.42	914.92	-1015.21	1356.53	1.78	1.09	1.41	MWD
9067.00	90.00	324.80	7688.34	965.03	-1051.68	1418.29	4.23	-3.23	2.74	MWD
9130.00	88.90	324.60	7688.94	1016.45	-1088.09	1480.97	1.77	-1.75	-0.32	MWD
9193.00	89.20	324.10	7689.99	1067.63	-1124.80	1543.69	0.93	0.48	-0.79	MWD
9255.00	89.30	324.10	7690.80	1117.85	-1161.15	1605.44	0.16	0.16	0.00	MWD
9318.00	88.60	322.00	7691.96	1168.19	-1199.01	1668.26	3.51	-1.11	-3.33	MWD
9380.00	89.20	321.70	7693.15	1216.93	-1237.30	1730.18	1.08	0.97	-0.48	MWD
9444.00	87.10	321.50	7695.21	1267.06	-1277.03	1794.07	3.30	-3.28	-0.31	MWD
9507.00	86.30	321.10	7698.84	1316.15	-1316.36	1856.92	1.42	-1.27	-0.63	MWD
9570.00	86.30	321.00	7702.90	1365.04	-1355.88	1919.75	0.16	0.00	-0.16	MWD
9633.00	85.20	321.30	7707.57	1413.97	-1395.29	1982.53	1.81	-1.75	0.48	MWD

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Site: Dellslow Hunting and Fishing Club	Vertical (TVD) Reference: GE 1709' + KB 15' 1724.0		
Well: 3H	Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Adapti	

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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
9695.00	85.70	321.70	7712.49	1462.34	-1433.76	2044.27	1.03	0.81	0.65	MWD
9759.00	86.00	321.10	7717.12	1512.22	-1473.59	2108.05	1.05	0.47	-0.94	MWD
9823.00	85.60	321.30	7721.81	1561.97	-1513.58	2171.83	0.70	-0.62	0.31	MWD
9886.00	85.20	321.70	7726.86	1611.11	-1552.68	2234.57	0.90	-0.63	0.63	MWD
9950.00	86.40	321.10	7731.55	1660.99	-1592.50	2298.34	2.10	1.87	-0.94	MWD
10013.00	86.20	321.10	7735.61	1709.92	-1631.97	2361.16	0.32	-0.32	0.00	MWD
10075.00	86.60	321.70	7739.51	1758.28	-1670.58	2422.99	1.16	0.65	0.97	MWD
10138.00	86.80	320.80	7743.13	1807.33	-1709.95	2485.83	1.46	0.32	-1.43	MWD
10202.00	85.70	321.70	7747.32	1857.13	-1749.92	2549.65	2.22	-1.72	1.41	MWD
10264.00	84.30	320.80	7752.72	1905.30	-1788.58	2611.36	2.68	-2.26	-1.45	MWD
10326.00	84.10	321.00	7758.99	1953.17	-1827.48	2673.01	0.46	-0.32	0.32	MWD
10390.00	84.50	320.10	7765.35	2002.34	-1867.94	2736.67	1.53	0.62	-1.41	MWD
10453.00	84.10	320.40	7771.60	2050.54	-1908.03	2799.34	0.79	-0.63	0.48	MWD
10517.00	83.90	319.70	7778.29	2099.33	-1948.90	2862.98	1.13	-0.31	-1.09	MWD
10578.00	82.70	319.90	7785.41	2145.61	-1988.00	2923.56	1.99	-1.97	0.33	MWD
10641.00	82.60	319.70	7793.47	2193.33	-2028.33	2986.03	0.35	-0.16	-0.32	MWD
10705.00	82.90	319.20	7801.55	2241.57	-2069.61	3049.52	0.91	0.47	-0.78	MWD
10768.00	84.60	319.20	7808.40	2288.98	-2110.52	3112.14	2.70	2.70	0.00	MWD
10830.00	85.20	318.80	7813.92	2335.58	-2151.04	3173.90	1.16	0.97	-0.65	MWD
10893.00	85.90	318.80	7818.80	2382.84	-2192.41	3236.70	1.11	1.11	0.00	MWD
10955.00	86.80	318.70	7822.75	2429.36	-2233.21	3298.58	1.46	1.45	-0.16	MWD
11018.00	87.10	318.30	7826.10	2476.48	-2274.89	3361.49	0.79	0.48	-0.63	MWD
11081.00	87.40	318.00	7829.13	2523.35	-2316.88	3424.41	0.67	0.48	-0.48	MWD
11143.00	87.50	319.60	7831.88	2569.95	-2357.67	3486.34	2.58	0.16	2.58	MWD
11207.00	87.80	319.70	7834.51	2618.69	-2399.08	3550.28	0.49	0.47	0.16	MWD
11269.00	89.20	321.80	7836.13	2666.68	-2438.29	3612.23	4.07	2.26	3.39	MWD
11332.00	89.90	322.50	7836.63	2716.42	-2476.94	3675.13	1.57	1.11	1.11	MWD
11395.00	90.30	322.40	7836.52	2766.37	-2515.34	3738.02	0.65	0.63	-0.16	MWD
11458.00	91.20	321.80	7835.69	2816.08	-2554.03	3800.92	1.72	1.43	-0.95	MWD
11522.00	90.00	322.20	7835.02	2866.51	-2593.43	3864.83	1.98	-1.87	0.62	MWD
11584.00	90.20	321.70	7834.91	2915.33	-2631.65	3926.74	0.87	0.32	-0.81	MWD
11647.00	90.80	321.10	7834.36	2964.56	-2670.95	3989.68	1.35	0.95	-0.95	MWD
11710.00	91.40	321.30	7833.15	3013.65	-2710.42	4052.63	1.00	0.95	0.32	MWD
11774.00	91.90	321.10	7831.31	3063.51	-2750.50	4116.55	0.84	0.78	-0.31	MWD
11838.00	91.50	321.70	7829.41	3113.50	-2790.41	4180.47	1.13	-0.62	0.94	MWD
11901.00	92.10	321.80	7827.43	3162.95	-2829.40	4243.36	0.97	0.95	0.16	MWD
11964.00	90.50	321.80	7826.00	3212.45	-2868.35	4306.27	2.54	-2.54	0.00	MWD
12028.00	90.50	322.20	7825.45	3262.88	-2907.75	4370.18	0.62	0.00	0.62	MWD
12091.00	88.90	323.10	7825.78	3312.96	-2945.97	4433.05	2.91	-2.54	1.43	MWD
12155.00	89.40	322.70	7826.73	3364.00	-2984.57	4496.89	1.00	0.78	-0.62	MWD
12219.00	87.60	322.20	7828.40	3414.72	-3023.56	4560.75	2.92	-2.81	-0.78	MWD
12283.00	87.50	322.50	7831.14	3465.35	-3062.61	4624.58	0.49	-0.16	0.47	MWD
12345.00	85.90	322.70	7834.71	3514.52	-3100.21	4686.36	2.60	-2.58	0.32	MWD
12409.00	85.50	322.20	7839.50	3565.11	-3139.10	4750.06	1.00	-0.62	-0.78	MWD
12472.00	85.60	322.40	7844.39	3614.81	-3177.51	4812.77	0.35	0.16	0.32	MWD
12535.00	86.40	322.90	7848.79	3664.77	-3215.64	4875.49	1.50	1.27	0.79	MWD
12599.00	87.00	322.50	7852.47	3715.59	-3254.36	4939.25	1.13	0.94	-0.62	MWD
12663.00	87.10	322.50	7855.76	3766.30	-3293.27	5003.04	0.16	0.16	0.00	MWD
12726.00	87.40	322.40	7858.79	3816.19	-3331.62	5065.86	0.50	0.48	-0.16	MWD
12789.00	88.60	321.50	7860.99	3865.77	-3370.42	5128.73	2.38	1.90	-1.43	MWD
12853.00	89.10	321.00	7862.27	3915.67	-3410.48	5192.67	1.10	0.78	-0.78	MWD
12916.00	89.50	320.60	7863.04	3964.49	-3450.29	5255.63	0.90	0.63	-0.63	MWD
12977.00	90.00	321.00	7863.31	4011.76	-3488.84	5316.60	1.05	0.82	0.66	MWD

