WR -35

Date October 1, 2010
API # 4709703673

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm Name: Craig Bessinger 6H

Operator Well No.: 831200

LOCATION Elevation: 2097'
District: Meade
Quadrangle: Rock Cave
County: Upshur

Top Hole	Latitude:	6800 ft	South of	38 °	52 '	30 "
Top Hole	Longitude:	7000 ft	West of	xx °	xx '	xx "
Btm Hole	Latitude:	14850 ft	South of	38 °	50 '	00 "
Btm Hole	Longitude:	4300 ft	West of	80 °	15 '	00 "

Company: Chesapeake Appalachia, LLC
P.O. Box 18496
Oklahoma City, OK 73154-0496

Agent: Eric Gillespie
Inspector: Bill Hatfield
Date Permit Issued: 08/25/20009
Date Well work commenced: 03/22/2010
Date Well Work completed: 04/13/2010
Verbal Plugging Permission
Granted on / /
Rotary ☒ Cable☐ Rig
Total Depth (ft): 13282' TVD: 7291'
Fresh Water Depth (ft):540'
Salt Water Depth (ft.):NA
Is coal being mined in area (Yes ☐ No ☒)
Coal Depths (ft): 233' 271' 341'

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill-Up Cu.Ft.
20"		40'	
13 3/8"	475'	475'	CTS
9 5/8"	1757'	1757'	CTS
5 ½"	13282'	13282'	4132' Calc.
2 3/8"	7914'	7914'	

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WV Dep[illegible]
Environ[illegible]

Open Flow Data

1st Producing Formation Marcellus Pay Zone Depth 7,982 ft to 13,104 ft
Gas: Initial Open Flow 2,151 Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure 3,281 psig after xx hours

2nd Producing Formation Marcellus Pay Zone Depth xx ft to xx ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure xx psig after xx hours

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

WR-35
Rev (8-10)
Page 1 of 2

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

DATE: MAY 10 2011
API No: 47-001-03183
Lease No: DTI 070639

Farm Name: ROMAIN, ALBERT & JOYCE Operator Well No. 35033

LOCATION: Elevation: 1466' Quadrangle: Philippi

District: Pleasant County: Barbour

Latitude: 060 Feet South of: 39 Deg. 12 Min. 30 Sec.

Longitude: 9,940 Feet West of: 80 Deg. 00 Min. 00 Sec.

Company: ~~CNX Gas Company LLC~~ formerly Consol Gas Company

Address: P.O. Box 1248
Jane Lew, WV 26301
Agent: Kent Wright
Inspector: Bryan Harris
Date Permit Issued: 12/13/2010
Date Well Work Commenced: 01/12/2011
Date Well Work Completed: 02/14/2011
Verbal Plugging:
Date Permission granted on:
Rotary X **Cable** **Rig**
Total Vertical Depth (feet): 8,200'
Total Measured Depth (feet):
Fresh Water Depth (ft.): 255', 270'
Salt Water Depth (ft.): 1715'
Is coal being mined in area (N/Y)?: Yes
Coal Depths (ft.): 445'-450', 494'-497', 560'-564'
Void(s) encountered (N/Y) Depth(s)

Casing and Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
13 3/8"	36'	36'	Sand In
9 5/8"	628'	628'	230 sks
7"	2012'	2012'	325 sks
4 1/2"	6723'	6723'	375 sks

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MAY 11 2011
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Environmental Protection

OPEN FLOW DATA

Producing formation BENSON, THIRD ELK, FOURTH ELK, SYCAMORE GRIT — Pay zone depth (ft) 4264'-4270', 4916'-4920', 5130'-5134', 6610'-6616'

Gas: Initial open flow 100 MCF/d — Oil: Initial open flow 0 Bbl/d

Final open flow 157 MCF/d — Final open flow 0 Bbl/d

Time of open flow between initial and final tests 12 Hours

Static Rock Pressure 1000 psig (surface pressure) after 12 Hours

Second Producing formation SPEECHLY — Pay zone depth (ft) 2938'-2942'

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 *

Static rock Pressure * psig (surface pressure) after * Hours

**** COMMINGLED WITH PREVIOUS FORMATIONS***

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

Signature

5-6-11
Date

BC

Rev. (4/27/2011)

WELL: **35033**

Were core samples taken? Yes ____ No **X** **Were cuttings caught during drilling?** Yes **X** No ____

Were ____ Electrical, ____ Mechanical, X or Geophysical logs recorded on this well?

