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WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

## Chesapeake Appalachia, LLC

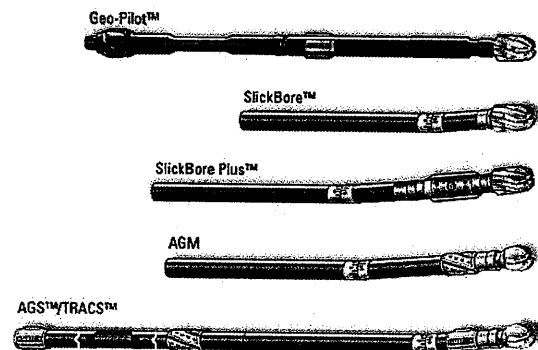
Brian Dytko OHI 1H

Ohio County, West Virginia  
Nomac #37

## Sperry Drilling Services

## End of Well Report

Prepared For: Chesapeake Appalachia, LLC



October 1, 2012

Submitted by:  
Tim Aitken - Well Planner  
Darin Brown - Directional Drilling Coordinator  
Hunter Williams - Sperry Account Rep.  
1-800-332-3992  
Houston, TX 77032

**HALLIBURTON**

# Chesapeake Appalachia. LLC

**Brian Dytko OHI 1H  
Ohio County, West Virginia**

## **End of Well Report**

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**HALLIBURTON**

**Sperry Drilling Services**

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WV GEOLOGICAL SURVEY  
MORGANTHAU, WV

## Final Surveys and Plot

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WV GEOLOGICAL SURVEY  
NORTH CHARLESTON, WV

# Chesapeake Appalachia, LLC

**HALLIBURTON**  
Sperry Drilling Services

Project: Ohio County, WV  
Site: Valley Grove  
Well: Brian Dytko OHI 1H  
Wellbore: Wellbore #1  
Design: Plan #3  
Rig: Nomac 37

### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Annotation
10984.00	90.74	324.46	6276.03	3047.52	-3756.56	0.00	0.00	4683.21	Tie-On
11031.00	90.68	324.48	6275.45	3085.77	-3783.87	0.13	161.57	4730.20	Start Drop
11136.04	89.00	323.22	6275.74	3170.58	-3845.83	2.00	-143.22	4835.23	End Drop
11304.45	89.00	323.22	6278.69	3305.46	-3946.65	0.00	0.00	5003.61	Start Build
11396.07	90.80	323.55	6278.85	3378.99	-4001.29	2.00	10.31	5095.23	End Build
12298.07	90.80	323.55	6266.26	4104.46	-4537.13	0.00	0.00	5997.14	TD

### Surface Location:

US State Plane 1927 (Exact solution)  
West Virginia North 4701  
Elevation: GL 1220' + KB 18' @ 1238.00ft (Nomac 37)

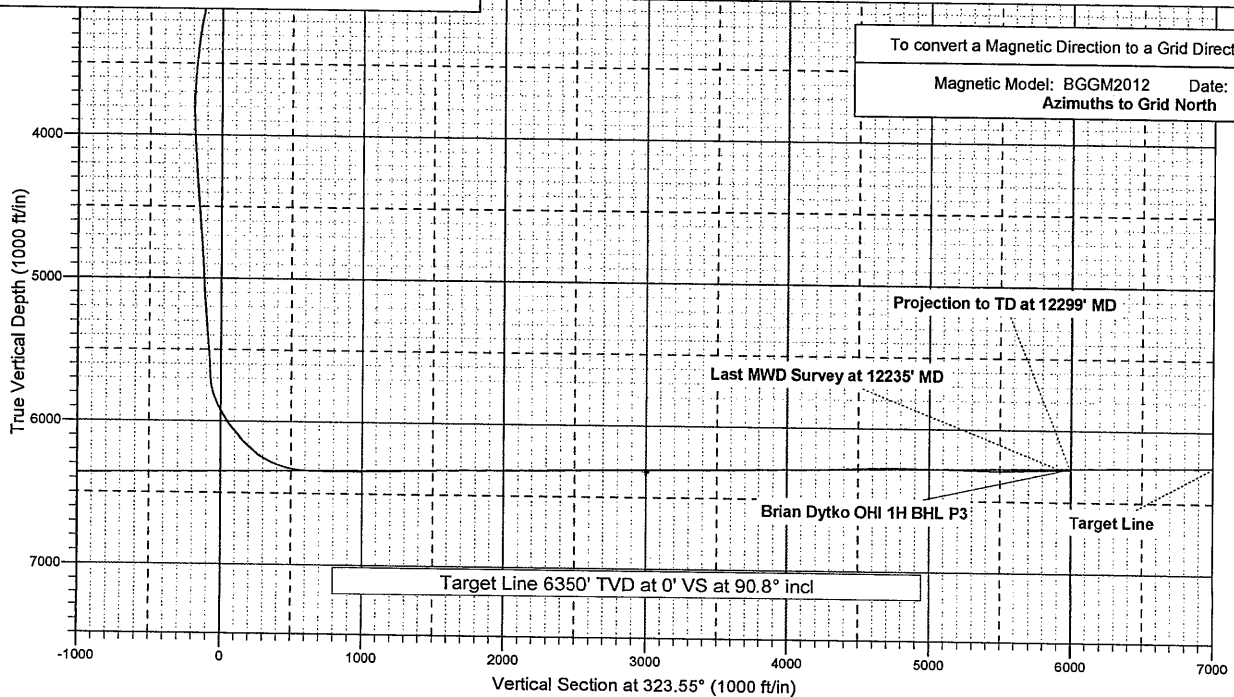
Northing	Easting	Latitude	Longitude
559151.72	1689701.18	40° 1' 47.676 N	80° 36' 29.110 W

### WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
Brian Dytko OHI 1H BHL P3	6266.26	4104.46	-4537.13	563256.18	1685164.05

To convert a Magnetic Direction to a Grid Direction, Subtract 7.97°

Magnetic Model: BGGM2012 Date: 16-Aug-12  
Azimuths to Grid North



Created By: Tim Aitken Date: 1 October 2012

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WV GEOLOGICAL SURVEY  
MORGANTHAU, WV

**Chesapeake Appalachia, LLC**

**HALLIBURTON**  
Sperry Drilling Services

Project: Ohio County, WV  
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Well: Brian Dytko OHI 1H  
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Rig: Nomac 37



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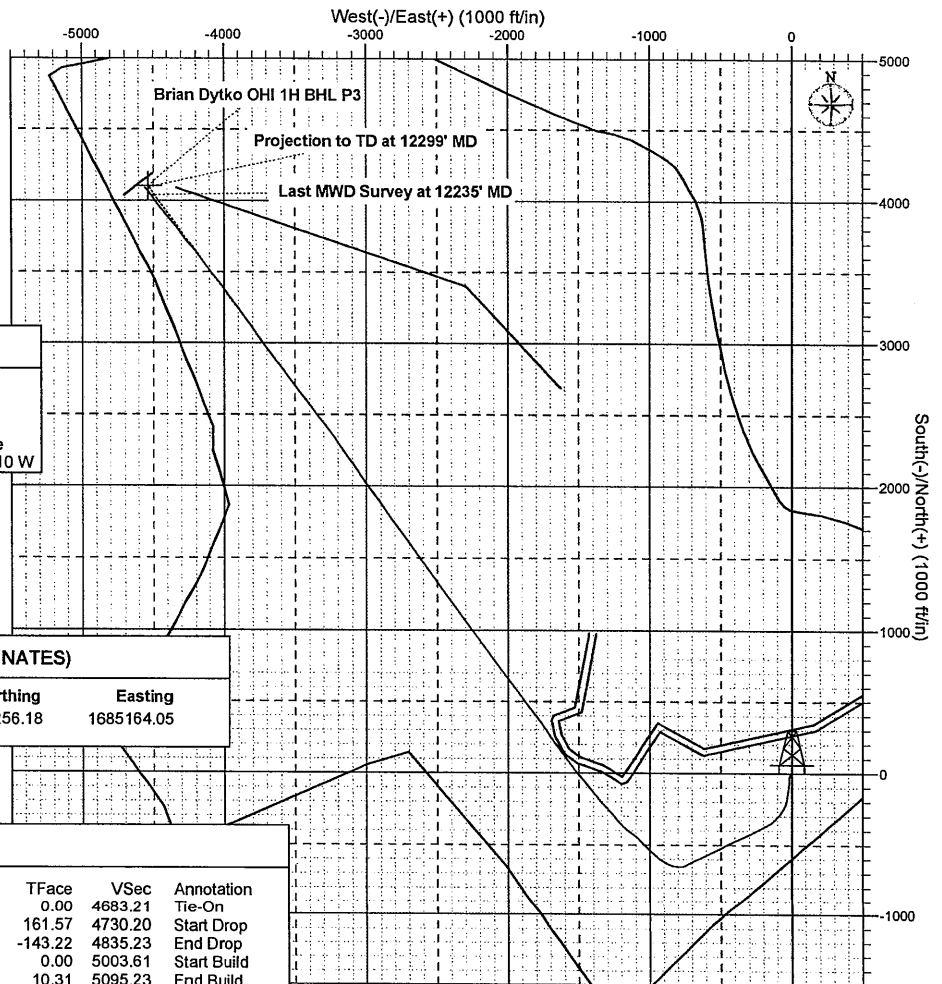
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11031.00	90.68	324.48	6275.45	3085.77	-3783.87	0.13	161.57	4730.20	Start Drop
11136.04	89.00	323.22	6275.74	3170.58	-3845.83	2.00	-143.22	4835.23	End Drop
11304.45	89.00	323.22	6278.69	3305.46	-3946.65	0.00	0.00	5003.61	Start Build
11396.07	90.80	323.55	6278.85	3378.99	-4001.29	2.00	10.31	5095.23	End Build
12298.07	90.80	323.55	6266.26	4104.46	-4537.13	0.00	0.00	5997.14	TD



Created By: Tim Altken Date: 1 October 2012

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WV GEOLOGICAL SURVEY  
DEPT. OF ENERGY

# Chesapeake Appalachia, LLC

Ohio County, WV  
Valley Grove  
Brian Dytko OHI 1H

Wellbore #1

Design: Surveys

## Sperry Drilling Services Combo Report

01 October, 2012

Well Coordinates: 559,151.72 N, 1,689,701.18 E (40° 01' 47.68" N, 080° 36' 29.11" W)  
Ground Level: 1,220.00 ft

Local Coordinate Origin:	Centered on Well Brian Dytko OHI 1H
Viewing Datum:	GL 1220' + KB 18' @ 1238.00ft (Nomac 37)
TVDs to System:	N
North Reference:	Grid
Unit System:	API-US Survey Feet

Version: 2003.16 Build: 431

**HALLIBURTON**

SEP 25 2012

**Design Report for Brian Dytko OHI 1H - Surveys**

WV OIL & GAS SURVEY

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
0.00	0.00	0.00	-1,238.00	0.00	0.00 N	0.00 E	559,151.72	1,689,701.18	0.00	0.00
100.00	0.26	249.13	-1,138.00	100.00	0.08 S	0.21 W	559,151.64	1,689,700.97	0.26	0.21
200.00	0.06	303.15	-1,038.00	200.00	0.13 S	0.47 W	559,151.59	1,689,700.71	0.23	0.44
300.00	0.16	302.87	-938.00	300.00	0.03 S	0.63 W	559,151.69	1,689,700.55	0.10	0.49
400.00	0.29	288.93	-838.00	400.00	0.13 N	0.99 W	559,151.85	1,689,700.20	0.14	0.65
500.00	0.32	263.47	-738.00	500.00	0.18 N	1.50 W	559,151.90	1,689,699.68	0.14	1.00
600.00	0.22	276.25	-638.00	600.00	0.17 N	1.97 W	559,151.89	1,689,699.21	0.12	1.36
700.00	0.39	323.72	-538.01	699.99	0.46 N	2.36 W	559,152.18	1,689,698.82	0.29	1.45
800.00	0.50	312.30	-438.01	799.99	1.03 N	2.89 W	559,152.75	1,689,698.30	0.14	1.46
900.00	0.38	321.00	-338.01	899.99	1.58 N	3.42 W	559,153.30	1,689,697.76	0.14	1.49
1,000.00	0.43	326.01	-238.01	999.99	2.15 N	3.84 W	559,153.87	1,689,697.35	0.06	1.43
1,100.00	0.38	310.67	-138.02	1,099.98	2.68 N	4.30 W	559,154.40	1,689,696.88	0.12	1.42
1,200.00	0.44	317.60	-38.02	1,199.98	3.18 N	4.81 W	559,154.90	1,689,696.37	0.08	1.47
1,300.00	0.33	350.67	61.98	1,299.98	3.75 N	5.11 W	559,155.47	1,689,696.07	0.24	1.32
1,400.00	0.37	340.92	161.98	1,399.98	4.34 N	5.27 W	559,156.06	1,689,695.92	0.07	1.04
1,500.00	0.25	9.47	261.98	1,499.98	4.86 N	5.34 W	559,156.58	1,689,695.85	0.19	0.74
1,600.00	0.13	22.86	361.97	1,599.97	5.18 N	5.26 W	559,156.90	1,689,695.93	0.13	0.47
1,700.00	0.18	30.76	461.97	1,699.97	5.42 N	5.13 W	559,157.13	1,689,696.05	0.05	0.22
1,800.00	0.06	359.59	561.97	1,799.97	5.60 N	5.05 W	559,157.32	1,689,696.13	0.13	0.03
1,900.00	0.16	320.63	661.97	1,899.97	5.76 N	5.14 W	559,157.48	1,689,696.04	0.12	-0.01
2,000.00	0.13	218.26	761.97	1,999.97	5.78 N	5.30 W	559,157.50	1,689,695.88	0.23	0.10
2,100.00	0.15	288.01	861.97	2,099.97	5.73 N	5.49 W	559,157.45	1,689,695.69	0.16	0.28
2,200.00	0.33	247.86	961.97	2,199.97	5.67 N	5.89 W	559,157.38	1,689,695.30	0.24	0.61
2,300.00	6.11	208.16	1,061.78	2,299.78	0.86 N	8.67 W	559,152.58	1,689,692.52	5.86	5.89
2,400.00	9.43	197.79	1,160.85	2,398.85	11.64 S	13.68 W	559,140.08	1,689,687.50	3.59	17.96
2,500.00	10.41	187.49	1,259.36	2,497.36	28.40 S	17.36 W	559,123.32	1,689,683.82	2.02	31.87
2,600.00	10.98	182.17	1,357.62	2,595.62	46.87 S	18.90 W	559,104.85	1,689,682.28	1.14	45.33
2,700.00	10.84	183.08	1,455.82	2,693.82	65.78 S	19.77 W	559,085.94	1,689,681.41	0.22	58.57
2,800.00	13.07	190.06	1,553.65	2,791.65	86.30 S	22.25 W	559,065.42	1,689,678.93	2.65	74.10
2,900.00	14.99	190.19	1,650.66	2,888.66	110.17 S	26.51 W	559,041.55	1,689,674.67	1.92	93.18
3,000.00	16.11	186.21	1,747.00	2,985.00	136.69 S	30.30 W	559,015.03	1,689,670.88	1.55	113.68
3,100.00	17.53	187.69	1,842.72	3,080.72	165.41 S	33.82 W	558,986.31	1,689,667.37	1.48	135.44
3,200.00	16.14	189.39	1,938.43	3,176.43	194.05 S	38.10 W	558,957.67	1,689,663.08	1.47	157.72
3,300.00	14.35	201.37	2,034.93	3,272.93	219.31 S	44.89 W	558,932.41	1,689,656.30	3.61	179.61
3,400.00	15.84	211.27	2,131.50	3,369.50	242.52 S	56.49 W	558,909.20	1,689,644.69	2.97	203.73
3,500.00	16.90	214.33	2,227.44	3,465.44	266.19 S	71.77 W	558,885.53	1,689,629.41	1.37	230.90
3,600.00	17.66	218.55	2,322.93	3,560.93	290.06 S	89.42 W	558,861.66	1,689,611.76	1.47	259.97
3,700.00	17.22	225.82	2,418.35	3,656.35	312.24 S	109.49 W	558,839.48	1,689,591.69	2.22	289.71
3,800.00	17.13	227.39	2,513.89	3,751.89	332.52 S	130.95 W	558,819.20	1,689,570.24	0.47	319.23
3,900.00	16.65	235.62	2,609.59	3,847.59	350.59 S	153.61 W	558,801.13	1,689,547.57	2.44	348.16
4,000.00	16.78	245.34	2,705.38	3,943.38	364.70 S	178.56 W	558,787.02	1,689,522.62	2.80	376.17
4,100.00	16.47	243.69	2,801.20	4,039.20	377.01 S	204.38 W	558,774.71	1,689,496.80	0.56	403.63
4,200.00	17.30	242.28	2,896.89	4,134.89	390.21 S	230.25 W	558,761.51	1,689,470.93	0.93	431.71
4,300.00	18.45	243.09	2,992.06	4,230.06	404.29 S	257.53 W	558,747.43	1,689,443.65	1.18	461.43
4,400.00	20.58	243.95	3,086.31	4,324.31	419.17 S	287.43 W	558,732.55	1,689,413.75	2.15	493.64