LEAM Drilling Systems, Inc.

Survey Report

Company: CHESAPEAKE OPERATING
Field: Preston County, WV
Site: Dellslow Hunting and Fishing Club
Well: 3H
Wellpath: OH

Date: 07/09/2011 **Time:** 07:49:22 **Page:** 5
Co-ordinate(NE) Reference: Well: 3H, Grid North
Vertical (TVD) Reference: GE 1709' + KB 15' 1724.0
Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)
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
13039.00	90.70	320.80	7862.93	4059.88	-3527.94	5378.57	1.17	1.13	-0.32	MWD
13103.00	91.20	320.80	7861.87	4109.47	-3568.39	5442.53	0.78	0.78	0.00	MWD
13166.00	91.50	320.60	7860.38	4158.20	-3608.28	5505.48	0.57	0.48	-0.32	MWD
13228.00	92.10	321.30	7858.43	4206.33	-3647.32	5567.41	1.49	0.97	1.13	MWD
13290.00	91.50	321.80	7856.49	4254.86	-3685.85	5629.32	1.26	-0.97	0.81	MWD
13354.00	91.60	321.80	7854.76	4305.14	-3725.42	5693.22	0.16	0.16	0.00	MWD
13417.00	92.40	321.70	7852.56	4354.58	-3764.40	5756.11	1.28	1.27	-0.16	MWD
13478.00	92.90	321.70	7849.74	4402.40	-3802.16	5816.98	0.82	0.82	0.00	MWD
13542.00	92.20	322.00	7846.89	4452.68	-3841.66	5880.83	1.19	-1.09	0.47	MWD
13605.00	92.50	321.70	7844.31	4502.18	-3880.54	5943.70	0.67	0.48	-0.48	MWD
13670.00	92.50	321.70	7841.47	4553.14	-3920.79	6008.57	0.00	0.00	0.00	Project

LEAM Drilling Systems, Inc.