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:

2/14/2011 SYCAMORE GRIT 6610-6616, 37 HOLES, BD 4100#, AVG RATE 18, AVG PRESS 3179#, 777 BBLS, TOT SAND 39,000#, MSCF N2 127, 2555# ISIP
FOURTH ELK 5130-5134, 17 HOLES BD 3041#, AVG RATE 14, AVG PRESS 3722#, 103 BBLS, TOT SAND 13,600#, MSCF N2 254, 2212# ISIP
THIRD ELK 4916-4920, 17 HOLES, BD 3987#, AVG RATE 12, AVG PRESS 3781#, 272 BBLS, TOT SAND 153,000#, MSCF N2 323, 4442# ISIP.
BENSON 4264-4270, 25 HOLES, BD 3158#, AVG RATE 18, AVG PRESS 2291#, 600 BBLS, TOT SAND 25,000#, MSCF N2 156, 2050# ISIP.
SPEECHLY 2938-2942, 17 HOLES, BD 1900#, AVG RATE 16, AVG PRESS 2545#, TOT BBLS 339, TOT SAND 21,100#, MSCF N2 87, 3950# ISIP.

FORMATIONS ENCOUNTERED:

Fill	0	15	Shale&Sand	15	163
RedRock	163	248	Sand	248	320
Shale&Sand	320	445	Coal	445	450
Shale&Sand	450	494	Coal	494	497
Shale&Sand	497	560	Coal	560	564
Shale&Sand	564	660	Sand/Shale	660	670
Sand/Shale	670	900	Sand	900	920
RedRock/Shale	920	935	Sand/Shale	935	1030
Sand	1030	1072	Sand/Shale	1072	1252
Lime	1252	1297	Keener	1297	1317
Injun	1317	1476	Sand/Shale	1476	1660
Gantz	1660	1761	Sand/Shale	1761	

GAMMA RAY / FORMATION TOPS

#35033 **47-001-03183**

	TOP	BASE
FOURTH SAND	2072	2105
SPEECHLEY	2925	2936
BALLTOWN	3110	3146
BRADFORD	3412	3471
FAULT		3572
BRADFORD	3600	3654
RILEY	3842	4023
BENSON	4236	4302
FIRST ELK	4468	4526
SECOND ELK	4620	4700
THIRD ELK	4879	4917
FOURTH ELK	5150	5188
SYCAMORE GRIT	6476	6592
SILTSTONE	6880	6962
BURKETT	7340	7360
TULLY	7361	7415
MARCELLUS	7533	7671
ONONDAGA	7672	7688
HUNTERSVILLE CHERT	7689	7844
NEEDMORE SHALE	7845	7882
ORISKANY	7894	8006
HELDERBERG	8007	
LTD		8200

WR-35

1/21/2010

API # 47 017 05040 F

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

COPY

Farm name: FERREBEE, ROY R.

Operator Well No.: C.A. SMITH 1

LOCATION: Elevation: 1,307'

Quadrangle: CENTERPOINT 7.5'

District: MCCLELLAN

County: DODDRIDGE

Latitude: 11,725 Feet south of 39 Deg 27 Min 30 Sec.

Longitude: 6,625 Feet west of 80 Deg 40 Min 0 Sec.

Company: EAST RESOURCES, INC.
P.O. BOX 5519
VIENNA, WV 26105-5519

Agent: PHILIP S. ONDRUSEK

Inspector: DAVID SCRANAGE

Permit Issued: 01/21/10

Well work Commenced: 03/31/10

Well work Completed: 04/01/10

Verbal plugging permission granted on:

Rotary X Cable Rig

Total Depth (feet) 3350'

Fresh water depths (ft) NA

Salt water depths (ft) NA

Is coal being mined in area (Y/N) N

Coal Depths (ft): NA

Casing Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
7"	633'	633'	155 sks
4 1/2"	3279.2'	3279.2'	150 sks

OPEN FLOW DATA * WATERFLOOD INJECTOR

Producing formation Gordon Pay zone depth (ft) 3177'-3190', 3204'-3207'

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

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

NOTE: ON BACK OF THIS FORM, 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

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WV Department of
Environmental Protection

For: EAST RESOURCES, INC.

By: [signature]

Date: 5/12/10

Treatment: Treated perfs. 3177'-3207' w/ 250 gals. 15% HCl acid, 390 bbls cross linked gel, and 25,000 # 20/40 sand.