**HALLIBURTON**

**Design Report for Brian Dytko OHI 1H - Surveys**

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
4,500.00	21.68	244.38	3,179.59	4,417.59	434.87 S	319.88 W	558,716.85	1,689,381.30	1.11	528.30
4,600.00	21.31	244.42	3,272.63	4,510.63	450.71 S	352.92 W	558,701.01	1,689,348.26	0.37	563.49
4,700.00	20.06	246.17	3,366.19	4,604.19	465.48 S	385.00 W	558,686.24	1,689,316.18	1.39	597.25
4,800.00	18.62	244.82	3,460.54	4,698.54	479.20 S	415.14 W	558,672.52	1,689,286.04	1.51	628.87
4,900.00	19.15	247.57	3,555.16	4,793.16	492.25 S	444.75 W	558,659.46	1,689,256.43	1.04	659.64
5,000.00	20.49	240.99	3,649.24	4,887.24	507.00 S	475.22 W	558,644.72	1,689,225.96	2.60	692.19
5,100.00	20.86	239.42	3,742.81	4,980.81	524.55 S	505.86 W	558,627.17	1,689,195.33	0.67	726.72
5,200.00	21.29	241.17	3,836.12	5,074.12	542.36 S	537.09 W	558,609.36	1,689,164.09	0.76	761.88
5,300.00	21.23	245.19	3,929.32	5,167.32	558.71 S	569.43 W	558,593.01	1,689,131.75	1.46	796.89
5,400.00	20.93	244.78	4,022.62	5,260.62	573.92 S	602.02 W	558,577.80	1,689,099.16	0.33	831.33
5,500.00	19.30	246.64	4,116.52	5,354.52	588.09 S	633.36 W	558,563.63	1,689,067.83	1.75	864.13
5,600.00	20.37	248.39	4,210.59	5,448.59	601.05 S	664.71 W	558,550.67	1,689,036.47	1.22	896.14
5,645.00	20.80	246.25	4,252.72	5,490.72	607.15 S	679.30 W	558,544.57	1,689,021.88	1.93	911.09
5,821.00	21.46	241.20	4,416.90	5,654.90	635.25 S	736.13 W	558,516.47	1,688,965.06	1.10	972.18
5,852.00	21.40	240.02	4,445.75	5,683.75	640.81 S	745.99 W	558,510.91	1,688,955.19	1.40	983.24
5,884.00	22.18	247.24	4,475.47	5,713.47	646.06 S	756.62 W	558,505.66	1,688,944.56	8.72	994.67
5,916.00	23.64	256.20	4,504.96	5,742.96	649.93 S	768.43 W	558,501.79	1,688,932.75	11.80	1,006.05
5,947.00	25.02	263.26	4,533.21	5,771.21	652.18 S	780.98 W	558,499.54	1,688,920.21	10.38	1,016.91
5,978.00	26.28	271.25	4,561.16	5,799.16	652.80 S	794.35 W	558,498.92	1,688,906.83	11.86	1,027.29
6,010.00	27.40	277.12	4,589.72	5,827.72	651.74 S	808.74 W	558,499.98	1,688,892.44	8.99	1,037.31
6,042.00	28.68	281.51	4,617.96	5,855.96	649.29 S	823.58 W	558,502.43	1,688,877.60	7.59	1,046.74
6,073.00	31.12	285.02	4,644.84	5,882.84	645.73 S	838.61 W	558,505.99	1,688,862.58	9.68	1,055.58
6,105.00	31.67	290.50	4,672.16	5,910.16	640.64 S	854.47 W	558,511.08	1,688,846.72	9.08	1,064.01
6,137.00	33.40	294.27	4,699.14	5,937.14	634.08 S	870.37 W	558,517.64	1,688,830.82	8.33	1,071.49
6,168.00	34.98	298.41	4,724.78	5,962.78	626.34 S	885.96 W	558,525.38	1,688,815.22	9.07	1,077.97
6,200.00	35.87	300.48	4,750.86	5,988.86	617.22 S	902.11 W	558,534.50	1,688,799.07	4.67	1,083.93
6,231.00	36.28	302.39	4,775.92	6,013.92	607.70 S	917.68 W	558,544.02	1,688,783.50	3.86	1,089.19
6,263.00	37.92	305.20	4,801.44	6,039.44	596.96 S	933.72 W	558,554.76	1,688,767.47	7.37	1,093.99
6,295.00	39.34	308.09	4,826.44	6,064.44	585.04 S	949.74 W	558,566.68	1,688,751.45	7.17	1,097.99
6,326.00	41.48	312.22	4,850.05	6,088.05	572.07 S	965.08 W	558,579.65	1,688,736.10	11.05	1,100.79
6,358.00	42.96	314.94	4,873.75	6,111.75	557.25 S	980.65 W	558,594.47	1,688,720.54	7.35	1,102.51
6,389.00	44.14	315.51	4,896.22	6,134.22	542.08 S	995.69 W	558,609.64	1,688,705.49	4.01	1,103.62
6,420.00	44.27	314.54	4,918.44	6,156.44	526.79 S	1,010.97 W	558,624.93	1,688,690.22	2.22	1,104.83
6,451.00	46.47	314.75	4,940.21	6,178.21	511.29 S	1,026.66 W	558,640.43	1,688,674.52	7.11	1,106.20
6,483.00	50.48	313.48	4,961.43	6,199.43	494.62 S	1,043.86 W	558,657.09	1,688,657.32	12.88	1,107.92
6,514.00	54.32	313.75	4,980.34	6,218.34	477.68 S	1,061.64 W	558,674.03	1,688,639.54	12.41	1,109.88
6,545.00	56.70	314.27	4,997.89	6,235.89	459.93 S	1,080.01 W	558,691.79	1,688,621.17	7.80	1,111.75
6,576.00	60.15	308.28	5,014.13	6,252.13	442.54 S	1,099.86 W	558,709.18	1,688,601.32	19.86	1,114.96
6,608.00	62.80	307.30	5,029.41	6,267.41	425.32 S	1,122.08 W	558,726.40	1,688,579.10	8.71	1,120.05
6,639.00	66.22	308.27	5,042.75	6,280.75	408.18 S	1,144.19 W	558,743.54	1,688,556.99	11.39	1,125.11
6,670.00	68.71	311.09	5,054.63	6,292.63	389.89 S	1,166.22 W	558,761.83	1,688,534.97	11.62	1,129.35
6,702.00	71.40	313.54	5,065.55	6,303.55	369.64 S	1,188.45 W	558,782.08	1,688,512.73	11.07	1,132.43
6,734.00	74.07	314.86	5,075.04	6,313.04	348.34 S	1,210.36 W	558,803.38	1,688,490.83	9.23	1,134.57
6,765.00	75.83	316.17	5,083.09	6,321.09	326.98 S	1,231.33 W	558,824.74	1,688,469.85	6.99	1,135.97
6,797.00	78.30	317.13	5,090.26	6,328.26	304.30 S	1,252.74 W	558,847.42	1,688,448.45	8.25	1,136.82



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HALLIBURTON

SEP 25 2013

Ohio County, WV

Design Report for Brian Dytko OHI 1H - Surveys

WV GEOLOGICAL SURVEY  
MORGANTHAU, WV

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
6,829.00	81.33	318.30	5,095.91	6,333.91	281.00 S	1,273.92 W	558,870.72	1,688,427.26	10.13	1,137.09
6,860.00	84.79	319.25	5,099.66	6,337.66	257.86 S	1,294.20 W	558,893.86	1,688,406.98	11.57	1,136.79
6,891.00	87.41	319.15	5,101.77	6,339.77	234.45 S	1,314.41 W	558,917.27	1,688,386.78	8.46	1,136.25
6,955.00	88.66	318.65	5,103.96	6,341.96	186.25 S	1,356.45 W	558,965.47	1,688,344.73	2.10	1,135.48
7,082.00	90.23	320.63	5,105.19	6,343.19	89.49 S	1,438.69 W	559,062.23	1,688,262.50	1.99	1,132.31
7,208.00	90.30	321.22	5,104.61	6,342.61	8.32 N	1,518.11 W	559,160.04	1,688,183.07	0.47	1,126.35
7,334.00	91.01	323.01	5,103.17	6,341.17	107.76 N	1,595.47 W	559,259.48	1,688,105.71	1.53	1,117.77
7,461.00	91.41	325.53	5,100.49	6,338.49	210.82 N	1,669.61 W	559,362.54	1,688,031.57	2.01	1,104.36
7,588.00	90.57	323.88	5,098.29	6,336.29	314.46 N	1,742.98 W	559,466.18	1,687,958.20	1.46	1,090.00
7,715.00	92.28	324.14	5,095.13	6,333.13	417.18 N	1,817.58 W	559,568.90	1,687,883.60	1.36	1,077.17
7,842.00	90.77	322.12	5,091.75	6,329.75	518.73 N	1,893.75 W	559,670.45	1,687,807.43	1.99	1,066.29
7,969.00	91.61	323.53	5,089.12	6,327.12	619.90 N	1,970.47 W	559,771.62	1,687,730.71	1.29	1,056.07
8,095.00	90.27	323.06	5,087.05	6,325.05	720.90 N	2,045.77 W	559,872.62	1,687,655.41	1.13	1,044.91
8,221.00	90.20	323.14	5,086.53	6,324.53	821.66 N	2,121.42 W	559,973.38	1,687,579.76	0.08	1,034.17
8,347.00	91.78	324.56	5,084.36	6,322.36	923.38 N	2,195.74 W	560,075.10	1,687,505.45	1.69	1,021.79
8,477.00	89.83	322.29	5,082.53	6,320.53	1,027.76 N	2,273.18 W	560,179.48	1,687,428.00	2.30	1,009.97
8,601.00	90.87	323.68	5,081.77	6,319.77	1,126.77 N	2,347.83 W	560,278.48	1,687,353.35	1.40	999.65
8,728.00	91.41	323.28	5,079.24	6,317.24	1,228.81 N	2,423.39 W	560,380.53	1,687,277.79	0.53	987.99
8,852.00	91.21	323.93	5,076.41	6,314.41	1,328.59 N	2,496.95 W	560,480.31	1,687,204.23	0.55	976.33
8,979.00	90.77	323.66	5,074.22	6,312.22	1,431.06 N	2,571.95 W	560,582.78	1,687,129.23	0.41	963.98
9,106.00	90.54	323.32	5,072.76	6,310.76	1,533.13 N	2,647.51 W	560,684.85	1,687,053.67	0.32	952.29
9,233.00	90.90	323.95	5,071.17	6,309.17	1,635.38 N	2,722.80 W	560,787.10	1,686,978.38	0.57	940.29
9,360.00	90.50	323.44	5,069.62	6,307.62	1,737.72 N	2,797.99 W	560,889.44	1,686,903.19	0.51	928.15
9,486.00	90.54	324.24	5,068.47	6,306.47	1,839.45 N	2,872.33 W	560,991.17	1,686,828.85	0.64	915.79
9,611.00	90.64	324.67	5,067.19	6,305.19	1,941.15 N	2,945.00 W	561,092.87	1,686,756.19	0.35	902.19
9,735.00	90.64	324.72	5,065.80	6,303.80	2,042.34 N	3,016.66 W	561,194.06	1,686,684.53	0.04	888.19
9,859.00	90.23	325.21	5,064.86	6,302.86	2,143.87 N	3,087.84 W	561,295.58	1,686,613.34	0.52	873.60
9,985.00	91.65	325.14	5,062.79	6,300.79	2,247.28 N	3,159.78 W	561,399.00	1,686,541.40	1.13	858.33
10,112.00	91.92	325.11	5,058.84	6,296.84	2,351.42 N	3,232.36 W	561,503.14	1,686,468.82	0.21	843.04
10,237.00	89.93	321.57	5,056.82	6,294.82	2,451.66 N	3,306.97 W	561,603.38	1,686,394.21	3.25	831.87
10,361.00	90.50	322.97	5,056.35	6,294.35	2,549.73 N	3,382.85 W	561,701.45	1,686,318.33	1.22	823.09
10,486.00	91.04	322.89	5,054.67	6,292.67	2,649.46 N	3,458.19 W	561,801.18	1,686,242.99	0.44	812.81
10,611.00	92.15	322.62	5,051.19	6,289.19	2,748.92 N	3,533.81 W	561,900.64	1,686,167.37	0.91	802.91
10,734.00	92.82	322.62	5,045.86	6,283.86	2,846.57 N	3,608.42 W	561,998.29	1,686,092.77	0.54	793.46
10,858.00	91.91	323.17	5,040.74	6,278.74	2,945.38 N	3,683.16 W	562,097.10	1,686,018.02	0.86	783.34
10,984.00	90.74	324.46	5,037.83	6,275.83	3,047.05 N	3,757.53 W	562,198.76	1,685,943.66	1.38	771.04
11,107.00	89.33	324.40	5,037.75	6,275.75	3,147.09 N	3,829.07 W	562,298.81	1,685,872.11	1.15	757.71
11,233.00	89.46	324.73	5,039.08	6,277.08	3,249.75 N	3,902.12 W	562,401.47	1,685,799.06	0.28	743.77
11,359.00	88.72	323.83	5,041.09	6,279.09	3,352.03 N	3,975.67 W	562,503.75	1,685,725.51	0.92	730.45
11,483.00	88.76	322.26	5,043.81	6,281.81	3,451.09 N	4,050.20 W	562,602.81	1,685,650.98	1.27	720.00
11,608.00	88.76	322.38	5,046.52	6,284.52	3,550.00 N	4,126.59 W	562,701.72	1,685,574.60	0.10	711.04
11,734.00	89.16	320.78	5,048.81	6,286.81	3,648.70 N	4,204.87 W	562,800.42	1,685,496.31	1.31	703.64
11,859.00	91.51	321.29	5,048.07	6,286.07	3,745.88 N	4,283.47 W	562,897.60	1,685,417.71	1.92	697.48
11,983.00	92.49	321.73	5,043.75	6,281.75	3,842.88 N	4,360.60 W	562,994.59	1,685,340.59	0.87	690.34
12,110.00	90.97	321.85	5,039.91	6,277.91	3,942.62 N	4,439.11 W	563,094.34	1,685,262.07	1.20	682.42

**HALLIBURTON****Design Report for Brian Dytko OHI 1H - Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
12,235.00	91.08	321.16	5,037.68	6,275.68	4,040.43 N	4,516.91 W	563,192.15	1,685,184.28	0.56	675.23
<b>Last MWD Survey at 12235' MD</b>										
12,299.00	91.08	321.16	5,036.47	6,274.47	4,090.27 N	4,557.04 W	563,241.99	1,685,144.15	0.00	671.94
<b>Projection to TD at 12299' MD</b>										

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
User	No Target (Freehand)	228.21	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
100.00	5,645.00	VES Gyro (ref to 15')	NS-Gyro-MS
5,821.00	12,299.00	Sperry MWD	MWD

**Targets**

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Brian Dytko OHI 1H	0.00	360.00	6,266.26	4,104.46	-4,537.13	563,256.18	1,685,164.05	40° 2' 27.679 N	80° 37' 28.092 W
- hit/miss target									
- Shape									
- Point									
- actual wellpath misses target center by 25.76ft at 12297.72ft MD (6274.49 TVD, 4089.28 N, -4556.24 E)									

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WR-35  
Rev (9-11)

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

DATE: 9-23-2013  
API #: 47-069-00126

Farm name: Brian Dytko OHI 6H Operator Well No.: 836044

LOCATION: Elevation: 1220' Quadrangle: Valley Grove

District: Triadelphia County: Ohio  
Latitude: 6690' Feet South of 40 Deg. 02 Min. 30 Sec.  
Longitude 4240' Feet West of 80 Deg. 35 Min. 00 Sec.