Survey Report - Geographic

Company: CHESAPEAKE OPERATING	Date: 07/09/2011	Time: 07:49:38	Page: 1
Field: Preston County, WV	Co-ordinate(NE) Reference: Well: 3H, Grid North		
Site: Dellslow Hunting and Fishing Club	Vertical (TVD) Reference: GE 1709' + KB 15' 1724.0		
Well: 3H	Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Adapti	

Field: Preston 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: Dellslow Hunting and Fishing Club			
Site Centered on the 3H			
Site Position:	Northing: 408881.40 ft	Latitude: 39 37 20.521 N	
From: Map	Easting: 1932159.10 ft	Longitude: 79 44 27.006 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 1709.00 ft		Grid Convergence: -0.15 deg	

Well: 3H				Slot Name:			
Well Position:	+N/-S 0.00 ft	Northing: 408881.40 ft	Latitude: 39 37 20.521 N	+E/-W 0.00 ft	Easting: 1932159.10 ft	Longitude: 79 44 27.006 W	
Position Uncertainty:	0.00 ft			0.00 ft			

Wellpath: OH				Drilled From: Pilot			
Current Datum: GE 1709' + KB 15'	Height 1724.00 ft			Tie-on Depth: 7200.00 ft			
Magnetic Data: 04/11/2011				Above System Datum: Mean Sea Level			
Field Strength: 52736 nT				Declination: -9.17 deg			
Vertical Section: Depth From (TVD)	+N/-S	+E/-W	Direction				
ft	ft	ft	deg				
0.00	0.00	0.00	319.00				

Survey Program for Definitive Wellpath					
Date: 05/09/2011		Validated: No		Version: 6	
Actual From	To	Survey	Toolcode	Tool Name	
ft	ft				
0.00	6600.00	Survey #1 (0.00-7750.00) (1)	Gyroscope	Gyroscope	
6600.00	13605.00	Survey #1 (6600.00-13605.00)	MWD	Std MWD	
13605.00	13670.00	Survey #2 (13605.00-13670.00)	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	408881.40	1932159.10	39	37	20.521 N	79	44	27.006 W
100.00	0.60	113.48	100.00	-0.21	0.48	408881.19	1932159.58	39	37	20.519 N	79	44	26.999 W
200.00	0.48	162.37	199.99	-0.82	1.09	408880.58	1932160.19	39	37	20.513 N	79	44	26.992 W
300.00	0.55	183.71	299.99	-1.69	1.18	408879.71	1932160.28	39	37	20.504 N	79	44	26.990 W
400.00	0.57	194.76	399.99	-2.65	1.03	408878.75	1932160.13	39	37	20.495 N	79	44	26.992 W
500.00	0.79	183.10	499.98	-3.82	0.86	408877.58	1932159.96	39	37	20.483 N	79	44	26.994 W
600.00	0.56	147.00	599.97	-4.92	1.09	408876.48	1932160.19	39	37	20.472 N	79	44	26.991 W
700.00	0.46	200.24	699.97	-5.71	1.22	408875.69	1932160.32	39	37	20.464 N	79	44	26.990 W
800.00	0.11	165.60	799.97	-6.18	1.10	408875.22	1932160.20	39	37	20.460 N	79	44	26.991 W
900.00	0.18	200.26	899.97	-6.42	1.07	408874.98	1932160.17	39	37	20.457 N	79	44	26.992 W
1000.00	0.33	352.28	999.97	-6.28	0.98	408875.12	1932160.08	39	37	20.459 N	79	44	26.993 W
1100.00	0.05	138.69	1099.97	-6.03	0.97	408875.37	1932160.07	39	37	20.461 N	79	44	26.993 W
1200.00	0.17	133.84	1199.97	-6.16	1.10	408875.24	1932160.20	39	37	20.460 N	79	44	26.991 W
1300.00	0.29	220.01	1299.97	-6.46	1.05	408874.94	1932160.15	39	37	20.457 N	79	44	26.992 W
1400.00	0.32	353.49	1399.96	-6.38	0.85	408875.02	1932159.95	39	37	20.458 N	79	44	26.994 W
1500.00	0.07	138.99	1499.96	-6.15	0.86	408875.25	1932159.96	39	37	20.460 N	79	44	26.994 W
1600.00	0.35	329.69	1599.96	-5.93	0.75	408875.47	1932159.85	39	37	20.462 N	79	44	26.996 W
1700.00	0.04	129.00	1699.96	-5.69	0.62	408875.71	1932159.72	39	37	20.465 N	79	44	26.997 W
1800.00	0.24	170.21	1799.96	-5.91	0.68	408875.49	1932159.78	39	37	20.462 N	79	44	26.997 W
1900.00	0.38	244.66	1899.96	-6.26	0.42	408875.14	1932159.52	39	37	20.459 N	79	44	27.000 W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