Well Log: SEE ORIGINAL WELL RECORD

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WR-35

12/30/2009

API # 47 017 05243 F

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State of West Virginia
Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

Farm name: COASTAL LUMBER COMPANY

Operator Well No.: O.W.O. HARDMAN # 1

LOCATION: Elevation: 1,330'

Quadrangle: CENTERPOINT 7.5'

District: MCCLELLAN

County: DODDRIDGE

Latitude: 12,375 Feet south of 39 Deg 27 Min 30 Sec.

Longitude: 8,400 Feet west of 80 Deg 40 Min 0 Sec.

Company: EAST RESOURCES, INC.
P.O. BOX 5519
VIENNA, WV 26105-5519

Agent: PHILIP S. ONDRUSEK

Inspector: DAVID SCRANAGE

Permit Issued: 12/30/09

Well work Commenced: 01/22/10

Well work Completed: 01/25/10

Verbal plugging permission granted on:

Rotary X Cable Rig

Total Depth (feet) 3380'

Fresh water depths (ft) NA

Salt water depths (ft) NA

Is coal being mined in area (Y/N) N

Coal Depths (ft): NA

Casing Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
7"	644'	644'	160 sks
4 1/2"	3311.45'	3311.45'	150 sks

OPEN FLOW DATA * WATERFLOOD INJECTOR

Producing formation Gordon Pay zone (ft) 3173.5'-3176' 3178'-3188', 3202'-3206.

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

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

NOTE: ON BACK OF THIS FORM, 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

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For: EAST RESOURCES, INC.

By: Ben Holden

Date: 5/12/10

Treatment : Treated perfs. 3173.5'-3206.5' w/ 250 gals. 15% HCl acid, 336 bbls cross linked gel, and 19,300 # 20/40 sand.

Well Log : SEE ORIGINAL WELL RECORD

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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: 4/05/2011
API #: 47-053-0543

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Farm name: AEP Operator Well No.: BA-02

LOCATION: Elevation: 804 Quadrangle: New Haven

District: Graham County: Mason
Latitude: 0 Feet South of 38 Deg. 56 Min. 32.413 Sec.
Longitude 0 Feet West of 81 Deg. 57 Min. 02.219 Sec.

Company: Appalachian Power Company

Address: Rt. 62, P.O. Box 419	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
New Haven WV 26265-0419				
Agent: Richard D. Thompson	26", 136.17 #	126	126	540
Inspector: Jamie Stevens	20", 133 # & 106.5 #	2,024	2,024	3,279
Date Permit Issued: 12/15/2010	13-3/8", 61 #	3,872	3,872	4,720
Date Well Work Commenced: 12/15/2010	9-5/8, 40 #	6,690	6,690	4213
Date Well Work Completed: 3/13/2011 (TD)				
Verbal Plugging: N/A				
Date Permission granted on: N/A				
Rotary X Cable Rig				
Total Vertical Depth (ft): 8875				
Total Measured Depth (ft): 8875				
Fresh Water Depth (ft.): 72				
Salt Water Depth (ft.): 1418				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.): 240 ft. to 1254 ft.				
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 N/A Pay zone depth (ft) N/A
Gas: Initial open flow N/A MCF/d Oil: Initial open flow N/A Bbl/d
Final open flow N/A MCF/d Final open flow N/A Bbl/d
Time of open flow between initial and final tests N/A Hours
Static rock Pressure N/A psig (surface pressure) after N/A Hours

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

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.

Richard D. Thompson
Signature

4/5/11
Date

Were core samples taken? Yes X No_____ Were cuttings caught during drilling? Yes X No_____

Were Y Electrical, N Mechanical, Y or Geophysical logs recorded on this well?
Y/N Y/N Y/N

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.

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Perforated Intervals, Fracturing, or Stimulating:

THIS WELL HAS NOT BEEN PERFORATED. A STRING OF 9-5/8" CASING WAS SET TO 6690 FT. IN THE TOP OF THE TRENTON LS. THE WELL WAS THEN DRILLED TO TOTAL DEPTH OF 8875 FT. THE INTERVAL FROM 6690 FT. TO 8875 FT. REMAINS UNCASED FOR OPEN HOLE RESERVOIR TESTING.

Formations Encountered: Top Depth / Bottom Depth
Surface:

COAL: 240', 620', 646', 650', 790', 802', 816', 1254'

SEE ATTACHED LITHOLOGY LOG FOR FOMATION TOPS AND BOTTOMS AND CORES.