Company: Chesapeake Appalachia, L.L.C.

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
P.O. Box 18496 Oklahoma City, OK 73154-0496	20"	125'	125'	275 Cu. Ft.
Agent: Eric Gillespie	13 3/8"	694'	694'	757 Cu. Ft.
Inspector: <b>Bill Hendershot</b>	9 5/8"	2095'	2095'	920 Cu. Ft.
Date Permit Issued: 6-6-2012	5 1/2"	14970'	14970'	3677 Cu. Ft.
Date Well Work Commenced: 7-28-2012				
Date Well Work Completed: 1-18-2013				
Verbal Plugging:				
Date Permission granted on:				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): 6416'				
Total Measured Depth (ft): 14970'				
Fresh Water Depth (ft.): 300', 556'				
Salt Water Depth (ft.): 1000'				
Is coal being mined in area (N/Y)? Y				
Coal Depths (ft.): 653'				
Void(s) encountered (N/Y) Depth(s) N				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Marcellus Pay zone depth (ft) 6,856-14,785  
Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d  
Final open flow 1,742\* MCF/d Final open flow 92 Bbl/d  
Time of open flow between initial and final tests 120 Hours  
Static rock Pressure 4,170\* psig (surface pressure) after 120 Hours \*Calculated

Second producing formation \_\_\_\_\_ Pay zone depth (ft) \_\_\_\_\_  
Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d  
Final open flow \_\_\_\_\_ MCF/d Final open flow \_\_\_\_\_ Bbl/d  
Time of open flow between initial and final tests \_\_\_\_\_ Hours  
Static rock Pressure \_\_\_\_\_ psig (surface pressure) after \_\_\_\_\_ Hours

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WEST VIRGINIA GEOLOGICAL SURVEY  
MORGANTOWN, WV

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Marlene Williams  
Signature

9-23-2013  
Date

Were core samples taken? Yes \_\_\_\_\_ No N

Were cuttings caught during drilling? Yes Y No \_\_\_\_\_

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list \_\_\_\_\_  
LWD GR from 5774-14970' MD.

**NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.**

Perforated Intervals, Fracturing, or Stimulating:

See attached

Plug Back Details Including Plug Type and Depth(s):

<u>Formations Encountered:</u>	<u>Top Depth</u>	<u>/</u>	<u>Bottom Depth</u>
--------------------------------	------------------	----------	---------------------

Surface:

See attached

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**PERFORATION RECORD ATTACHMENT**

Well Number and Name: 836044 Brian Dytko OHI 6H

PERFORATION RECORD			STIMULATION RECORD							
Date	Interval Perforated		Date	Interval	Treated	Fluid		Propping Agent		Average Injection
	From	To				Type	Amount	Type	Amount	
10/20/2012	14,320	14,785	12/5/2012	14,320	14,785	Slk wtr	11,961	Sand	661,040	80
12/5/2012	13,772	14,236	12/6/2012	13,772	14,236	Slk wtr	13,544	Sand	662,220	77
12/6/2012	13,223	13,688	12/7/2012	13,223	13,688	Slk wtr	13,754	Sand	555,460	78
12/7/2012	12,675	13,140	12/8/2012	12,675	13,140	Slk wtr	12,208	Sand	659,720	80
12/8/2012	12,040	12,512	12/9/2012	12,040	12,512	Slk wtr	12,032	Sand	662,670	80
12/9/2012	11,440	11,867	12/10/2012	11,440	11,867	Slk wtr	11,322	Sand	662,630	80
12/10/2012	10,930	11,357	12/11/2012	10,930	11,357	Slk wtr	11,239	Sand	659,900	80
12/11/2012	10,420	10,847	12/12/2012	10,420	10,847	Slk wtr	13,571	Sand	660,400	75
12/13/2012	9,910	10,337	12/13/2012	9,910	10,337	Slk wtr	11,295	Sand	660,720	78
12/14/2012	9,400	9,827	12/14/2012	9,400	9,827	Slk wtr	11,106	Sand	660,540	80
12/15/2012	8,890	9,317	12/15/2012	8,890	9,317	Slk wtr	11,195	Sand	660,800	80
12/16/2012	8,380	8,807	12/16/2012	8,380	8,807	Slk wtr	13,040	Sand	660,200	74
12/17/2012	7,870	8,297	12/17/2012	7,870	8,297	Slk wtr	11,555	Sand	660,340	77
12/18/2012	7,360	7,787	12/18/2012	7,360	7,787	Slk wtr	11,257	Sand	660,920	79.8
12/19/2012	6,856	7,277	12/19/2012	6,856	7,277	Slk wtr	10,938	Sand	660,930	80

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MORGANTOWN, WV

**LATERAL SIDETRACK WELLBORE (no vertical pilot hole associated with this well)**

**Maximum TVD of wellbore:** 6416 ft TVD @ 14970 ft MD

Formation/Lithology	Top Depth, MD (ft)	Top Depth, TVD (ft)	Bottom Depth, MD (ft)	Bottom Depth, TVD (ft)
SS/LS	0	0	520	520
LS/SS	520	520	632	632
Pittsburg Coal	632	632	637	637
LS/SS	637	637	680	680
SS/SHALE	680	680	900	900
Big Lime	900	900	1110	1110
Big Injun	1110	1110	1300	1300
SHALE	1300	1300	2950	2950
SHALE/LS	2950	2950	3100	3100
SHALE	3100	3100	6405	6165
Geneseo	6405	6165	6441	6188
Tully	6441	6188	6495	6220
Hamilton	6495	6220	6742	6326
Marcellus	6742	6326		
TD of Lateral			14970	6416

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## Chesapeake Appalachia, LLC

Brian Dytko OHI 6H

Ohio County, West Virginia  
Nomac #37

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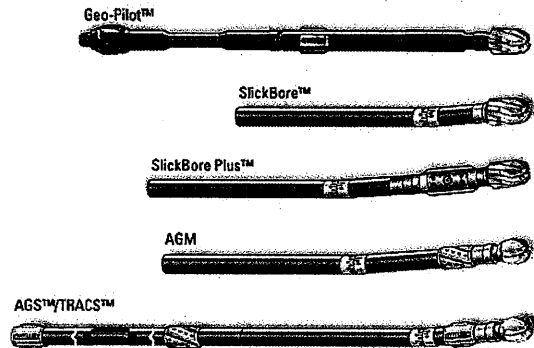
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WV GEOLOGICAL SURVEY  
GEOLOGICAL DIVISION

## Sperry Drilling Services

## End of Well Report

Prepared For: Chesapeake Appalachia, LLC



October 2, 2012

Submitted by:  
Tim Aitken - Well Planner  
Darin Brown - Directional Drilling Coordinator  
Hunter Williams - Sperry Account Rep.  
1-800-332-3992  
Houston, TX 77032

**HALLIBURTON**

# Chesapeake Appalachia. LLC

**Brian Dytko OHI 6H  
Ohio County, West Virginia**

**End of Well Report**

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WV GEOLOGICAL SURVEY  
605 STATE STREET  
MARTINSBURG, WV

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Well Summary and Graphs .....	Section 2
Drilling Parameters.....	Section 3
BHA Performance Records.....	Section 4
Daily Drilling Activity Reports.....	Section 5

**HALLIBURTON**

**Sperry Drilling Services**



## Final Surveys and Plot

# Chesapeake Appalachia, LLC

**HALLIBURTON**  
Sperry Drilling Services

Project: Ohio County, WV  
Site: Valley Grove  
Well: Brian Dytko OHI 6H  
Wellbore: Wellbore #1  
Design: Plan #6  
Rig: Nomac 37

### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Annotation
13742.00	90.07	152.82	6398.15	-7090.47	2306.52	0.00	0.00	7334.16	Tie-On
13790.00	90.07	152.82	6398.09	-7133.17	2328.44	0.00	0.00	7382.15	Start Drop
13969.76	86.50	152.41	6403.47	-7292.68	2411.08	2.00	-173.41	7561.77	End Drop
14173.14	86.50	152.41	6415.89	-7472.60	2505.11	0.00	0.00	7764.75	Start Build
14309.32	89.10	151.60	6421.12	-7592.74	2568.98	2.00	-17.24	7900.81	End Build
14970.32	89.10	151.60	6431.50	-8174.11	2883.33	0.00	0.00	8561.73	TD

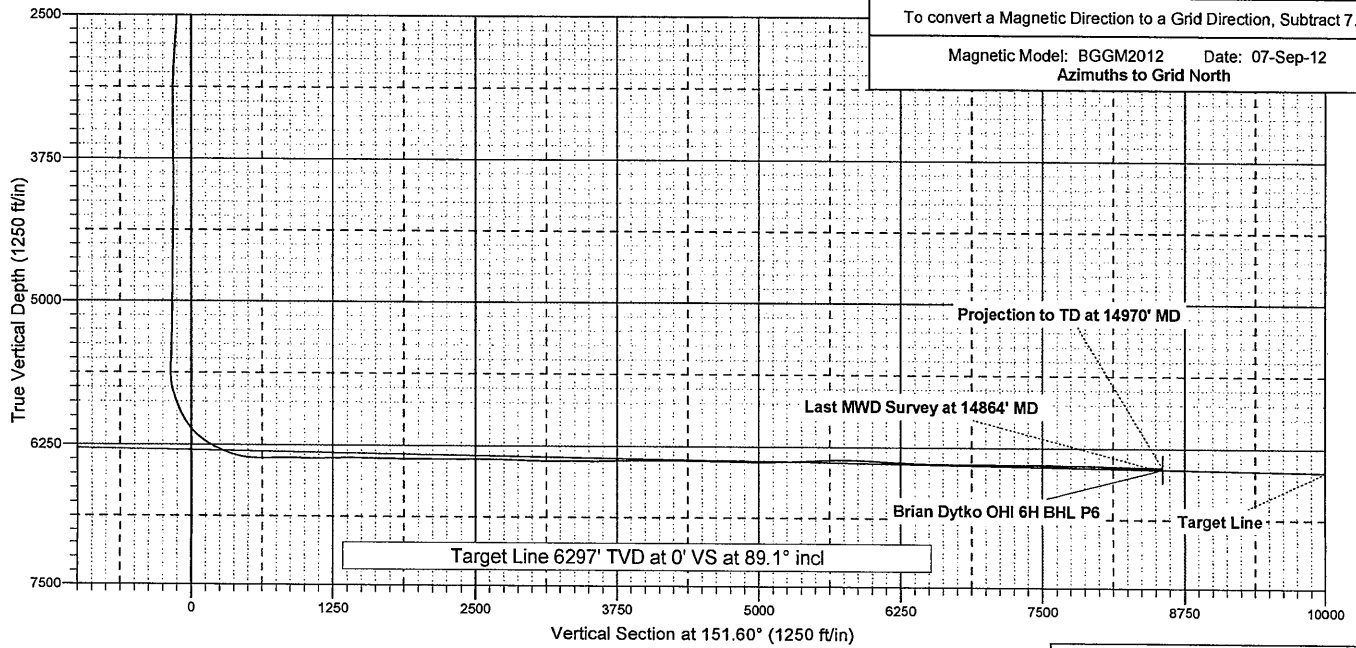
### Surface Location:

US State Plane 1927 (Exact solution)  
West Virginia North 4701  
Elevation: GL 1220' + KB 18' @ 1238.00ft (Nomac 37)

Northing	Easting	Latitude	Longitude
559166.16	1689682.60	40° 1' 47.816 N	80° 36' 29.351 W

### WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
Brian Dytko OHI 6H BHL P6	6431.50	-8174.11	2883.33	550992.05	1692565.92



Created By: Tim Aitken Date: 11 September 2012

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MORGANTHAU, WV

# Chesapeake Appalachia, LLC

**HALLIBURTON**  
Sperry Drilling Services

Project: Ohio County, WV  
Site: Valley Grove  
Well: Brian Dytko OHI 6H  
Wellbore: Wellbore #1  
Design: Plan #6  
Rig: Nomac 37



**Surface Location:**

US State Plane 1927 (Exact solution)  
West Virginia North 4701  
Elevation: GL 1220' + KB 18' @ 1238.00ft (Nomac 37)

Northing	Easting	Latitude	Longitude
559166.16	1689682.60	40° 1' 47.816 N	80° 36' 29.351 W

To convert a Magnetic Direction to a Grid Direction, Subtract 7.97°

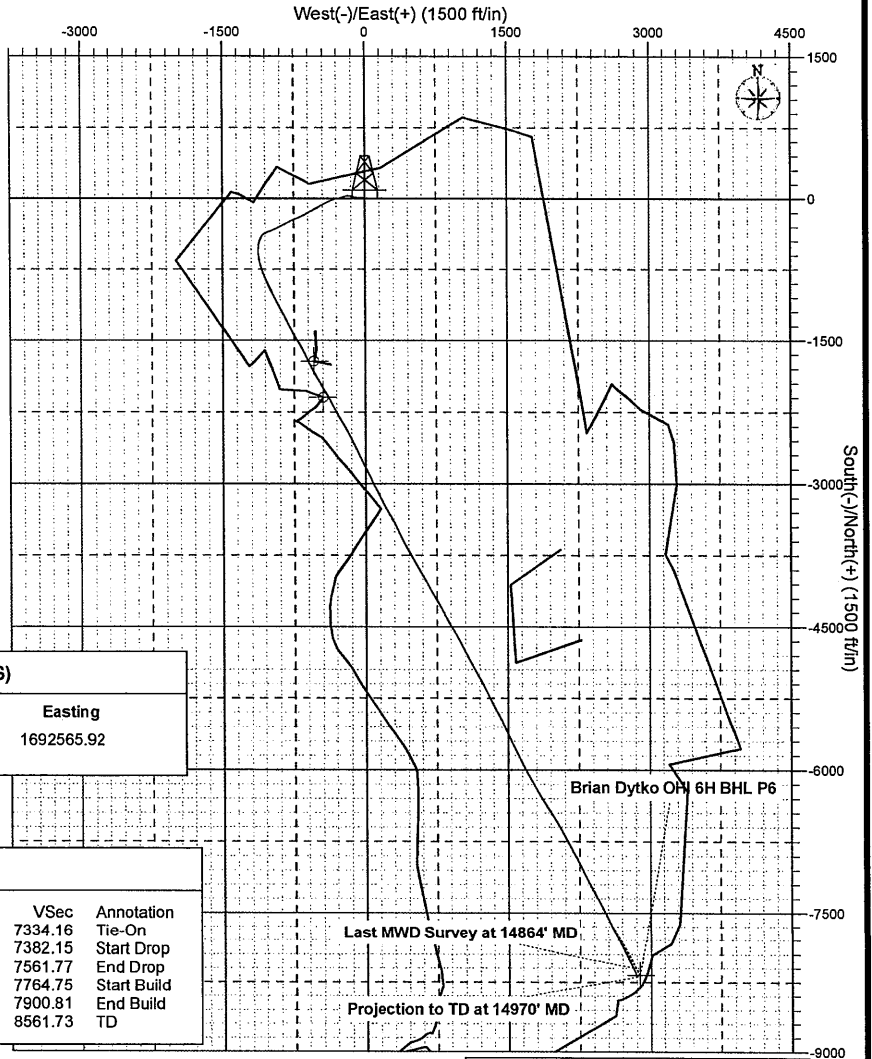
Magnetic Model: BGGM2012 Date: 07-Sep-12  
Azimuths to Grid North

**WELLBORE TARGET DETAILS (MAP CO-ORDINATES)**

Name	TVD	+N/-S	+E/-W	Northing	Easting
Brian Dytko OHI 6H BHL P6	6431.50	-8174.11	2883.33	550992.05	1692565.92