077-00565

Company: CHESAPEAKE OPERATING	Date: 07/09/2011	Time: 07:49:38	Page: 2
Field: Preston County, WV	Co-ordinate(NE) Reference: Well: 3H, Grid North		
Site: Dellslow Hunting and Fishing Club	Vertical (TVD) Reference: GE 1709' + KB 15' 1724.0		
Well: 3H	Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)		
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
2000.00	0.24	127.89	1999.96	-6.53	0.29	408874.87	1932159.39	39 37	20.456 N	79 44	27.002 W
2100.00	0.31	7.61	2099.96	-6.39	0.49	408875.01	1932159.59	39 37	20.458 N	79 44	26.999 W
2200.00	0.19	121.14	2199.96	-6.21	0.67	408875.19	1932159.77	39 37	20.459 N	79 44	26.997 W
2300.00	0.35	14.78	2299.96	-6.00	0.89	408875.40	1932159.99	39 37	20.462 N	79 44	26.994 W
2400.00	0.10	65.51	2399.96	-5.67	1.04	408875.73	1932160.14	39 37	20.465 N	79 44	26.992 W
2500.00	0.35	122.53	2499.96	-5.80	1.38	408875.60	1932160.48	39 37	20.464 N	79 44	26.988 W
2600.00	0.41	332.96	2599.96	-5.64	1.47	408875.76	1932160.57	39 37	20.465 N	79 44	26.987 W
2700.00	0.32	2.13	2699.95	-5.05	1.32	408876.35	1932160.42	39 37	20.471 N	79 44	26.988 W
2800.00	0.43	37.15	2799.95	-4.47	1.56	408876.93	1932160.66	39 37	20.477 N	79 44	26.985 W
2900.00	0.62	40.84	2899.95	-3.76	2.14	408877.64	1932161.24	39 37	20.484 N	79 44	26.978 W
3000.00	0.55	44.11	2999.94	-3.01	2.83	408878.39	1932161.93	39 37	20.491 N	79 44	26.969 W
3100.00	0.49	355.30	3099.94	-2.23	3.13	408879.17	1932162.23	39 37	20.499 N	79 44	26.966 W
3200.00	0.44	356.37	3199.94	-1.43	3.07	408879.97	1932162.17	39 37	20.507 N	79 44	26.966 W
3300.00	0.22	38.97	3299.93	-0.89	3.16	408880.51	1932162.26	39 37	20.512 N	79 44	26.965 W
3400.00	0.32	62.70	3399.93	-0.62	3.53	408880.78	1932162.63	39 37	20.515 N	79 44	26.960 W
3500.00	0.68	85.49	3499.93	-0.44	4.37	408880.96	1932163.47	39 37	20.517 N	79 44	26.950 W
3600.00	0.66	92.73	3599.92	-0.42	5.54	408880.98	1932164.64	39 37	20.517 N	79 44	26.935 W
3700.00	0.81	103.71	3699.91	-0.62	6.80	408880.78	1932165.90	39 37	20.515 N	79 44	26.919 W
3800.00	0.80	84.91	3799.90	-0.72	8.18	408880.68	1932167.28	39 37	20.514 N	79 44	26.901 W
3900.00	0.78	69.65	3899.90	-0.42	9.52	408880.98	1932168.62	39 37	20.517 N	79 44	26.884 W
4000.00	0.80	81.80	3999.89	-0.09	10.85	408881.31	1932169.95	39 37	20.520 N	79 44	26.867 W
4100.00	1.04	101.11	4099.87	-0.16	12.43	408881.24	1932171.53	39 37	20.520 N	79 44	26.847 W
4200.00	1.06	101.95	4199.86	-0.53	14.22	408880.87	1932173.32	39 37	20.516 N	79 44	26.824 W
4300.00	1.23	99.74	4299.84	-0.90	16.19	408880.50	1932175.29	39 37	20.512 N	79 44	26.799 W
4400.00	1.25	102.26	4399.81	-1.32	18.31	408880.08	1932177.41	39 37	20.508 N	79 44	26.772 W
4500.00	1.07	92.31	4499.79	-1.58	20.31	408879.82	1932179.41	39 37	20.506 N	79 44	26.746 W
4600.00	1.14	91.45	4599.77	-1.65	22.24	408879.75	1932181.34	39 37	20.505 N	79 44	26.721 W
4700.00	1.08	76.72	4699.76	-1.46	24.15	408879.94	1932183.25	39 37	20.507 N	79 44	26.697 W
4800.00	1.12	76.41	4799.74	-1.01	26.01	408880.39	1932185.11	39 37	20.512 N	79 44	26.673 W
4900.00	1.22	61.73	4899.72	-0.28	27.90	408881.12	1932187.00	39 37	20.519 N	79 44	26.649 W
5000.00	1.02	66.32	4999.70	0.59	29.65	408881.99	1932188.75	39 37	20.527 N	79 44	26.627 W
5100.00	1.38	76.59	5099.68	1.22	31.64	408882.62	1932190.74	39 37	20.534 N	79 44	26.601 W
5200.00	1.46	77.42	5199.64	1.78	34.06	408883.18	1932193.16	39 37	20.539 N	79 44	26.570 W
5300.00	1.66	73.57	5299.61	2.47	36.69	408883.87	1932195.79	39 37	20.546 N	79 44	26.537 W
5400.00	1.50	81.47	5399.57	3.07	39.37	408884.47	1932198.47	39 37	20.552 N	79 44	26.502 W
5500.00	1.16	90.97	5499.54	3.25	41.68	408884.65	1932200.78	39 37	20.554 N	79 44	26.473 W
5600.00	1.08	97.84	5599.52	3.10	43.62	408884.50	1932202.72	39 37	20.553 N	79 44	26.448 W
5700.00	0.95	107.03	5699.51	2.73	45.35	408884.13	1932204.45	39 37	20.549 N	79 44	26.426 W
5800.00	0.88	117.88	5799.49	2.13	46.82	408883.53	1932205.92	39 37	20.543 N	79 44	26.407 W
5900.00	0.96	123.82	5899.48	1.30	48.20	408882.70	1932207.30	39 37	20.535 N	79 44	26.390 W
6000.00	1.04	117.83	5999.47	0.41	49.69	408881.81	1932208.79	39 37	20.526 N	79 44	26.370 W
6100.00	1.17	123.84	6099.45	-0.58	51.35	408880.82	1932210.45	39 37	20.516 N	79 44	26.349 W
6200.00	1.15	126.98	6199.43	-1.75	52.99	408879.65	1932212.09	39 37	20.505 N	79 44	26.328 W
6300.00	0.97	146.78	6299.41	-3.06	54.26	408878.34	1932213.36	39 37	20.492 N	79 44	26.312 W
6400.00	1.31	175.39	6399.39	-4.91	54.82	408876.49	1932213.92	39 37	20.474 N	79 44	26.305 W
6500.00	1.58	179.88	6499.36	-7.43	54.91	408873.97	1932214.01	39 37	20.449 N	79 44	26.304 W
6600.00	2.00	179.17	6599.31	-10.55	54.94	408870.85	1932214.04	39 37	20.418 N	79 44	26.303 W
6665.00	2.50	179.17	6664.26	-13.10	54.98	408868.30	1932214.08	39 37	20.393 N	79 44	26.303 W
6727.00	2.50	192.50	6726.20	-15.78	54.70	408865.62	1932213.80	39 37	20.366 N	79 44	26.306 W
6791.00	2.70	195.80	6790.14	-18.59	53.99	408862.81	1932213.09	39 37	20.339 N	79 44	26.315 W
6854.00	2.50	186.30	6853.07	-21.38	53.44	408860.02	1932212.54	39 37	20.311 N	79 44	26.322 W
6917.00	2.90	205.50	6916.00	-24.19	52.60	408857.21	1932211.70	39 37	20.283 N	79 44	26.333 W
6981.00	3.80	215.70	6979.89	-27.37	50.66	408854.03	1932209.76	39 37	20.252 N	79 44	26.357 W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