SUMMARY OF FORMATIONS, LITHOLOGIES,
And NATURAL SHOWS

Battelle Memorial Institute
AEP BA-02 API# 47-053-0543
Graham District, Mason Co., West Virginia

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First Run Openhole Logging Program

Baker-Atlas – gamma ray, spectral gamma ray, compensated neutron, compensated density, photo-electric, caliper, laterlog, directional

Lithology or Formation	Depth	Notes
Ground level/Kelly bushing	804/814	
Alluvium	0-85	(estimated)
Allegheny-Pottsville Group (undiff)	85-1414	
Sharon sandstone	1414-1474	change to fluid drilling
Maxville limestone	absent	
Cuyahoga shale	1474-1940-	
Sunbury shale	1940-1949	
Berea sandstone	1949-1970	
Driller's/Logger's total depth	2031/2032	

20" casing set to 2024' (logger) in 24" hole and cemented to surface

Second Run Openhole Logging Program

Baker-Atlas – gamma ray, spectral gamma ray, compensated neutron, compensated density, photo-electric, caliper, laterlog, Star-Cbil image, directional

Lithology or Formation	Depth	Notes
Chagrin, U & M Huron (undiff)	1970-3024	drilled on air
Lower Huron shale	3024-3383	
Java shale	3383-3484	
Pipe Creek shale	3484-3499	
Angola shale	3499-3586	
Rhinestreet shale	3586-3744	
Hamilton shale	3744-3788	
Marcellus shale	3788-3793	
Onondaga limestone	3793-4014	
Salina dolomite	4014-4553	
Lockport dolomite	4553-4766	
Niagaran/Rose Hill shale	4766-4973	
Dayton/Casing Shell limestone	4973-5036	
Brassfield/Packer Shell limestone	5036-5063	
Tuscarora/Clinton sandstone	5063-5204	
Medina sandstone	5204-5212	
Queenston-Cincinnatian shale	5212-5840	
Utica/Martinsburg shale	5840-6460	
Point Pleasant shale	6460-6544	
Trenton limestone	6544-	
Total depth (drlr/lgr)	6702/6704	12.25" wellbore diameter

13.38" casing set to 3872' (logger) in 17.5" hole and cemented to surface &
9.67" casing set to 6690' (drlr) in 12.25" hole and cemented to approx. 3000'

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Third Run Openhole Logging Program

Baker-Atlas – gamma ray, spectral gamma ray, compensated neutron, compensated density, photo-electric, caliper, laterlog, micro-laterlog, magnetic resonance, elemental spectroscopy, Star-Cbil image, directional, sidewall cores

Lithology or Formation	Depth	Notes
Trenton limestone	6544-6660	
Black River limestone	6660-7177	
Gull River limestone	7177-7217	
Lower Chazy limestone	7217-7283	
Wells Creek shale & dolomite	7283-7368	
St. Peter sandstone	7368-7395	
Beekmantown "C" dolomite	7395-7586	
Beekmantown "B" dolomite	7586-7806	
Beekmantown "A" dolomite	7806-7955	
Rose Run sandstone	7955-8069	
Copper Ridge dolomite	8069-8227	
Copper Ridge "B" dolomite	8227-8341	
Lower Copper Ridge dolomite	8341-8736	
Nolichucky shale	8736-	
Total depth (drlr/lgr)	8875/8865	in 8.5" wellbore diameter

Conventional Cores

Depths and intervals are approximate, correlated via Baker-Hughes core gamma ray to openhole gamma ray depths

Core #1	6980-7010	Black River limestone (confinement)
Core #2	8318-8333	basal Copper Ridge "B" dolomite (confinement)
Core #3	8333-8356	Lower Copper Ridge dolomite (reservoir)
Core #4	8356-8448	Lower Copper Ridge dolomite (reservoir)
Core #5	8448-8536	Lower Copper Ridge dolomite (reservoir)
Core #6	8536-8603	Lower Copper Ridge dolomite (reservoir)

Sidewall Cores

Core No.	Depth	Formation	Rock type
1	8367.5	Lower Copper Ridge	reservoir
2	8366.5	Lower Copper Ridge	reservoir
3	8365.5	Lower Copper Ridge	reservoir
4	8364.5	Lower Copper Ridge	reservoir
5	8363.5	Lower Copper Ridge	reservoir
6	8362.5	Lower Copper Ridge	reservoir
7	8361.5	Lower Copper Ridge	reservoir
8	8360.5	Lower Copper Ridge	reservoir
9	8359.5	Lower Copper Ridge	reservoir
10	8358.5	Lower Copper Ridge	reservoir
11	8357.5	Lower Copper Ridge	reservoir
12	8356.5	Lower Copper Ridge	reservoir
13	8355.5	Lower Copper Ridge	reservoir
14	8354.5	Lower Copper Ridge	reservoir
15	8353.5	No core	
16	8352.5	Lower Copper Ridge	reservoir
17	8654.5	Lower Copper Ridge	reservoir
18	8653.5	Lower Copper Ridge	reservoir
19	8642.5	Lower Copper Ridge	reservoir