**SECTION DETAILS**

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Annotation
13742.00	90.07	152.82	6398.15	-7090.47	2306.52	0.00	0.00	7334.16	Tie-On
13790.00	90.07	152.82	6398.09	-7133.17	2328.44	0.00	0.00	7382.15	Start Drop
13969.76	86.50	152.41	6403.47	-7292.68	2411.08	2.00	-173.41	7561.77	End Drop
14173.14	86.50	152.41	6415.89	-7472.60	2505.11	0.00	0.00	7764.75	Start Build
14309.32	89.10	151.60	6421.12	-7592.74	2568.98	2.00	-17.24	7900.81	End Build
14970.32	89.10	151.60	6431.50	-8174.11	2883.33	0.00	0.00	8561.73	TD



Created By: Tim Aitken Date: 11 September 2012

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WV GEOLOGICAL SURVEY  
MARTINSBURG, WV

# Chesapeake Appalachia, LLC

Ohio County, WV  
Valley Grove  
Brian Dytko OHI 6H

Wellbore #1

Design: Surveys

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WV GEOLOGICAL  
SURVEY

## Sperry Drilling Services Combo Report

11 September, 2012

Well Coordinates: 559,166.16 N, 1,689,682.60 E (40° 01' 47.82" N, 080° 36' 29.35" W)  
Ground Level: 1,220.00 ft

Local Coordinate Origin:	Centered on Well Brian Dytko OHI 6H
Viewing Datum:	GL 1220' + KB 18' @ 1238.00ft (Nomac 37)
TVDs to System:	N
North Reference:	Grid
Unit System:	API-US Survey Feet

Version: 2003.16 Build: 431

**HALLIBURTON**

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Chesapeake Appalachia, LLC

Ohio County, WV

SEP 25 2012

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MORGANTHAU, WV

**HALLIBURTON**

**Design Report for Brian Dytko OHI 6H - Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
0.00	0.00	0.00	-1,238.00	0.00	0.00 N	0.00 E	559,166.16	1,689,682.60	0.00	0.00
28.00	0.50	55.90	-1,210.00	28.00	0.07 N	0.10 E	559,166.23	1,689,682.70	1.79	0.11
53.00	0.58	68.47	-1,185.00	53.00	0.18 N	0.31 E	559,166.34	1,689,682.91	0.57	0.32
78.00	0.78	56.78	-1,160.00	78.00	0.32 N	0.57 E	559,166.48	1,689,683.17	0.97	0.59
103.00	0.79	43.27	-1,135.01	102.99	0.53 N	0.83 E	559,166.69	1,689,683.43	0.74	0.92
128.00	0.81	55.99	-1,110.01	127.99	0.76 N	1.09 E	559,166.92	1,689,683.69	0.71	1.26
153.00	0.64	65.70	-1,085.01	152.99	0.92 N	1.37 E	559,167.08	1,689,683.96	0.84	1.54
178.00	0.34	61.87	-1,060.01	177.99	1.01 N	1.56 E	559,167.17	1,689,684.16	1.21	1.73
203.00	0.19	40.18	-1,035.01	202.99	1.07 N	1.65 E	559,167.23	1,689,684.25	0.71	1.84
228.00	0.25	342.30	-1,010.01	227.99	1.16 N	1.66 E	559,167.32	1,689,684.26	0.88	1.91
253.00	0.52	350.61	-985.01	252.99	1.32 N	1.63 E	559,167.48	1,689,684.22	1.10	2.03
278.00	0.65	16.10	-960.01	277.99	1.57 N	1.65 E	559,167.73	1,689,684.25	1.15	2.24
303.00	0.66	21.60	-935.01	302.99	1.84 N	1.74 E	559,168.00	1,689,684.34	0.25	2.51
328.00	0.65	28.30	-910.02	327.98	2.10 N	1.86 E	559,168.26	1,689,684.46	0.31	2.79
353.00	0.69	59.42	-885.02	352.98	2.30 N	2.06 E	559,168.46	1,689,684.65	1.45	3.07
378.00	0.42	68.30	-860.02	377.98	2.41 N	2.27 E	559,168.57	1,689,684.87	1.13	3.29
403.00	0.07	126.09	-835.02	402.98	2.44 N	2.37 E	559,168.60	1,689,684.97	1.55	3.36
428.00	0.59	21.93	-810.02	427.98	2.55 N	2.43 E	559,168.71	1,689,685.03	2.44	3.49
453.00	0.55	72.64	-785.02	452.98	2.70 N	2.59 E	559,168.86	1,689,685.19	1.96	3.71
478.00	0.23	328.97	-760.02	477.98	2.78 N	2.68 E	559,168.94	1,689,685.28	2.58	3.82
503.00	0.49	37.20	-735.02	502.98	2.91 N	2.72 E	559,169.07	1,689,685.32	1.83	3.95
528.00	0.10	89.87	-710.02	527.98	2.99 N	2.81 E	559,169.15	1,689,685.40	1.75	4.07
553.00	0.47	341.31	-685.02	552.98	3.09 N	2.80 E	559,169.25	1,689,685.39	2.04	4.14
578.00	0.51	16.95	-660.02	577.98	3.29 N	2.80 E	559,169.45	1,689,685.39	1.21	4.31
603.00	0.12	141.15	-635.02	602.98	3.38 N	2.84 E	559,169.54	1,689,685.44	2.34	4.41
628.00	0.53	302.62	-610.02	627.98	3.42 N	2.76 E	559,169.58	1,689,685.36	2.58	4.39
653.00	0.84	14.63	-585.03	652.97	3.66 N	2.71 E	559,169.82	1,689,685.31	3.37	4.56
663.00	0.25	348.74	-575.03	662.97	3.75 N	2.73 E	559,169.91	1,689,685.32	6.25	4.64
703.00	0.55	334.53	-535.03	702.97	4.01 N	2.63 E	559,170.17	1,689,685.22	0.78	4.79
803.00	1.05	320.07	-435.04	802.96	5.15 N	1.83 E	559,171.31	1,689,684.43	0.54	5.24
903.00	2.62	299.29	-335.09	902.91	6.97 N	0.75 W	559,173.13	1,689,681.85	1.68	5.20
1,003.00	4.69	279.73	-235.30	1,002.70	8.78 N	6.77 W	559,174.94	1,689,675.82	2.39	3.13
1,103.00	6.16	269.48	-135.74	1,102.26	9.42 N	16.17 W	559,175.58	1,689,666.43	1.76	-1.86
1,203.00	8.36	274.26	-36.55	1,201.45	9.91 N	28.78 W	559,176.07	1,689,653.81	2.28	-8.87
1,303.00	9.44	270.39	62.24	1,300.24	10.51 N	44.23 W	559,176.67	1,689,638.36	1.23	-17.45
1,403.00	10.05	269.50	160.80	1,398.80	10.49 N	61.16 W	559,176.65	1,689,621.44	0.63	-27.41
1,503.00	9.50	274.09	259.35	1,497.35	11.00 N	78.12 W	559,177.16	1,689,604.48	0.95	-36.94
1,603.00	9.07	280.69	358.04	1,596.04	13.05 N	94.09 W	559,179.21	1,689,588.50	1.15	-44.66
1,703.00	9.50	280.86	456.73	1,694.73	16.07 N	109.94 W	559,182.23	1,689,572.65	0.43	-51.52
1,803.00	10.46	280.10	555.22	1,793.22	19.22 N	126.99 W	559,185.38	1,689,555.61	0.97	-58.97
1,903.00	10.05	281.15	653.62	1,891.62	22.49 N	144.48 W	559,188.65	1,689,538.11	0.45	-66.59
2,003.00	9.30	282.34	752.20	1,990.20	25.91 N	160.94 W	559,192.07	1,689,521.66	0.78	-73.48
2,103.00	9.61	280.38	850.84	2,088.84	29.14 N	177.04 W	559,195.30	1,689,505.55	0.45	-80.32
2,203.00	9.95	258.01	949.42	2,187.42	28.85 N	193.71 W	559,195.01	1,689,488.89	3.79	-90.34
2,303.00	12.33	251.15	1,047.53	2,285.53	23.60 N	212.27 W	559,189.76	1,689,470.33	2.72	-105.48

**HALLIBURTON****Design Report for Brian Dytko OHI 6H - Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
2,403.00	11.24	247.50	1,145.43	2,383.43	16.42 N	231.38 W	559,182.58	1,689,451.22	1.32	-122.51
2,503.00	10.74	249.46	1,243.59	2,481.59	9.42 N	249.11 W	559,175.58	1,689,433.49	0.62	-138.58
2,603.00	13.48	257.53	1,341.37	2,579.37	3.64 N	269.22 W	559,169.80	1,689,413.38	3.21	-155.07
2,703.00	14.67	258.58	1,438.36	2,676.36	1.39 S	293.01 W	559,164.77	1,689,389.59	1.22	-173.10
2,803.00	15.51	254.24	1,534.92	2,772.92	7.53 S	318.29 W	559,158.63	1,689,364.30	1.41	-192.91
2,903.00	14.81	253.17	1,631.44	2,869.44	14.86 S	343.39 W	559,151.30	1,689,339.20	0.75	-213.58
3,003.00	15.85	251.95	1,727.88	2,965.88	22.79 S	368.61 W	559,143.37	1,689,313.99	1.09	-234.80
3,103.00	17.10	244.24	1,823.78	3,061.78	33.41 S	394.84 W	559,132.75	1,689,287.76	2.52	-258.80
3,203.00	16.01	238.02	1,919.64	3,157.64	47.11 S	419.78 W	559,119.05	1,689,262.81	2.08	-284.52
3,303.00	15.11	244.09	2,015.98	3,253.98	60.11 S	443.20 W	559,106.05	1,689,239.39	1.86	-308.80
3,403.00	15.02	240.34	2,112.55	3,350.55	72.21 S	466.19 W	559,093.95	1,689,216.41	0.98	-332.09
3,503.00	15.92	240.16	2,208.92	3,446.92	85.45 S	489.35 W	559,080.71	1,689,193.25	0.90	-356.40
3,603.00	15.10	237.69	2,305.28	3,543.28	99.24 S	512.25 W	559,066.92	1,689,170.35	1.05	-381.00
3,703.00	14.62	239.86	2,401.94	3,639.94	112.54 S	534.17 W	559,053.62	1,689,148.42	0.73	-404.64
3,803.00	16.18	243.24	2,498.35	3,736.35	125.15 S	557.53 W	559,041.01	1,689,125.07	1.80	-428.56
3,903.00	15.86	241.94	2,594.46	3,832.46	137.85 S	582.03 W	559,028.31	1,689,100.57	0.48	-453.22
4,003.00	13.61	238.44	2,691.17	3,929.17	150.44 S	604.12 W	559,015.72	1,689,078.48	2.42	-476.37
4,103.00	14.82	242.80	2,788.11	4,026.11	162.44 S	625.52 W	559,003.72	1,689,057.08	1.61	-498.66
4,203.00	14.23	242.53	2,884.91	4,122.91	173.96 S	647.80 W	558,992.20	1,689,034.80	0.59	-521.06
4,303.00	15.31	244.55	2,981.61	4,219.61	185.30 S	670.63 W	558,980.86	1,689,011.97	1.20	-543.64
4,403.00	16.32	243.00	3,077.82	4,315.82	197.35 S	695.07 W	558,968.81	1,688,987.53	1.09	-567.74
4,503.00	15.62	248.49	3,173.97	4,411.97	208.67 S	720.11 W	558,957.49	1,688,962.49	1.66	-591.60
4,603.00	16.30	246.86	3,270.11	4,508.11	219.12 S	745.54 W	558,947.04	1,688,937.06	0.81	-614.99
4,703.00	16.12	244.99	3,366.14	4,604.14	230.50 S	771.03 W	558,935.66	1,688,911.57	0.55	-639.16
4,803.00	17.33	242.10	3,461.91	4,699.91	243.34 S	796.77 W	558,922.82	1,688,885.83	1.47	-664.67
4,903.00	17.07	242.75	3,557.43	4,795.43	257.03 S	822.98 W	558,909.13	1,688,859.61	0.32	-691.14
5,003.00	16.55	242.73	3,653.16	4,891.16	270.28 S	848.69 W	558,895.88	1,688,833.91	0.52	-716.95
5,103.00	17.02	243.62	3,748.90	4,986.90	283.31 S	874.46 W	558,882.85	1,688,808.14	0.54	-742.62
5,203.00	16.21	242.58	3,844.72	5,082.72	296.24 S	899.96 W	558,869.92	1,688,782.63	0.86	-768.06
5,303.00	16.58	244.05	3,940.66	5,178.66	308.91 S	925.18 W	558,857.25	1,688,757.41	0.56	-793.12
5,403.00	16.61	247.37	4,036.50	5,274.50	320.65 S	951.20 W	558,845.51	1,688,731.39	0.95	-817.90
5,503.00	16.59	247.64	4,132.33	5,370.33	331.58 S	977.60 W	558,834.58	1,688,705.00	0.08	-842.25
5,603.00	17.46	243.58	4,227.95	5,465.95	343.69 S	1,004.24 W	558,822.47	1,688,678.36	1.47	-867.68
5,653.00	18.45	247.22	4,275.51	5,513.51	350.09 S	1,018.25 W	558,816.07	1,688,664.35	2.99	-881.09
5,798.00	18.90	237.22	4,412.92	5,650.92	371.69 S	1,059.16 W	558,794.47	1,688,623.44	2.23	-922.59
5,829.00	18.92	233.56	4,442.24	5,680.24	377.40 S	1,067.43 W	558,788.76	1,688,615.17	3.83	-932.06
5,860.00	21.38	226.91	4,471.35	5,709.35	384.25 S	1,075.60 W	558,781.91	1,688,607.00	10.83	-942.40
5,892.00	23.35	218.65	4,500.95	5,738.95	393.19 S	1,083.82 W	558,772.97	1,688,598.78	11.58	-954.47
5,924.00	25.43	211.80	4,530.09	5,768.09	403.98 S	1,091.40 W	558,762.18	1,688,591.19	10.96	-967.66
5,955.00	27.06	207.99	4,557.90	5,795.90	415.87 S	1,098.22 W	558,750.29	1,688,584.37	7.56	-981.28
5,986.00	27.00	203.71	4,585.52	5,823.52	428.54 S	1,104.36 W	558,737.62	1,688,578.23	6.28	-995.14
6,017.00	27.61	200.62	4,613.06	5,851.06	441.70 S	1,109.72 W	558,724.46	1,688,572.88	4.98	-1,008.95
6,049.00	28.78	196.55	4,641.27	5,879.27	456.03 S	1,114.53 W	558,710.13	1,688,568.07	7.03	-1,023.37
6,080.00	29.24	194.24	4,668.38	5,906.38	470.52 S	1,118.52 W	558,695.64	1,688,564.08	3.91	-1,037.45
6,112.00	29.24	191.59	4,696.30	5,934.30	485.75 S	1,122.01 W	558,680.41	1,688,560.59	4.04	-1,051.83