Company: CHESAPEAKE OPERATING	Date: 07/09/2011	Time: 07:49:38	Page: 3
Field: Preston County, WV	Co-ordinate(NE) Reference: Well: 3H, Grid North		
Site: Dellslow Hunting and Fishing Club	Vertical (TVD) Reference: GE 1709' + KB 15' 1724.0		
Well: 3H	Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)		
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
7044.00	4.70	222.00	7042.72	-30.98	47.72	408850.42	1932206.82	39 37	20.216 N	79 44	26.395 W
7107.00	8.50	246.60	7105.30	-34.75	41.72	408846.65	1932200.82	39 37	20.178 N	79 44	26.471 W
7169.00	9.20	248.70	7166.56	-38.37	32.89	408843.03	1932191.99	39 37	20.142 N	79 44	26.584 W
7200.00	9.40	248.20	7197.16	-40.21	28.23	408841.19	1932187.33	39 37	20.124 N	79 44	26.643 W
7232.00	11.70	249.90	7228.61	-42.30	22.76	408839.10	1932181.86	39 37	20.103 N	79 44	26.713 W
7263.00	14.80	252.20	7258.78	-44.59	16.04	408836.81	1932175.14	39 37	20.081 N	79 44	26.799 W
7295.00	16.40	256.30	7289.61	-46.91	7.75	408834.49	1932166.85	39 37	20.057 N	79 44	26.905 W
7326.00	16.70	260.00	7319.32	-48.72	-0.88	408832.68	1932158.22	39 37	20.039 N	79 44	27.015 W
7359.00	15.50	261.20	7351.03	-50.22	-9.91	408831.18	1932149.19	39 37	20.024 N	79 44	27.130 W
7389.00	17.70	264.50	7379.78	-51.27	-18.41	408830.13	1932140.69	39 37	20.014 N	79 44	27.239 W
7421.00	19.60	266.80	7410.10	-52.03	-28.62	408829.37	1932130.48	39 37	20.006 N	79 44	27.369 W
7453.00	20.10	267.50	7440.19	-52.57	-39.47	408828.83	1932119.63	39 37	20.000 N	79 44	27.508 W
7485.00	19.50	270.70	7470.30	-52.75	-50.30	408828.65	1932108.80	39 37	19.998 N	79 44	27.647 W
7517.00	20.90	274.70	7500.34	-52.22	-61.33	408829.18	1932097.77	39 37	20.003 N	79 44	27.788 W
7548.00	24.40	277.00	7528.94	-50.98	-73.20	408830.42	1932085.90	39 37	20.015 N	79 44	27.939 W
7579.00	30.50	278.20	7556.44	-49.08	-87.36	408832.32	1932071.74	39 37	20.033 N	79 44	28.120 W
7610.00	35.50	279.30	7582.43	-46.50	-104.04	408834.90	1932055.06	39 37	20.058 N	79 44	28.334 W
7642.00	42.10	282.10	7607.36	-42.75	-123.72	408838.65	1932035.38	39 37	20.095 N	79 44	28.585 W
7674.00	47.70	283.20	7630.01	-37.79	-145.75	408843.61	1932013.35	39 37	20.143 N	79 44	28.867 W
7706.00	54.10	286.90	7650.19	-31.31	-169.70	408850.09	1931989.40	39 37	20.207 N	79 44	29.173 W
7737.00	59.00	291.10	7667.28	-22.87	-194.13	408858.53	1931964.97	39 37	20.290 N	79 44	29.486 W
7768.00	63.50	296.20	7682.19	-11.95	-219.00	408869.45	1931940.10	39 37	20.397 N	79 44	29.804 W
7800.00	66.90	300.60	7695.62	1.87	-244.53	408883.27	1931914.57	39 37	20.533 N	79 44	30.131 W
7831.00	71.50	304.80	7706.63	17.53	-268.89	408898.93	1931890.21	39 37	20.687 N	79 44	30.443 W
7863.00	77.80	305.80	7715.09	35.36	-294.06	408916.76	1931865.04	39 37	20.862 N	79 44	30.765 W
7895.00	83.60	306.70	7720.26	54.02	-319.52	408935.42	1931839.58	39 37	21.046 N	79 44	31.091 W
7926.00	86.90	308.10	7722.83	72.79	-344.06	408954.19	1931815.04	39 37	21.231 N	79 44	31.405 W
7957.00	88.90	312.90	7723.97	92.90	-367.60	408974.30	1931791.50	39 37	21.429 N	79 44	31.707 W
7989.00	89.40	315.70	7724.44	115.24	-390.50	408996.64	1931768.60	39 37	21.649 N	79 44	32.000 W
8051.00	90.00	317.30	7724.77	160.21	-433.18	409041.61	1931725.92	39 37	22.093 N	79 44	32.547 W
8115.00	92.80	321.50	7723.20	208.78	-474.80	409090.18	1931684.30	39 37	22.572 N	79 44	33.081 W
8179.00	93.30	321.50	7719.80	258.79	-514.59	409140.19	1931644.51	39 37	23.065 N	79 44	33.591 W
8241.00	93.80	321.70	7715.96	307.29	-553.02	409188.69	1931606.08	39 37	23.543 N	79 44	34.084 W
8304.00	92.90	322.40	7712.28	356.88	-591.70	409238.28	1931567.40	39 37	24.032 N	79 44	34.580 W
8367.00	92.80	322.00	7709.14	406.60	-630.27	409288.00	1931528.83	39 37	24.523 N	79 44	35.074 W
8431.00	92.50	321.80	7706.18	456.91	-669.71	409338.31	1931489.39	39 37	25.019 N	79 44	35.580 W
8495.00	92.00	323.80	7703.67	507.84	-708.38	409389.24	1931450.72	39 37	25.521 N	79 44	36.076 W
8559.00	91.90	323.80	7701.49	559.46	-746.15	409440.86	1931412.95	39 37	26.030 N	79 44	36.561 W
8622.00	91.90	323.20	7699.40	610.07	-783.61	409491.47	1931375.49	39 37	26.530 N	79 44	37.041 W
8686.00	92.80	322.70	7696.78	661.11	-822.13	409542.51	1931336.97	39 37	27.033 N	79 44	37.535 W
8750.00	91.40	322.90	7694.43	712.05	-860.80	409593.45	1931298.30	39 37	27.536 N	79 44	38.031 W
8814.00	90.50	323.20	7693.37	763.19	-899.27	409644.59	1931259.83	39 37	28.040 N	79 44	38.525 W
8877.00	91.00	322.50	7692.55	813.40	-937.31	409694.80	1931221.79	39 37	28.535 N	79 44	39.013 W
8941.00	91.30	322.20	7691.26	864.06	-976.39	409745.46	1931182.71	39 37	29.035 N	79 44	39.514 W
9005.00	92.00	323.10	7689.42	914.92	-1015.21	409796.32	1931143.89	39 37	29.536 N	79 44	40.012 W
9067.00	90.00	324.80	7688.34	965.03	-1051.68	409846.43	1931107.42	39 37	30.031 N	79 44	40.480 W
9130.00	88.90	324.60	7688.94	1016.45	-1088.09	409897.85	1931071.01	39 37	30.538 N	79 44	40.947 W
9193.00	89.20	324.10	7689.99	1067.63	-1124.80	409949.03	1931034.30	39 37	31.043 N	79 44	41.418 W
9255.00	89.30	324.10	7690.80	1117.85	-1161.15	409999.25	1930997.95	39 37	31.538 N	79 44	41.884 W
9318.00	88.60	322.00	7691.96	1168.19	-1199.01	410049.59	1930960.09	39 37	32.035 N	79 44	42.370 W
9380.00	89.20	321.70	7693.15	1216.93	-1237.30	410098.33	1930921.80	39 37	32.516 N	79 44	42.861 W
9444.00	87.10	321.50	7695.21	1267.06	-1277.03	410148.46	1930882.07	39 37	33.010 N	79 44	43.370 W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

Company: CHESAPEAKE OPERATING	Date: 07/09/2011	Time: 07:49:38	Page: 4
Field: Preston County, WV	Co-ordinate(NE) Reference: Well: 3H, Grid North		
Site: Dellslow Hunting and Fishing Club	Vertical (TVD) Reference: GE 1709' + KB 15' 1724.0		
Well: 3H	Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)		
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
9507.00	86.30	321.10	7698.84	1316.15	-1316.36	410197.55	1930842.74	39 37	33.494 N	79 44	43.874 W
9570.00	86.30	321.00	7702.90	1365.04	-1355.88	410246.44	1930803.22	39 37	33.976 N	79 44	44.381 W
9633.00	85.20	321.30	7707.57	1413.97	-1395.29	410295.37	1930763.81	39 37	34.459 N	79 44	44.887 W
9695.00	85.70	321.70	7712.49	1462.34	-1433.76	410343.74	1930725.34	39 37	34.936 N	79 44	45.380 W
9759.00	86.00	321.10	7717.12	1512.22	-1473.59	410393.62	1930685.51	39 37	35.428 N	79 44	45.891 W
9823.00	85.60	321.30	7721.81	1561.97	-1513.58	410443.37	1930645.52	39 37	35.918 N	79 44	46.404 W
9886.00	85.20	321.70	7726.86	1611.11	-1552.68	410492.51	1930606.42	39 37	36.403 N	79 44	46.905 W
9950.00	86.40	321.10	7731.55	1660.99	-1592.50	410542.39	1930566.60	39 37	36.895 N	79 44	47.416 W
10013.00	86.20	321.10	7735.61	1709.92	-1631.97	410591.32	1930527.13	39 37	37.377 N	79 44	47.922 W
10075.00	86.60	321.70	7739.51	1758.28	-1670.58	410639.68	1930488.52	39 37	37.854 N	79 44	48.417 W
10138.00	86.80	320.80	7743.13	1807.33	-1709.95	410688.73	1930449.15	39 37	38.338 N	79 44	48.922 W
10202.00	85.70	321.70	7747.32	1857.13	-1749.92	410738.53	1930409.18	39 37	38.829 N	79 44	49.435 W
10264.00	84.30	320.80	7752.72	1905.30	-1788.58	410786.70	1930370.52	39 37	39.304 N	79 44	49.930 W
10326.00	84.10	321.00	7758.99	1953.17	-1827.48	410834.57	1930331.62	39 37	39.776 N	79 44	50.429 W
10390.00	84.50	320.10	7765.35	2002.34	-1867.94	410883.74	1930291.16	39 37	40.261 N	79 44	50.948 W
10453.00	84.10	320.40	7771.60	2050.54	-1908.03	410931.94	1930251.07	39 37	40.736 N	79 44	51.462 W
10517.00	83.90	319.70	7778.29	2099.33	-1948.90	410980.73	1930210.20	39 37	41.218 N	79 44	51.986 W
10578.00	82.70	319.90	7785.41	2145.61	-1988.00	411027.01	1930171.10	39 37	41.674 N	79 44	52.488 W
10641.00	82.60	319.70	7793.47	2193.33	-2028.33	411074.73	1930130.77	39 37	42.145 N	79 44	53.005 W
10705.00	82.90	319.20	7801.55	2241.57	-2069.61	411122.97	1930089.49	39 37	42.620 N	79 44	53.534 W
10768.00	84.60	319.20	7808.40	2288.98	-2110.52	411170.38	1930048.58	39 37	43.088 N	79 44	54.059 W
10830.00	85.20	318.80	7813.92	2335.58	-2151.04	411216.98	1930008.06	39 37	43.547 N	79 44	54.578 W
10893.00	85.90	318.80	7818.80	2382.84	-2192.41	411264.24	1929966.69	39 37	44.013 N	79 44	55.109 W
10955.00	86.80	318.70	7822.75	2429.36	-2233.21	411310.76	1929925.89	39 37	44.472 N	79 44	55.632 W
11018.00	87.10	318.30	7826.10	2476.48	-2274.89	411357.88	1929884.21	39 37	44.936 N	79 44	56.166 W