**HALLIBURTON****Design Report for Brian Dytko OHI 6H - Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
6,144.00	29.41	189.10	4,724.20	5,962.20	501.17 S	1,124.82 W	558,664.99	1,688,557.77	3.85	-1,065.96
6,176.00	30.95	185.20	4,751.87	5,989.87	517.12 S	1,126.81 W	558,649.04	1,688,555.79	7.79	-1,080.04
6,208.00	32.92	181.27	4,779.03	6,017.03	534.02 S	1,127.75 W	558,632.14	1,688,554.85	8.95	-1,094.27
6,239.00	35.47	178.54	4,804.67	6,042.67	551.43 S	1,127.71 W	558,614.73	1,688,554.89	9.60	-1,108.35
6,271.00	37.76	176.35	4,830.35	6,068.35	570.50 S	1,126.85 W	558,595.66	1,688,555.75	8.24	-1,123.28
6,302.00	40.10	173.48	4,854.47	6,092.47	589.89 S	1,125.11 W	558,576.27	1,688,557.49	9.53	-1,137.96
6,333.00	42.92	172.69	4,877.68	6,115.68	610.28 S	1,122.63 W	558,555.88	1,688,559.97	9.25	-1,153.02
6,365.00	46.05	170.35	4,900.51	6,138.51	632.46 S	1,119.31 W	558,533.71	1,688,563.28	11.04	-1,169.02
6,397.00	48.15	168.62	4,922.29	6,160.29	655.50 S	1,115.03 W	558,510.66	1,688,567.57	7.66	-1,185.16
6,429.00	51.06	165.82	4,943.03	6,181.03	679.26 S	1,109.63 W	558,486.90	1,688,572.97	11.27	-1,201.23
6,461.00	53.90	163.46	4,962.52	6,200.52	703.72 S	1,102.90 W	558,462.44	1,688,579.70	10.63	-1,217.08
6,493.00	56.78	161.14	4,980.72	6,218.72	728.79 S	1,094.89 W	558,437.37	1,688,587.71	10.80	-1,232.68
6,525.00	59.88	159.74	4,997.52	6,235.52	754.45 S	1,085.76 W	558,411.71	1,688,596.83	10.38	-1,248.10
6,556.00	62.12	158.66	5,012.54	6,250.54	779.79 S	1,076.13 W	558,386.37	1,688,606.46	7.84	-1,262.96
6,588.00	63.63	158.08	5,027.13	6,265.13	806.26 S	1,065.64 W	558,359.90	1,688,616.96	4.99	-1,278.24
6,620.00	64.46	157.46	5,041.14	6,279.14	832.90 S	1,054.75 W	558,333.26	1,688,627.85	3.12	-1,293.41
6,650.00	65.86	157.04	5,053.74	6,291.74	858.00 S	1,044.22 W	558,308.16	1,688,638.37	4.84	-1,307.56
6,682.00	66.78	156.59	5,066.59	6,304.59	884.94 S	1,032.68 W	558,281.22	1,688,649.91	3.15	-1,322.59
6,714.00	68.45	156.49	5,078.78	6,316.78	912.08 S	1,020.91 W	558,254.08	1,688,661.69	5.23	-1,337.66
6,746.00	70.87	156.92	5,089.90	6,327.90	939.64 S	1,009.04 W	558,226.52	1,688,673.56	7.67	-1,353.00
6,776.00	74.44	156.14	5,098.84	6,336.84	965.90 S	997.64 W	558,200.26	1,688,684.96	12.16	-1,367.57
6,808.00	77.11	154.46	5,106.71	6,344.71	994.08 S	984.67 W	558,172.08	1,688,697.92	9.77	-1,382.78
6,840.00	79.03	154.25	5,113.32	6,351.32	1,022.30 S	971.12 W	558,143.86	1,688,711.47	6.03	-1,397.67
6,871.00	81.31	154.43	5,118.61	6,356.61	1,049.83 S	957.90 W	558,116.33	1,688,724.70	7.38	-1,412.20
6,903.00	84.28	153.69	5,122.63	6,360.63	1,078.38 S	944.01 W	558,087.79	1,688,738.58	9.56	-1,427.16
6,934.00	87.35	152.13	5,124.89	6,362.89	1,105.90 S	929.93 W	558,060.26	1,688,752.66	11.10	-1,441.18
6,965.00	89.19	151.46	5,125.82	6,363.82	1,133.20 S	915.29 W	558,032.96	1,688,767.31	6.32	-1,454.69
7,092.00	90.27	151.67	5,126.42	6,364.42	1,244.88 S	854.82 W	557,921.28	1,688,827.78	0.87	-1,509.62
7,219.00	90.17	153.02	5,125.94	6,363.94	1,357.37 S	795.87 W	557,808.80	1,688,886.72	1.07	-1,566.10
7,345.00	89.76	152.07	5,126.01	6,364.01	1,469.17 S	737.78 W	557,696.99	1,688,944.81	0.82	-1,622.52
7,472.00	89.03	149.73	5,127.35	6,365.35	1,580.13 S	676.03 W	557,586.03	1,689,006.57	1.93	-1,676.11
7,598.00	91.34	152.20	5,126.95	6,364.95	1,690.28 S	614.88 W	557,475.89	1,689,067.71	2.68	-1,729.40
7,725.00	90.97	152.77	5,124.39	6,362.39	1,802.89 S	556.22 W	557,363.27	1,689,126.37	0.54	-1,786.15
7,851.00	90.13	150.68	5,123.18	6,361.18	1,913.84 S	496.54 W	557,252.32	1,689,186.05	1.79	-1,840.95
7,978.00	88.76	149.71	5,124.41	6,362.41	2,024.03 S	433.42 W	557,142.13	1,689,249.17	1.32	-1,893.12
8,105.00	88.59	149.75	5,127.34	6,365.34	2,133.69 S	369.42 W	557,032.47	1,689,313.17	0.14	-1,944.34
8,232.00	90.20	150.44	5,128.68	6,366.68	2,243.77 S	306.11 W	556,922.39	1,689,376.49	1.38	-1,996.30
8,359.00	89.19	151.33	5,129.36	6,367.36	2,354.72 S	244.32 W	556,811.44	1,689,438.28	1.06	-2,049.86
8,486.00	89.87	152.31	5,130.40	6,368.40	2,466.66 S	184.35 W	556,699.50	1,689,498.25	0.94	-2,105.29
8,612.00	89.33	152.24	5,131.28	6,369.28	2,578.19 S	125.73 W	556,587.97	1,689,556.87	0.43	-2,161.19
8,737.00	90.50	153.63	5,131.47	6,369.47	2,689.49 S	68.86 W	556,476.67	1,689,613.74	1.45	-2,217.93
8,863.00	90.27	153.67	5,130.62	6,368.62	2,802.40 S	12.93 W	556,363.76	1,689,669.66	0.19	-2,276.52
8,990.00	90.07	155.27	5,130.24	6,368.24	2,917.00 S	41.80 E	556,249.16	1,689,724.40	1.27	-2,337.17
9,117.00	88.59	153.03	5,131.73	6,369.73	3,031.27 S	97.16 E	556,134.89	1,689,779.76	2.11	-2,397.20
9,243.00	88.01	151.86	5,135.47	6,373.47	3,142.93 S	155.42 E	556,023.23	1,689,838.02	1.04	-2,453.40

**Design Report for Brian Dytko OHI 6H - Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
9,369.00	88.09	151.01	5,139.76	6,377.76	3,253.52 S	215.64 E	555,912.64	1,689,898.23	0.68	-2,507.61
9,496.00	88.59	151.70	5,143.43	6,381.43	3,364.93 S	276.49 E	555,801.23	1,689,959.09	0.67	-2,562.09
9,620.00	90.81	153.87	5,144.08	6,382.08	3,475.19 S	333.19 E	555,690.97	1,690,015.79	2.50	-2,618.08
9,745.00	90.70	153.24	5,142.44	6,380.44	3,587.10 S	388.86 E	555,579.06	1,690,071.45	0.51	-2,676.01
9,870.00	88.66	150.26	5,143.13	6,381.13	3,697.19 S	448.01 E	555,468.97	1,690,130.61	2.89	-2,730.43
9,995.00	91.01	149.40	5,143.49	6,381.49	3,805.25 S	510.83 E	555,360.91	1,690,193.42	2.00	-2,781.05
10,121.00	91.31	149.44	5,140.94	6,378.94	3,913.70 S	574.91 E	555,252.46	1,690,257.51	0.24	-2,831.24
10,244.00	92.45	149.75	5,136.91	6,374.91	4,019.73 S	637.13 E	555,146.43	1,690,319.73	0.96	-2,880.56
10,369.00	90.17	150.48	5,134.05	6,372.05	4,128.07 S	699.39 E	555,038.09	1,690,381.99	1.92	-2,931.74
10,496.00	88.96	151.46	5,135.02	6,373.02	4,239.11 S	761.02 E	554,927.05	1,690,443.61	1.23	-2,985.47
10,619.00	89.36	150.92	5,136.82	6,374.82	4,346.87 S	820.28 E	554,819.29	1,690,502.88	0.55	-3,037.93
10,743.00	90.03	150.07	5,137.48	6,375.48	4,454.79 S	881.35 E	554,711.37	1,690,563.95	0.87	-3,089.46
10,870.00	88.49	151.15	5,139.12	6,377.12	4,565.43 S	943.67 E	554,600.73	1,690,626.27	1.48	-3,142.46
10,994.00	89.23	151.25	5,141.59	6,379.59	4,674.07 S	1,003.40 E	554,492.09	1,690,685.99	0.60	-3,195.37
11,121.00	89.46	151.17	5,143.04	6,381.04	4,785.36 S	1,064.56 E	554,380.80	1,690,747.15	0.19	-3,249.58
11,245.00	89.56	152.10	5,144.10	6,382.10	4,894.47 S	1,123.46 E	554,271.69	1,690,806.06	0.75	-3,303.34
11,370.00	88.76	151.92	5,145.93	6,383.93	5,004.83 S	1,182.12 E	554,161.33	1,690,864.72	0.66	-3,358.27
11,496.00	90.54	152.02	5,146.70	6,384.70	5,116.05 S	1,241.33 E	554,050.11	1,690,923.93	1.41	-3,413.56
11,620.00	91.61	152.29	5,144.37	6,382.37	5,225.67 S	1,299.24 E	553,940.49	1,690,981.83	0.89	-3,468.33
11,745.00	93.39	152.17	5,138.92	6,376.92	5,336.16 S	1,357.42 E	553,830.00	1,691,040.02	1.43	-3,523.64
11,871.00	92.72	153.15	5,132.21	6,370.21	5,447.93 S	1,415.20 E	553,718.23	1,691,097.80	0.94	-3,580.21
11,995.00	91.81	154.60	5,127.31	6,365.31	5,559.17 S	1,469.76 E	553,606.99	1,691,152.36	1.38	-3,638.26
12,121.00	90.37	154.32	5,124.91	6,362.91	5,672.83 S	1,524.07 E	553,493.33	1,691,206.67	1.16	-3,698.40
12,245.00	88.52	153.74	5,126.11	6,364.11	5,784.30 S	1,578.37 E	553,381.86	1,691,260.96	1.56	-3,756.79
12,371.00	87.21	153.82	5,130.80	6,368.80	5,897.26 S	1,634.00 E	553,268.91	1,691,316.59	1.04	-3,815.59
12,495.00	86.64	152.32	5,137.46	6,375.46	6,007.65 S	1,690.07 E	553,158.51	1,691,372.67	1.29	-3,872.05
12,619.00	87.01	149.99	5,144.32	6,382.32	6,116.09 S	1,749.80 E	553,050.07	1,691,432.40	1.90	-3,924.79
12,743.00	87.78	148.93	5,149.96	6,387.96	6,222.77 S	1,812.74 E	552,943.39	1,691,495.34	1.06	-3,974.22
12,868.00	89.43	148.56	5,153.00	6,391.00	6,329.59 S	1,877.58 E	552,836.57	1,691,560.17	1.35	-4,022.66
12,994.00	88.49	147.53	5,155.29	6,393.29	6,436.48 S	1,944.25 E	552,729.68	1,691,626.85	1.11	-4,070.07
13,118.00	89.46	148.70	5,157.51	6,395.51	6,541.75 S	2,009.74 E	552,624.41	1,691,692.33	1.23	-4,116.86
13,242.00	90.17	150.71	5,157.91	6,395.91	6,648.81 S	2,072.28 E	552,517.35	1,691,754.88	1.72	-4,166.83
13,367.00	90.57	151.31	5,157.10	6,395.10	6,758.15 S	2,132.86 E	552,408.02	1,691,815.46	0.58	-4,219.79
13,491.00	89.50	152.21	5,157.03	6,395.03	6,867.38 S	2,191.54 E	552,298.78	1,691,874.13	1.13	-4,273.80
13,616.00	88.79	152.95	5,158.89	6,396.89	6,978.33 S	2,249.09 E	552,187.83	1,691,931.69	0.82	-4,329.84
13,742.00	90.07	152.82	5,160.15	6,398.15	7,090.47 S	2,306.52 E	552,075.69	1,691,989.11	1.02	-4,386.93
13,868.00	90.67	152.91	5,159.33	6,397.33	7,202.60 S	2,363.98 E	551,963.56	1,692,046.58	0.48	-4,443.99
13,991.00	89.03	152.34	5,159.65	6,397.65	7,311.82 S	2,420.54 E	551,854.34	1,692,103.13	1.41	-4,499.22
14,114.00	89.33	152.26	5,161.41	6,399.41	7,420.71 S	2,477.71 E	551,745.45	1,692,160.30	0.25	-4,553.83
14,239.00	89.33	152.79	5,162.88	6,400.88	7,531.61 S	2,535.37 E	551,634.55	1,692,217.97	0.42	-4,609.77
14,363.00	88.42	153.66	5,165.31	6,403.31	7,642.29 S	2,591.22 E	551,523.87	1,692,273.82	1.02	-4,666.60
14,489.00	88.72	154.75	5,168.45	6,406.45	7,755.70 S	2,646.03 E	551,410.47	1,692,328.63	0.90	-4,726.25
14,612.00	88.89	155.33	5,171.02	6,409.02	7,867.18 S	2,697.92 E	551,298.98	1,692,380.52	0.49	-4,786.06
14,738.00	87.95	154.39	5,174.49	6,412.49	7,981.20 S	2,751.43 E	551,184.96	1,692,434.03	1.05	-4,846.97
14,864.00	89.76	154.36	5,177.01	6,415.01	8,094.78 S	2,805.91 E	551,071.38	1,692,488.51	1.44	-4,906.95



# HALLIBURTON

## Design Report for Brian Dytko OHI 6H - Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
14,970.00	89.76	154.36	5,177.46	6,415.46	8,190.34 S	2,851.78 E	550,975.82	1,692,534.38	0.00	-4,957.40

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
14,864.00	6,415.01	-8,094.78	2,805.91	Last MWD Survey at 14864' MD
14,970.00	6,415.46	-8,190.34	2,851.78	Projection to TD at 14970' MD

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
User	No Target (Freehand)	35.94	Slot	0.00	0.00	0.00

### Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
28.00	663.00	VES Gyro (ref to 18')	NS-Gyro-MS
703.00	5,653.00	VES Gyro 2 (ref to 18')	NS-Gyro-MS
5,798.00	14,970.00	Sperry MWD	MWD

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Point 6 - hit/miss target - Shape	0.00	360.00	0.00	-2,095.35	-450.26	557,070.81	1,689,232.34	40° 1' 27.055 N	80° 36' 34.806 W
- actual wellpath misses target center by 2143.18ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 50.00)									
Point 3 - hit/miss target - Shape	0.00	0.00	0.00	-1,716.98	-542.98	557,449.18	1,689,139.62	40° 1' 30.783 N	80° 36' 36.058 W
- actual wellpath misses target center by 1800.79ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 50.00)									
Brian Dytko OHI 6H - hit/miss target - Shape	0.00	0.00	6,431.50	-8,174.11	2,883.33	550,992.05	1,692,565.92	40° 0' 27.389 N	80° 35' 51.004 W
- actual wellpath misses target center by 38.93ft at 14969.09ft MD (6415.45 TVD, -8189.52 N, 2851.38 E)									
- Point									

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**HALLIBURTON**

**North Reference Sheet for Valley Grove - Brian Dytko OHI 6H - Wellbore #1**

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to GL 1220' + KB 18' @ 1238.00ft (Nomac 37). Northing and Easting are relative to Brian Dytko OHI 6H

Coordinate System is US State Plane 1927 (Exact solution), West Virginia North 4701 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 79° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 15' 0.000 N°

False Easting: 2,000,000.00ft, False Northing: 0.00ft, Scale Reduction: 0.99996555

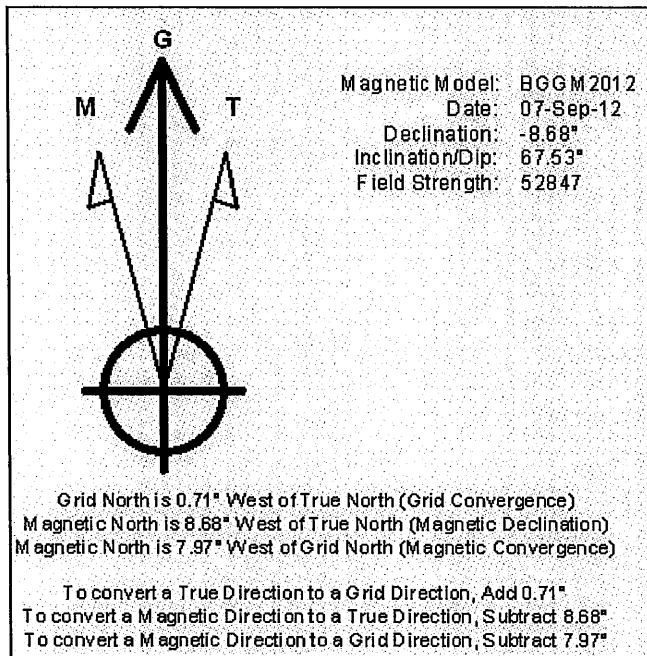
Grid Coordinates of Well: 559,166.16 ft N, 1,689,682.60 ft E

Geographical Coordinates of Well: 40° 01' 47.82" N, 080° 36' 29.35" W

Grid Convergence at Surface is: -0.71°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,970.00ft the Bottom Hole Displacement is 8,672.62ft in the Direction of 160.80° (Grid).