11081.00	87.40	318.00	7829.13	2523.35	-2316.88	411404.75	1929842.22	39 37	45.398 N	79 44	56.704 W
11143.00	87.50	319.60	7831.88	2569.95	-2357.67	411451.35	1929801.43	39 37	45.858 N	79 44	57.228 W
11207.00	87.80	319.70	7834.51	2618.69	-2399.08	411500.09	1929760.02	39 37	46.338 N	79 44	57.758 W
11269.00	89.20	321.80	7836.13	2666.68	-2438.29	411548.08	1929720.81	39 37	46.812 N	79 44	58.261 W
11332.00	89.90	322.50	7836.63	2716.42	-2476.94	411597.82	1929682.16	39 37	47.302 N	79 44	58.757 W
11395.00	90.30	322.40	7836.52	2766.37	-2515.34	411647.77	1929643.76	39 37	47.795 N	79 44	59.250 W
11458.00	91.20	321.80	7835.69	2816.08	-2554.03	411697.48	1929605.07	39 37	48.285 N	79 44	59.746 W
11522.00	90.00	322.20	7835.02	2866.51	-2593.43	411747.91	1929565.67	39 37	48.783 N	79 45	0.251 W
11584.00	90.20	321.70	7834.91	2915.33	-2631.65	411796.73	1929527.45	39 37	49.264 N	79 45	0.742 W
11647.00	90.80	321.10	7834.36	2964.56	-2670.95	411845.96	1929488.15	39 37	49.750 N	79 45	1.246 W
11710.00	91.40	321.30	7833.15	3013.65	-2710.42	411895.05	1929448.68	39 37	50.234 N	79 45	1.752 W
11774.00	91.90	321.10	7831.31	3063.51	-2750.50	411944.91	1929408.60	39 37	50.725 N	79 45	2.266 W
11838.00	91.50	321.70	7829.41	3113.50	-2790.41	411994.90	1929368.69	39 37	51.218 N	79 45	2.778 W
11901.00	92.10	321.80	7827.43	3162.95	-2829.40	412044.35	1929329.70	39 37	51.706 N	79 45	3.278 W
11964.00	90.50	321.80	7826.00	3212.45	-2868.35	412093.85	1929290.75	39 37	52.194 N	79 45	3.777 W
12028.00	90.50	322.20	7825.45	3262.88	-2907.75	412144.28	1929251.35	39 37	52.691 N	79 45	4.283 W
12091.00	88.90	323.10	7825.78	3312.96	-2945.97	412194.36	1929213.13	39 37	53.185 N	79 45	4.773 W
12155.00	89.40	322.70	7826.73	3364.00	-2984.57	412245.40	1929174.53	39 37	53.689 N	79 45	5.268 W
12219.00	87.60	322.20	7828.40	3414.72	-3023.56	412296.12	1929135.54	39 37	54.189 N	79 45	5.769 W
12283.00	87.50	322.50	7831.14	3465.35	-3062.61	412346.75	1929096.49	39 37	54.688 N	79 45	6.270 W
12345.00	85.90	322.70	7834.71	3514.52	-3100.21	412395.92	1929058.89	39 37	55.173 N	79 45	6.752 W
12409.00	85.50	322.20	7839.50	3565.11	-3139.10	412446.51	1929020.00	39 37	55.672 N	79 45	7.251 W
12472.00	85.60	322.40	7844.39	3614.81	-3177.51	412496.21	1928981.59	39 37	56.162 N	79 45	7.744 W
12535.00	86.40	322.90	7848.79	3664.77	-3215.64	412546.17	1928943.46	39 37	56.655 N	79 45	8.233 W
12599.00	87.00	322.50	7852.47	3715.59	-3254.36	412596.99	1928904.74	39 37	57.156 N	79 45	8.729 W
12663.00	87.10	322.50	7855.76	3766.30	-3293.27	412647.70	1928865.83	39 37	57.656 N	79 45	9.229 W
12726.00	87.40	322.40	7858.79	3816.19	-3331.62	412697.59	1928827.48	39 37	58.148 N	79 45	9.721 W
12789.00	88.60	321.50	7860.99	3865.77	-3370.42	412747.17	1928788.68	39 37	58.637 N	79 45	10.218 W

LEAM Drilling Systems, Inc.

Survey Report - Geographic

Company: CHESAPEAKE OPERATING
 Field: Preston County, WV
 Site: Dellslow Hunting and Fishing Club
 Well: 3H
 Wellpath: OH

Date: 07/09/2011 Time: 07:49:38 Page: 5
 Co-ordinate(NE) Reference: Well: 3H, Grid North
 Vertical (TVD) Reference: GE 1709' + KB 15' 1724.0
 Section (VS) Reference: Well (0.00N,0.00E,319.00Azi)
 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
12853.00	89.10	321.00	7862.27	3915.67	-3410.48	412797.07	1928748.62	39 37	59.130 N	79 45	10.732 W
12916.00	89.50	320.60	7863.04	3964.49	-3450.29	412845.89	1928708.81	39 37	59.611 N	79 45	11.243 W
12977.00	90.00	321.00	7863.31	4011.76	-3488.84	412893.16	1928670.26	39 38	0.077 N	79 45	11.737 W
13039.00	90.70	320.80	7862.93	4059.88	-3527.94	412941.28	1928631.16	39 38	0.552 N	79 45	12.239 W
13103.00	91.20	320.80	7861.87	4109.47	-3568.39	412990.87	1928590.71	39 38	1.041 N	79 45	12.757 W
13166.00	91.50	320.60	7860.38	4158.20	-3608.28	413039.60	1928550.82	39 38	1.521 N	79 45	13.269 W
13228.00	92.10	321.30	7858.43	4206.33	-3647.32	413087.73	1928511.78	39 38	1.996 N	79 45	13.770 W
13290.00	91.50	321.80	7856.49	4254.86	-3685.85	413136.26	1928473.25	39 38	2.474 N	79 45	14.264 W
13354.00	91.60	321.80	7854.76	4305.14	-3725.42	413186.54	1928433.68	39 38	2.970 N	79 45	14.772 W
13417.00	92.40	321.70	7852.56	4354.58	-3764.40	413235.98	1928394.70	39 38	3.458 N	79 45	15.272 W
13478.00	92.90	321.70	7849.74	4402.40	-3802.16	413283.80	1928356.94	39 38	3.929 N	79 45	15.756 W
13542.00	92.20	322.00	7846.89	4452.68	-3841.66	413334.08	1928317.44	39 38	4.425 N	79 45	16.263 W
13605.00	92.50	321.70	7844.31	4502.18	-3880.54	413383.58	1928278.56	39 38	4.913 N	79 45	16.762 W
13670.00	92.50	321.70	7841.47	4553.14	-3920.79	413434.54	1928238.31	39 38	5.416 N	79 45	17.278 W



July 9, 2011

Chesapeake Operating
Well: Dellslow Fishing & Hunting Club 3H
County/Parish: Preston County, WV

Leam MWD: from 6,665' MD – 13,605' MD
Projection: 13,670' MD

This Borehole Survey taken between 4/20/2011 and 5/6/2011, has been conducted and calculated according to the highest professional standards and complies with all known State and federal requirements.

Reviewed and Approved:

Date: July 9, 2011



Survey Certification Form

State of West Virginia
County of Preston

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Systems, Inc., that I did on the day(s) of April 20, 2011 through May 6, 2011, conduct or supervise the taking of MWD Survey from a depth of 6,665' to 13,670' 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 for the Dellslow Fishing & Hunting Club 3H in County of Preston, 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 read 'Randy W. Rakowitz', is written over a solid horizontal line.

Randy W. Rakowitz
MWD Operations Coordinator