Magnetic Convergence at surface is: 7.97° ( 7 September 2012, , BGGM2012)



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

DATE: 9-23-2013  
API #: 47-069-00127

Farm name: Brian Dytko OHI 10H Operator Well No.: 835791

LOCATION: Elevation: 1220.52' Quadrangle: Valley Grove

District: Triadelphia County: Ohio  
Latitude: 6890' Feet South of 40 Deg. 02 Min. 30 Sec.  
Longitude 4240' Feet West of 80 Deg. 35 Min. 00 Sec.

Company: Chesapeake Appalachia, L.L.C.

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
P.O. Box 18496 Oklahoma City, OK 73154-0496	20"	120'	120'	269 Cu. Ft.
Agent: Eric Gillespie	13 3/8"	701'	701'	808 Cu. Ft.
Inspector: <b>Bill Hendershot</b>	9 5/8"	2098'	2098'	926 Cu. Ft.
Date Permit Issued: 5-17-2012	5 1/2"	14,490'	14,490'	3924 Cu. Ft.
Date Well Work Commenced: 8-8-2012				
Date Well Work Completed: 12-19-2012				
Verbal Plugging:				
Date Permission granted on:				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): 6473'				
Total Measured Depth (ft): 14500'				
Fresh Water Depth (ft.): 556'				
Salt Water Depth (ft.): 1000'				
Is coal being mined in area (N/Y)? Y				
Coal Depths (ft.): 653'				
Void(s) encountered (N/Y) Depth(s) N				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Marcellus Pay zone depth (ft) 6,690-14,362

Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d

Final open flow 1,147\* MCF/d Final open flow 222 Bbl/d

Time of open flow between initial and final tests 312 Hours

Static rock Pressure 4,200\* psig (surface pressure) after 312 Hours \*Calculated

Second producing formation \_\_\_\_\_ Pay zone depth (ft) \_\_\_\_\_

Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d

Final open flow \_\_\_\_\_ MCF/d Final open flow \_\_\_\_\_ Bbl/d

Time of open flow between initial and final tests \_\_\_\_\_ Hours

Static rock Pressure \_\_\_\_\_ psig (surface pressure) after \_\_\_\_\_ Hours

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I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Marlene Williams  
Signature

9-23-2013  
Date

Were core samples taken? Yes \_\_\_\_\_ No N

Were cuttings caught during drilling? Yes Y No \_\_\_\_\_

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list \_\_\_\_\_  
LWD GR from 5332-14500' MD.

**NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.**

Perforated Intervals, Fracturing, or Stimulating:

See attached

Plug Back Details Including Plug Type and Depth(s):

Formations Encountered: Surface:	Top Depth	/	Bottom Depth
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See attached

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WV GEOLOGICAL SURVEY  
1071 UNIVERSITY AVENUE  
MORGANTOWN, WV 26604

**PERFORATION RECORD ATTACHMENT**

Well Number and Name: 835791 Brian Dytko OHI 10H

PERFORATION RECORD			STIMULATION RECORD							
Date	Interval Perforated		Date	Interval	Treated	Fluid		Propping Agent		Average Injection
	From	To				Type	Amount	Type	Amount	
10/23/2012	13,947	14,362	12/5/2012	13,947	14,362	Slk wtr	9,658	Sand	551,700	79.6
12/5/2012	13,428	13,844	12/6/2012	13,428	13,844	Slk wtr	12,533	Sand	552,280	78.6
12/6/2012	12,910	13,345	12/7/2012	12,910	13,345	Slk wtr	11,920	Sand	666,540	79.9
12/7/2012	12,392	12,827	12/8/2012	12,392	12,827	Slk wtr	11,916	Sand	656,760	79.9
12/8/2012	11,874	12,309	12/9/2012	11,874	12,309	Slk wtr	12,159	Sand	668,700	80.1
12/9/2012	11,355	11,796	12/10/2012	11,355	11,796	Slk wtr	11,551	Sand	656,040	80
12/10/2012	10,837	11,272	12/11/2012	10,837	11,272	Slk wtr	11,765	Sand	665,010	80.2
12/11/2012	10,324	10,753	12/12/2012	10,324	10,753	Slk wtr	11,735	Sand	667,300	79.9
12/12/2012	9,800	10,235	12/13/2012	9,800	10,235	Slk wtr	11,616	Sand	662,560	79.9
12/13/2012	9,282	9,717	12/14/2012	9,282	9,717	Slk wtr	11,299	Sand	660,440	79.7
12/13/2012	8,763	9,198	12/15/2012	8,763	9,198	Slk wtr	12,208	Sand	661,400	78.2
12/15/2012	8,245	8,680	12/16/2012	8,245	8,680	Slk wtr	11,547	Sand	660,940	80
12/16/2012	7,725	8,162	12/17/2012	7,725	8,162	Slk wtr	11,718	Sand	660,780	80
12/17/2012	7,208	7,644	12/18/2012	7,208	7,644	Slk wtr	11,473	Sand	660,880	80
12/18/2012	6,690	7,125	12/19/2012	6,690	7,125	Slk wtr	11,753	Sand	657,820	80

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**LATERAL SIDETRACK WELLBORE (no vertical pilot hole associated with this well)**

**Maximum TVD of wellbore:** 6473 ft TVD @ 14045 ft MD

Formation/Lithology	Top Depth, MD (ft)	Top Depth, TVD (ft)	Bottom Depth, MD (ft)	Bottom Depth, TVD (ft)
SS/LS	0	0	520	520
LS/SS	520	520	632	632
Pittsburg Coal	632	632	637	637
LS/SS	637	637	680	680
SS/SHALE	680	680	900	900
Big Lime	900	900	1110	1110
Big Injun	1110	1110	1300	1300
SHALE	1300	1300	2950	2950
SHALE/LS	2950	2950	3100	3100
SHALE	3100	3100	6355	6216
Geneseo	6355	6216	6384	6237
Tully	6384	6237	6436	6272
Hamilton	6436	6272	6641	6373
Marcellus	6641	6373		
TD of Lateral			14500	6461

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## Chesapeake Appalachia, LLC

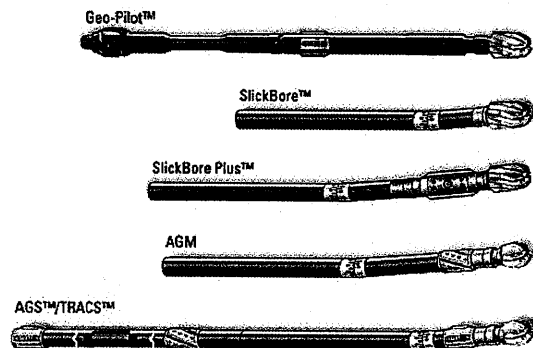
Brian Dytko OHI 10H

Ohio County, West Virginia  
Nomac #37

## Sperry Drilling Services

## End of Well Report

Prepared For: Chesapeake Appalachia, LLC



October 5, 2012

Submitted by:  
Tim Aitken - Well Planner  
Darin Brown - Directional Drilling Coordinator  
Hunter Williams - Sperry Account Rep.  
1-800-332-3992  
Houston, TX 77032

**HALLIBURTON**

# Chesapeake Appalachia. LLC

**Brian Dytko OHI 10H  
Ohio County, West Virginia**

**End of Well Report**

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WV GEOLOGICAL SURVEY  
MORGANTOWN WV

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**HALLIBURTON**

**Sperry Drilling Services**



Final Surveys and Plot

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WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

# Chesapeake Appalachia, LLC

**HALLIBURTON**  
Sperry Drilling Services

Project: Ohio County, WV  
Site: Valley Grove  
Well: Brian Dytko OHI 10H  
Wellbore: Wellbore #1  
Design: Plan #8  
Rig: Nomac 37

### SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Annotation
9367.00	88.76	158.55	6384.71	-1998.57	2321.55	0.00	0.00	2881.75	Tie-On
9414.00	88.76	158.18	6385.72	-2042.25	2338.87	0.79	-90.00	2928.30	Start Drop
9477.22	87.50	158.18	6387.79	-2100.91	2362.36	2.00	-179.86	2990.93	End Drop
9644.04	87.50	158.18	6395.08	-2255.62	2424.31	0.00	0.00	3156.11	Start Build
10455.93	89.60	150.33	6415.68	-2986.06	2776.59	1.00	-75.10	3965.37	End Build
14551.93	89.60	150.33	6444.28	-6545.04	4803.92	0.00	0.00	8061.24	TD

### Surface Location:

US State Plane 1927 (Exact solution)  
West Virginia North 4701  
Elevation: GL 1220' + KB 18' @ 1238.00ft (Nomac 37)

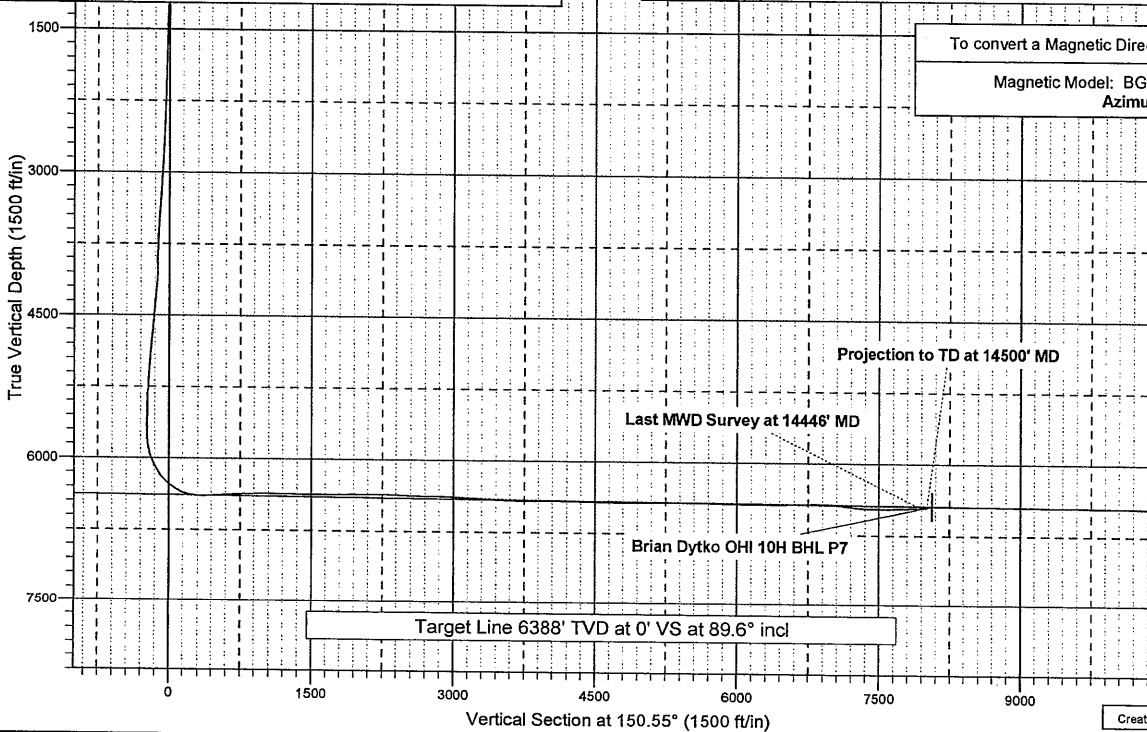
Northing	Easting	Latitude	Longitude
559171.44	1689695.82	40° 1' 47.870 N	80° 36' 29.182 W

### WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting
Brian Dytko OHI 10H BHL P7	6444.28	-6545.04	4803.92	552626.40	1694499.75

To convert a Magnetic Direction to a Grid Direction, Subtract 7.97°

Magnetic Model: BGGM2012 Date: 16-Sep-12  
Azimuths to Grid North



Created By: Tim Aitken Date: 28 September 2012

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SEP 26 2012

WV GEOLOGICAL SURVEY  
MORGANTHAU, WV

# Chesapeake Appalachia, LLC

**HALLIBURTON**  
Sperry Drilling Services

Project: Ohio County, WV  
Site: Valley Grove  
Well: Brian Dytko OHI 10H  
Wellbore: Wellbore #1  
Design: Plan #8  
Rig: Nomac 37



**Surface Location:**

US State Plane 1927 (Exact solution)  
West Virginia North 4701  
Elevation: GL 1220' + KB 18' @ 1238.00ft (Nomac 37)

Northing	Easting	Latitude	Longitude
559171.44	1689695.82	40° 1' 47.870 N	80° 36' 29.182 W

To convert a Magnetic Direction to a Grid Direction, Subtract 7.97°

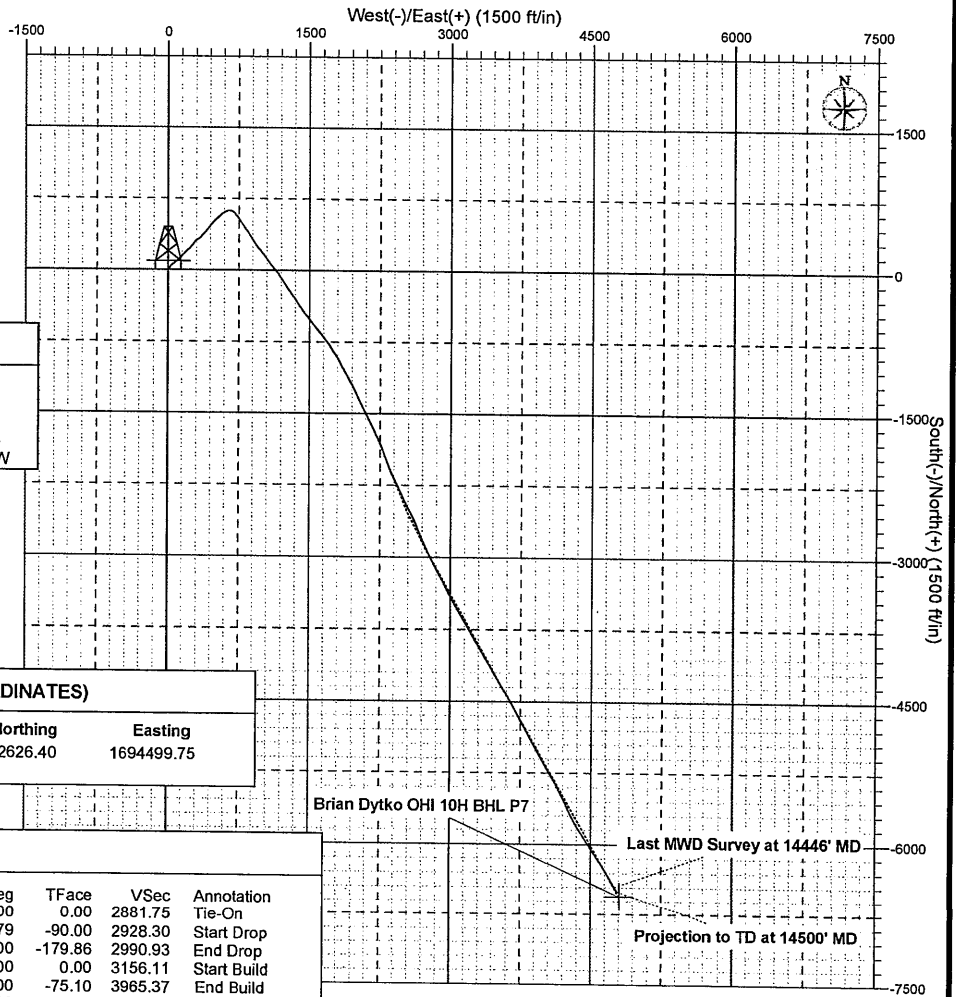
Magnetic Model: BGGM2012 Date: 16-Sep-12  
Azimuths to Grid North

**WELLBORE TARGET DETAILS (MAP CO-ORDINATES)**

Name	TVD	+N/-S	+E/-W	Northing	Easting
Brian Dytko OHI 10H BHL P7	6444.28	-6545.04	4803.92	552626.40	1694499.75

**SECTION DETAILS**

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Annotation
9367.00	88.76	158.55	6384.71	-1998.57	2321.55	0.00	0.00	2881.75	Tie-On
9414.00	88.76	158.18	6385.72	-2042.25	2338.87	0.79	-90.00	2928.30	Start Drop
9477.22	87.50	158.18	6387.79	-2100.91	2362.36	2.00	-179.86	2990.93	End Drop
9644.04	87.50	158.18	6395.08	-2255.62	2424.31	0.00	0.00	3156.11	Start Build
10455.93	89.60	150.33	6415.68	-2986.06	2776.59	1.00	-75.10	3965.37	End Build
14551.93	89.60	150.33	6444.28	-6545.04	4803.92	0.00	0.00	8061.24	TD



Brian Dytko OHI 10H BHL P7

Last MWD Survey at 14446' MD

Projection to TD at 14500' MD

Created By: Tim Aitken Date: 29 September 2012

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WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

# Chesapeake Appalachia, LLC

Ohio County, WV  
Valley Grove  
Brian Dytko OHI 10H

Wellbore #1

Design: Surveys

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WV GEOLOGICAL SURVEY  
APPROPRIATE DIVISION

## Sperry Drilling Services Combo Report

28 September, 2012

Well Coordinates: 559,171.44 N, 1,689,695.82 E (40° 01' 47.87" N, 080° 36' 29.18" W)  
Ground Level: 1,220.00 ft

Local Coordinate Origin:	Centered on Well Brian Dytko OHI 10H
Viewing Datum:	GL 1220' + KB 18' @ 1238.00ft (Nomac 37)
TVDs to System:	N
North Reference:	Grid
Unit System:	API-US Survey Feet

Version: 2003.16 Build: 431

**HALLIBURTON**

**HALLIBURTON**

WV GEOLOGICAL SURVEY  
MORGANTHAU, WV

**Design Report for Brian Dytko OHI 10H - Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
0.00	0.00	0.00	-1,238.00	0.00	0.00 N	0.00 E	559,171.44	1,689,695.82	0.00	0.00
103.00	0.57	45.08	-1,135.00	103.00	0.36 N	0.36 E	559,171.80	1,689,696.19	0.55	-0.14
203.00	0.75	56.30	-1,035.01	202.99	1.08 N	1.26 E	559,172.52	1,689,697.08	0.22	-0.32
303.00	0.51	56.20	-935.01	302.99	1.69 N	2.17 E	559,173.13	1,689,698.00	0.24	-0.40
403.00	0.64	61.25	-835.02	402.98	2.20 N	3.03 E	559,173.64	1,689,698.86	0.14	-0.43
503.00	0.61	59.22	-735.03	502.97	2.74 N	3.98 E	559,174.18	1,689,699.80	0.04	-0.43
566.00	0.86	63.07	-672.03	565.97	3.13 N	4.69 E	559,174.57	1,689,700.51	0.40	-0.42
603.00	0.61	56.01	-635.03	602.97	3.37 N	5.10 E	559,174.81	1,689,700.93	0.72	-0.42
694.00	0.74	34.07	-544.04	693.96	4.12 N	5.83 E	559,175.56	1,689,701.66	0.32	-0.72
755.00	0.65	10.52	-483.04	754.96	4.79 N	6.12 E	559,176.23	1,689,701.94	0.49	-1.16
772.00	0.82	1.80	-466.05	771.95	5.01 N	6.14 E	559,176.45	1,689,701.96	1.19	-1.34
804.00	1.05	25.45	-434.05	803.95	5.50 N	6.27 E	559,176.94	1,689,702.09	1.39	-1.71
836.00	1.12	31.44	-402.06	835.94	6.03 N	6.56 E	559,177.47	1,689,702.38	0.42	-2.03
868.00	1.24	38.42	-370.06	867.94	6.57 N	6.94 E	559,178.01	1,689,702.76	0.58	-2.31
900.00	1.32	25.17	-338.07	899.93	7.17 N	7.31 E	559,178.61	1,689,703.13	0.96	-2.65
932.00	1.70	23.00	-306.08	931.92	7.94 N	7.65 E	559,179.38	1,689,703.48	1.20	-3.16
964.00	1.91	21.93	-274.10	963.90	8.88 N	8.04 E	559,180.32	1,689,703.86	0.66	-3.78
996.00	2.18	25.19	-242.12	995.88	9.92 N	8.49 E	559,181.36	1,689,704.32	0.92	-4.46
1,028.00	2.44	24.39	-210.14	1,027.86	11.09 N	9.03 E	559,182.53	1,689,704.86	0.82	-5.22
1,059.00	2.76	20.12	-179.18	1,058.82	12.39 N	9.56 E	559,183.83	1,689,705.39	1.21	-6.09
1,091.00	3.31	24.91	-147.22	1,090.78	13.96 N	10.22 E	559,185.40	1,689,706.04	1.89	-7.13
1,123.00	3.85	22.26	-115.28	1,122.72	15.79 N	11.01 E	559,187.23	1,689,706.84	1.76	-8.33
1,155.00	4.22	27.40	-83.36	1,154.64	17.83 N	11.96 E	559,189.27	1,689,707.79	1.62	-9.64
1,187.00	4.62	30.09	-51.46	1,186.54	19.99 N	13.15 E	559,191.43	1,689,708.98	1.41	-10.94
1,219.00	4.86	29.88	-19.57	1,218.43	22.28 N	14.47 E	559,193.72	1,689,710.30	0.75	-12.28
1,251.00	4.95	33.11	12.32	1,250.32	24.61 N	15.90 E	559,196.05	1,689,711.73	0.91	-13.61
1,283.00	5.21	37.87	44.19	1,282.19	26.91 N	17.55 E	559,198.35	1,689,713.37	1.55	-14.81
1,315.00	5.44	38.39	76.05	1,314.05	29.25 N	19.38 E	559,200.69	1,689,715.21	0.73	-15.94
1,347.00	5.42	37.69	107.91	1,345.91	31.63 N	21.25 E	559,203.07	1,689,717.07	0.22	-17.10
1,379.00	6.08	42.17	139.75	1,377.75	34.09 N	23.31 E	559,205.53	1,689,719.13	2.49	-18.22
1,411.00	5.50	41.29	171.58	1,409.58	36.49 N	25.46 E	559,207.93	1,689,721.28	1.83	-19.26
1,442.00	5.70	40.27	202.44	1,440.44	38.79 N	27.43 E	559,210.23	1,689,723.26	0.72	-20.29
1,474.00	5.71	43.26	234.28	1,472.28	41.16 N	29.55 E	559,212.60	1,689,725.38	0.93	-21.31
1,506.00	5.93	43.72	266.11	1,504.11	43.51 N	31.79 E	559,214.95	1,689,727.61	0.70	-22.26
1,538.00	5.94	46.71	297.94	1,535.94	45.84 N	34.13 E	559,217.28	1,689,729.96	0.97	-23.14
1,570.00	6.05	46.59	329.77	1,567.77	48.14 N	36.56 E	559,219.58	1,689,732.39	0.35	-23.94
1,602.00	5.89	48.37	361.59	1,599.59	50.39 N	39.02 E	559,221.83	1,689,734.84	0.76	-24.69
1,634.00	6.02	48.66	393.42	1,631.42	52.58 N	41.50 E	559,224.02	1,689,737.33	0.42	-25.38
1,666.00	6.21	49.65	425.24	1,663.24	54.81 N	44.08 E	559,226.25	1,689,739.91	0.68	-26.06
1,698.00	6.26	48.70	457.05	1,695.05	57.09 N	46.71 E	559,228.53	1,689,742.54	0.36	-26.74
1,730.00	6.41	47.77	488.85	1,726.85	59.44 N	49.35 E	559,230.88	1,689,745.17	0.57	-27.50
1,761.00	6.53	49.88	519.66	1,757.66	61.74 N	51.97 E	559,233.18	1,689,747.80	0.86	-28.21
1,793.00	6.70	50.31	551.44	1,789.44	64.10 N	54.80 E	559,235.54	1,689,750.63	0.55	-28.87
1,825.00	6.93	50.75	583.22	1,821.22	66.51 N	57.73 E	559,237.95	1,689,753.56	0.74	-29.53
1,857.00	7.14	50.40	614.98	1,852.98	69.00 N	60.76 E	559,240.44	1,689,756.59	0.67	-30.21

**Design Report for Brian Dytko OHI 10H - Surveys**

WV GEOLOGICAL SURVEY  
APPROVED

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
1,889.00	7.13	49.87	646.73	1,884.73	71.55 N	63.81 E	559,242.99	1,689,759.64	0.21	-30.93
1,921.00	7.08	49.96	678.48	1,916.48	74.10 N	66.84 E	559,245.54	1,689,762.66	0.16	-31.66
1,953.00	7.05	51.04	710.24	1,948.24	76.60 N	69.88 E	559,248.04	1,689,765.70	0.43	-32.35
1,984.00	6.89	49.59	741.01	1,979.01	79.01 N	72.77 E	559,250.44	1,689,768.60	0.77	-33.02
2,016.00	6.82	49.94	772.78	2,010.78	81.47 N	75.69 E	559,252.91	1,689,771.51	0.25	-33.73
2,127.00	6.60	48.21	883.02	2,121.02	89.96 N	85.49 E	559,261.40	1,689,781.31	0.27	-36.31
2,223.00	6.50	49.18	978.39	2,216.39	97.19 N	93.71 E	559,268.63	1,689,789.54	0.16	-38.56
2,318.00	7.29	46.03	1,072.71	2,310.71	104.89 N	102.12 E	559,276.33	1,689,797.95	0.92	-41.13
2,414.00	8.17	43.21	1,167.83	2,405.83	114.09 N	111.18 E	559,285.53	1,689,807.00	1.00	-44.69
2,510.00	8.87	45.11	1,262.77	2,500.77	124.29 N	121.09 E	559,295.73	1,689,816.91	0.79	-48.69
2,606.00	9.88	48.68	1,357.49	2,595.49	134.95 N	132.52 E	559,306.39	1,689,828.34	1.21	-52.36
2,701.00	11.52	48.54	1,450.84	2,688.84	146.61 N	145.75 E	559,318.05	1,689,841.57	1.73	-56.01
2,797.00	12.94	45.98	1,544.66	2,782.66	160.43 N	160.66 E	559,331.87	1,689,856.49	1.58	-60.71
2,893.00	12.53	43.47	1,638.30	2,876.30	175.46 N	175.56 E	559,346.90	1,689,871.38	0.72	-66.47
2,989.00	10.97	42.50	1,732.28	2,970.28	189.75 N	188.89 E	559,361.19	1,689,884.72	1.64	-72.36
3,084.00	11.16	43.02	1,825.51	3,063.51	203.14 N	201.27 E	559,374.58	1,689,897.10	0.23	-77.93
3,180.00	11.66	41.29	1,919.62	3,157.62	217.22 N	214.01 E	559,388.66	1,689,909.84	0.63	-83.93
3,276.00	12.49	42.93	2,013.49	3,251.49	232.11 N	227.49 E	559,403.55	1,689,923.31	0.94	-90.27
3,371.00	11.63	40.98	2,106.40	3,344.40	246.86 N	240.76 E	559,418.30	1,689,936.59	1.00	-96.59
3,467.00	12.26	41.72	2,200.32	3,438.32	261.77 N	253.89 E	559,433.21	1,689,949.72	0.68	-103.12
3,563.00	11.15	39.93	2,294.32	3,532.32	276.50 N	266.63 E	559,447.94	1,689,962.46	1.22	-109.68
3,659.00	11.19	39.68	2,388.50	3,626.50	290.79 N	278.54 E	559,462.23	1,689,974.36	0.07	-116.26
3,754.00	8.42	41.31	2,482.10	3,720.10	303.11 N	289.02 E	559,474.55	1,689,984.84	2.93	-121.84
3,850.00	5.59	55.05	2,577.38	3,815.38	311.07 N	297.49 E	559,482.51	1,689,993.32	3.41	-124.61
3,946.00	7.21	66.98	2,672.79	3,910.79	316.10 N	306.87 E	559,487.54	1,690,002.69	2.17	-124.38
4,041.00	14.00	60.16	2,766.11	4,004.11	324.16 N	322.34 E	559,495.60	1,690,018.17	7.26	-123.79
4,136.00	14.73	45.08	2,858.17	4,096.17	338.41 N	340.87 E	559,509.85	1,690,036.69	4.00	-127.09
4,232.00	14.47	41.06	2,951.08	4,189.08	356.07 N	357.39 E	559,527.51	1,690,053.21	1.09	-134.35
4,328.00	16.70	38.41	3,043.54	4,281.54	375.93 N	373.84 E	559,547.37	1,690,069.66	2.44	-143.55
4,423.00	16.22	40.08	3,134.65	4,372.65	396.78 N	390.86 E	559,568.22	1,690,086.69	0.71	-153.33
4,519.00	14.89	44.59	3,227.13	4,465.13	415.82 N	408.16 E	559,587.26	1,690,103.98	1.87	-161.41
4,615.00	13.68	39.18	3,320.17	4,558.17	433.41 N	423.99 E	559,604.85	1,690,119.81	1.88	-168.94
4,711.00	13.84	35.85	3,413.42	4,651.42	451.51 N	437.89 E	559,622.95	1,690,133.71	0.84	-177.88
4,807.00	13.59	36.01	3,506.68	4,744.68	469.94 N	451.24 E	559,641.38	1,690,147.07	0.26	-187.36
4,902.00	14.16	39.38	3,598.91	4,836.91	487.95 N	465.18 E	559,659.39	1,690,161.00	1.04	-196.19
4,998.00	14.07	40.81	3,692.01	4,930.01	505.86 N	480.25 E	559,677.30	1,690,176.08	0.38	-204.37
5,094.00	14.50	47.73	3,785.05	5,023.05	522.78 N	496.77 E	559,694.22	1,690,192.60	1.83	-210.98
5,189.00	14.07	45.75	3,877.11	5,115.11	538.84 N	513.85 E	559,710.28	1,690,209.67	0.69	-216.57
5,285.00	13.44	49.71	3,970.36	5,208.36	554.19 N	530.71 E	559,725.63	1,690,226.54	1.18	-221.65
5,366.00	12.90	49.71	4,049.23	5,287.23	566.13 N	544.79 E	559,737.57	1,690,240.62	0.67	-225.12
5,431.00	11.78	51.81	4,112.73	5,350.73	574.92 N	555.54 E	559,746.36	1,690,251.37	1.86	-227.49
5,557.00	9.95	52.91	4,236.46	5,474.46	589.44 N	574.34 E	559,760.88	1,690,270.16	1.46	-230.90
5,684.00	8.74	57.68	4,361.78	5,599.78	601.22 N	591.24 E	559,772.66	1,690,287.07	1.13	-232.84
5,746.00	7.98	58.04	4,423.12	5,661.12	606.01 N	598.87 E	559,777.45	1,690,294.70	1.23	-233.26
5,778.00	9.42	64.40	4,454.75	5,692.75	608.32 N	603.12 E	559,779.76	1,690,298.95	5.41	-233.18

SEP 25 2012

## Design Report for Brian Dytko OHI 10H - Surveys

WV GEOLOGICAL SURVEY  
MORTGAGE

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates Northing (ft)	Local Coordinates Easting (ft)	Map Coordinates Northing (ft)	Map Coordinates Easting (ft)	Dogleg Rate (°/100ft)	Vertical Section (ft)
5,808.00	11.46	66.99	4,484.25	5,722.25	610.55 N	608.08 E	559,781.99	1,690,303.90	6.98	-232.69
5,840.00	12.90	67.11	4,515.53	5,753.53	613.18 N	614.30 E	559,784.62	1,690,310.12	4.50	-231.92
5,871.00	14.75	64.14	4,545.63	5,783.63	616.25 N	621.04 E	559,787.69	1,690,316.86	6.39	-231.28
5,902.00	17.10	67.21	4,575.44	5,813.44	619.73 N	628.79 E	559,791.17	1,690,324.61	8.05	-230.50
5,933.00	19.10	76.62	4,604.91	5,842.91	622.67 N	637.93 E	559,794.11	1,690,333.75	11.41	-228.57
5,964.00	18.76	87.59	4,634.24	5,872.24	624.06 N	647.85 E	559,795.50	1,690,343.67	11.52	-224.90
5,995.00	18.91	96.71	4,663.59	5,901.59	623.68 N	657.82 E	559,795.12	1,690,353.64	9.50	-219.67
6,025.00	19.11	107.02	4,691.96	5,929.96	621.67 N	667.34 E	559,793.11	1,690,363.17	11.20	-213.24
6,056.00	20.45	114.48	4,721.14	5,959.14	617.94 N	677.13 E	559,789.38	1,690,372.95	9.21	-205.18
6,088.00	22.34	123.60	4,750.94	5,988.94	612.26 N	687.28 E	559,783.70	1,690,383.11	11.94	-195.23
6,119.00	24.05	131.04	4,779.44	6,017.44	604.85 N	696.96 E	559,776.29	1,690,392.78	10.93	-184.03
6,150.00	24.91	137.35	4,807.66	6,045.66	595.90 N	706.15 E	559,767.34	1,690,401.97	8.87	-171.71
6,181.00	26.94	139.97	4,835.54	6,073.54	585.72 N	715.09 E	559,757.16	1,690,410.91	7.52	-158.45
6,213.00	29.52	140.70	4,863.73	6,101.73	574.07 N	724.75 E	559,745.51	1,690,420.57	8.13	-143.56
6,244.00	32.48	141.11	4,890.30	6,128.30	561.67 N	734.81 E	559,733.11	1,690,430.64	9.57	-127.82
6,275.00	35.13	141.91	4,916.05	6,154.05	548.17 N	745.54 E	559,719.61	1,690,441.37	8.67	-110.79
6,306.00	38.75	143.17	4,940.83	6,178.83	533.38 N	756.86 E	559,704.82	1,690,452.69	11.93	-92.34
6,337.00	40.54	143.81	4,964.70	6,202.70	517.49 N	768.63 E	559,688.93	1,690,464.45	5.92	-72.71
6,367.00	43.08	144.42	4,987.05	6,225.05	501.28 N	780.35 E	559,672.72	1,690,476.17	8.57	-52.84
6,399.00	45.75	144.74	5,009.91	6,247.91	483.03 N	793.33 E	559,654.47	1,690,489.15	8.37	-30.57
6,431.00	49.55	145.78	5,031.46	6,269.46	463.60 N	806.79 E	559,635.04	1,690,502.62	12.12	-7.02
6,463.00	54.49	146.74	5,051.15	6,289.15	442.63 N	820.79 E	559,614.07	1,690,516.62	15.62	18.12
6,494.00	55.45	146.98	5,068.94	6,306.94	421.37 N	834.67 E	559,592.81	1,690,530.50	3.16	43.45
6,526.00	57.98	146.98	5,086.50	6,324.50	398.94 N	849.25 E	559,570.38	1,690,545.07	7.91	70.15
6,556.00	60.88	146.06	5,101.76	6,339.76	377.40 N	863.50 E	559,548.84	1,690,559.32	10.02	95.91
6,587.00	64.68	146.64	5,115.94	6,353.94	354.46 N	878.77 E	559,525.90	1,690,574.59	12.37	123.40
6,620.00	68.92	147.99	5,128.94	6,366.94	328.93 N	895.14 E	559,500.37	1,690,590.96	13.39	153.68
6,652.00	73.85	147.13	5,139.15	6,377.15	303.35 N	911.40 E	559,474.79	1,690,607.23	15.62	183.95
6,683.00	78.58	145.58	5,146.53	6,384.53	278.30 N	928.08 E	559,449.74	1,690,623.91	16.01	213.97
6,715.00	82.46	144.38	5,151.80	6,389.80	252.45 N	946.19 E	559,423.89	1,690,642.02	12.68	245.37
6,747.00	86.30	142.55	5,154.94	6,392.94	226.87 N	965.15 E	559,398.31	1,690,660.97	13.28	276.97
6,778.00	89.73	140.74	5,156.01	6,394.01	202.58 N	984.37 E	559,374.02	1,690,680.19	12.51	307.57
6,809.00	90.00	140.06	5,156.08	6,394.08	178.70 N	1,004.13 E	559,350.14	1,690,699.95	2.36	338.09
6,840.00	90.30	139.62	5,156.00	6,394.00	155.01 N	1,024.12 E	559,326.45	1,690,719.95	1.72	368.55
6,872.00	92.18	139.97	5,155.31	6,393.31	130.57 N	1,044.77 E	559,302.01	1,690,740.60	5.98	399.98
6,999.00	94.16	145.49	5,148.28	6,386.28	29.71 N	1,121.53 E	559,201.15	1,690,817.36	4.61	525.55
7,122.00	93.02	145.34	5,140.58	6,378.58	71.35 S	1,191.21 E	559,100.09	1,690,887.04	0.93	647.81
7,247.00	91.91	145.56	5,135.20	6,373.20	174.21 S	1,262.04 E	558,997.23	1,690,957.86	0.91	772.20
7,372.00	90.37	144.87	5,132.72	6,370.72	276.85 S	1,333.33 E	558,894.59	1,691,029.16	1.35	896.63
7,498.00	90.67	146.63	5,131.57	6,369.57	380.99 S	1,404.24 E	558,790.45	1,691,100.07	1.42	1,022.18
7,622.00	90.10	143.76	5,130.74	6,368.74	482.79 S	1,475.01 E	558,688.65	1,691,170.83	2.36	1,145.62
7,747.00	89.19	139.47	5,131.51	6,369.51	580.75 S	1,552.61 E	558,590.69	1,691,248.43	3.51	1,269.07
7,873.00	88.59	139.54	5,133.95	6,371.95	676.55 S	1,634.41 E	558,494.89	1,691,330.24	0.48	1,392.71
7,997.00	89.26	146.48	5,136.28	6,374.28	775.52 S	1,708.96 E	558,395.92	1,691,404.79	5.62	1,515.54
8,121.00	90.40	149.46	5,136.65	6,374.65	880.62 S	1,774.72 E	558,290.81	1,691,470.54	2.57	1,639.40

SEP 25 2012

**HALLIBURTON**

**Design Report for Brian Dytko OHI 10H - Surveys**

WV GEOLOGICAL SURVEY  
MCP, LITTLE ROCK, AR

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
8,244.00	90.77	150.45	5,135.40	6,373.40	987.09 S	1,836.30 E	558,184.35	1,691,532.12	0.86	1,762.38
8,369.00	90.81	152.07	5,133.67	6,371.67	1,096.68 S	1,896.39 E	558,074.76	1,691,592.22	1.30	1,887.36
8,495.00	90.17	153.64	5,132.59	6,370.59	1,208.79 S	1,953.88 E	557,962.65	1,691,649.70	1.35	2,013.25
8,617.00	90.74	153.93	5,131.63	6,369.63	1,318.24 S	2,007.77 E	557,853.20	1,691,703.59	0.52	2,135.05
8,739.00	89.50	153.68	5,131.37	6,369.37	1,427.71 S	2,061.62 E	557,743.73	1,691,757.44	1.04	2,256.85
8,864.00	87.72	153.86	5,134.40	6,372.40	1,539.80 S	2,116.85 E	557,631.64	1,691,812.67	1.43	2,381.61
8,990.00	88.39	154.11	5,138.68	6,376.68	1,652.97 S	2,172.08 E	557,518.47	1,691,867.90	0.57	2,507.31
9,114.00	87.31	153.73	5,143.33	6,381.33	1,764.26 S	2,226.55 E	557,407.18	1,691,922.38	0.92	2,631.01
9,241.00	90.44	159.73	5,145.83	6,383.83	1,880.84 S	2,276.69 E	557,290.60	1,691,972.51	5.33	2,757.17
9,367.00	88.76	158.55	5,146.71	6,384.71	1,998.57 S	2,321.55 E	557,172.87	1,692,017.37	1.63	2,881.75
9,491.00	88.83	157.64	5,149.31	6,387.31	2,113.59 S	2,367.80 E	557,057.85	1,692,063.62	0.74	3,004.65
9,617.00	85.73	154.02	5,155.29	6,393.29	2,228.39 S	2,419.31 E	556,943.05	1,692,115.14	3.78	3,129.93
9,744.00	86.04	154.13	5,164.41	6,402.41	2,342.31 S	2,474.69 E	556,829.13	1,692,170.52	0.26	3,256.37
9,871.00	86.44	153.33	5,172.74	6,410.74	2,455.95 S	2,530.78 E	556,715.49	1,692,226.60	0.70	3,382.90
9,998.00	87.11	154.49	5,179.88	6,417.88	2,569.82 S	2,586.54 E	556,601.62	1,692,282.37	1.05	3,509.47
10,125.00	89.09	156.46	5,184.09	6,422.09	2,685.29 S	2,639.22 E	556,486.15	1,692,335.05	2.20	3,635.92
10,251.00	91.34	156.32	5,183.62	6,421.62	2,800.74 S	2,689.68 E	556,370.70	1,692,385.51	1.79	3,761.26
10,378.00	90.07	154.93	5,182.06	6,420.06	2,916.40 S	2,742.09 E	556,255.04	1,692,437.92	1.48	3,887.75
10,504.00	89.66	153.45	5,182.35	6,420.35	3,029.83 S	2,796.95 E	556,141.61	1,692,492.77	1.22	4,013.49
10,631.00	89.46	152.26	5,183.33	6,421.33	3,142.83 S	2,854.89 E	556,028.60	1,692,550.71	0.95	4,140.38
10,758.00	88.83	151.29	5,185.22	6,423.22	3,254.72 S	2,914.94 E	555,916.72	1,692,610.77	0.91	4,267.33
10,883.00	88.62	150.81	5,188.00	6,426.00	3,364.07 S	2,975.43 E	555,807.37	1,692,671.26	0.42	4,392.30
11,010.00	89.09	151.62	5,190.54	6,428.54	3,475.36 S	3,036.58 E	555,696.08	1,692,732.40	0.74	4,519.26
11,138.00	88.83	150.54	5,192.87	6,430.87	3,587.37 S	3,098.46 E	555,584.07	1,692,794.29	0.87	4,647.23
11,264.00	89.16	147.94	5,195.08	6,433.08	3,695.62 S	3,162.89 E	555,475.82	1,692,858.71	2.08	4,773.17
11,391.00	91.28	149.73	5,194.59	6,432.59	3,804.28 S	3,228.61 E	555,367.16	1,692,924.43	2.18	4,900.10
11,518.00	90.17	149.63	5,192.98	6,430.98	3,913.90 S	3,292.71 E	555,257.54	1,692,988.54	0.88	5,027.07
11,646.00	90.43	149.53	5,192.31	6,430.31	4,024.28 S	3,357.52 E	555,147.16	1,693,053.35	0.22	5,155.05
11,772.00	92.15	149.63	5,189.47	6,427.47	4,132.90 S	3,421.30 E	555,038.54	1,693,117.13	1.37	5,281.00
11,899.00	89.16	149.18	5,188.02	6,426.02	4,242.20 S	3,485.93 E	554,929.24	1,693,181.75	2.38	5,407.95
12,025.00	89.16	147.60	5,189.87	6,427.87	4,349.49 S	3,551.96 E	554,821.95	1,693,247.79	1.25	5,533.84
12,152.00	88.86	150.65	5,192.07	6,430.07	4,458.46 S	3,617.12 E	554,712.97	1,693,312.94	2.41	5,660.77
12,280.00	89.19	150.79	5,194.24	6,432.24	4,570.10 S	3,679.71 E	554,601.34	1,693,375.53	0.28	5,788.75
12,407.00	89.19	151.86	5,196.04	6,434.04	4,681.51 S	3,740.64 E	554,489.93	1,693,436.47	0.84	5,915.72
12,532.00	89.16	152.08	5,197.84	6,435.84	4,791.83 S	3,799.38 E	554,379.61	1,693,495.20	0.18	6,040.67
12,659.00	88.96	151.61	5,199.92	6,437.92	4,903.79 S	3,859.30 E	554,267.65	1,693,555.12	0.40	6,167.62
12,786.00	90.57	150.97	5,200.44	6,438.44	5,015.17 S	3,920.30 E	554,156.27	1,693,616.12	1.36	6,294.61
12,911.00	90.44	150.02	5,199.34	6,437.34	5,123.96 S	3,981.86 E	554,047.48	1,693,677.68	0.77	6,419.60
13,037.00	90.94	150.36	5,197.82	6,435.82	5,233.27 S	4,044.49 E	553,938.17	1,693,740.32	0.48	6,545.59
13,164.00	90.91	150.94	5,195.77	6,433.77	5,343.96 S	4,106.73 E	553,827.48	1,693,802.56	0.46	6,672.57
13,286.00	91.38	152.02	5,193.34	6,431.34	5,451.13 S	4,164.97 E	553,720.31	1,693,860.80	0.97	6,794.53
13,413.00	88.86	154.63	5,193.07	6,431.07	5,564.59 S	4,221.97 E	553,606.85	1,693,917.80	2.86	6,921.36
13,539.00	84.28	154.30	5,200.61	6,438.61	5,678.05 S	4,276.18 E	553,493.39	1,693,972.00	3.64	7,046.80
13,664.00	81.27	151.14	5,216.33	6,454.33	5,788.25 S	4,332.99 E	553,383.19	1,694,028.81	3.48	7,170.69
13,791.00	85.62	145.76	5,230.83	6,468.83	5,895.69 S	4,398.99 E	553,275.75	1,694,094.81	5.43	7,296.70



**HALLIBURTON**

**Design Report for Brian Dytko OHI 10H - Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100ft)	Vertical Section (ft)
					Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)		
13,918.00	89.66	146.08	5,236.06	6,474.06	6,000.76 S	4,470.08 E	553,170.68	1,694,165.90	3.19	7,423.15
14,045.00	90.34	146.31	5,236.06	6,474.06	6,106.29 S	4,540.74 E	553,065.15	1,694,236.56	0.57	7,549.78
14,171.00	91.78	147.70	5,233.73	6,471.73	6,211.95 S	4,609.34 E	552,959.49	1,694,305.16	1.59	7,675.51
14,297.00	91.55	148.30	5,230.07	6,468.07	6,318.76 S	4,676.08 E	552,852.68	1,694,371.90	0.51	7,801.34
14,423.00	91.72	148.67	5,226.48	6,464.48	6,426.13 S	4,741.91 E	552,745.31	1,694,437.74	0.32	7,927.20
14,446.00	91.52	148.92	5,225.83	6,463.83	6,445.79 S	4,753.82 E	552,725.65	1,694,449.65	1.39	7,950.18
<b>Last MWD Survey at 14446' MD</b>										
14,500.00	91.52	148.92	5,224.39	6,462.39	6,492.02 S	4,781.69 E	552,679.42	1,694,477.52	0.00	8,004.14
<b>Projection to TD at 14500' MD</b>										

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (ft)	+E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	150.55	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
103.00	694.00	VES Gyro (ref to 18' KB)	NS-Gyro-MS
755.00	14,500.00	Sperry MWD (ref to 18' KB)	MWD

**Targets**

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Brian Dytko OHI 10H	0.00	0.00	6,444.28	-6,545.04	4,803.92	552,626.40	1,694,499.75	40° 0' 43.772 N	80° 35' 26.408 W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 60.28ft at 14500.00ft MD (6462.39 TVD, -6492.02 N, 4781.69 E)									
- Point									

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SEP 25 2013

WV GEOLOGICAL SURVEY