20	8640.5	Lower Copper Ridge	reservoir
21	8638.5	Lower Copper Ridge	reservoir
22	8632.5	Lower Copper Ridge	reservoir
23	8630.5	Lower Copper Ridge	reservoir
24	8628.5	Lower Copper Ridge	reservoir
25	8186.5	Copper Ridge	reservoir
26	8122.5	Copper Ridge	reservoir
27	8120.5	Copper Ridge	reservoir
28	8118.5	Copper Ridge	reservoir
29	8090.5	Copper Ridge	reservoir
30	8087.5	Copper Ridge	reservoir
31	8068.5	Rose Run	reservoir
32	8067.5	Rose Run	reservoir
33	8028.5	Rose Run	reservoir
34	8026.5	Rose Run	reservoir
35	8024.5	Rose Run	reservoir
36	8022.5	Rose Run	reservoir
37	8020.5	Rose Run	reservoir
38	8018.5	Rose Run	reservoir
39	8016.5	Rose Run	reservoir
40	8005.5	Rose Run	reservoir
41	7998.5	Rose Run	reservoir
42	7992.5	Rose Run	reservoir
43	7986.5	Rose Run	reservoir
44	7972.5	Rose Run	reservoir
45	7970.5	Rose Run	reservoir
46	7964.5	Rose Run	reservoir
47	7963.5	Rose Run	reservoir
48	7955.5	Rose Run	reservoir
49	7858.5	Beekmantown "A"	confinement
50	7857.5	Beekmantown "A"	confinement
51	7796.5	Beekmantown "B"	confinement
52	7794.5	No core	
53	7793.5	Beekmantown "B"	confinement
54	7603.5	No core	
55	7601.5	No core	
56	7504.5	Beekmantown "C"	confinement
57	7402.5	Beekmantown "C"	reservoir
58	7400.5	Beekmantown "C"	reservoir
59	7126.5	Black River	confinement
60	7104.5	Black River	confinement
61	8750.5	Lower Copper Ridge	confinement
62	8684.5	Lower Copper Ridge	confinement
63	8471.5	Lower Copper Ridge	reservoir
64	8427.5	No core	
65	8264.5	No core	
66	7937.5	Beekmantown "A"	reservoir
67	7715.5	Beekmantown "B"	reservoir
68	7620.5	Beekmantown "B"	reservoir
69	7618.5	Beekmantown "B"	reservoir
70	7378.5	St. Peter	reservoir
71	7263.5	Lower Chazy	confinement
72	6859.5	Black River	confinement

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WR -35

CORRECTION

Date October 26, 2010
API # 4707700509

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm Name: Bray Liston 3H **Operator Well No.:** 831257

LOCATION **Elevation:** 1896' **Quadrangle:** Valley Point
District: Pleasant **County:** Preston

Top Hole	**Latitude:**	xx ft	**South of**	39°	37 '	30 "
Top Hole	**Longitude:**	xx ft	**West of**	79 °	37 '	30 "
Btm Hole	**Latitude:**	xx ft	**South of**	xx °	xx '	xx "
Btm Hole	**Longitude:**	xx ft	**West of**	xx °	xx '	xx "

Company: Chesapeake Appalachia, LLC
P.O. Box 18496
Oklahoma City, OK 73154-0496

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill-Up Cu.Ft.
20"	40'	40'	driven
13 3/8"	560'	560'	614 CF
9 5/8"	3490'	3490'	1602 CF
5 ½"	13182'	13182'	2293 CF
2 3/8"	8326'	8326'	None

Agent: Eric Gillespie
Inspector: Tristan Jenkins
Date Permit Issued: 08/19/2009
Date Well work commenced: 09/26/2009
Date Well Work completed: 7/26/2010
Verbal Plugging Permission
Granted on / /
Rotary ☒ Cable☐ Rig
Total Depth (ft): 13194' TVD: 8080'
Fresh Water Depth (ft):30'
Salt Water Depth (ft.):None
Is coal being mined in area (Yes ☐ No ☒)
Coal Depths (ft): None

pb TVD

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Open Flow Data

1st Producing Formation Marcellus Pay Zone Depth 8,063 ft to 13,035 ft
Gas: Initial Open Flow 3,402 Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure 5,252 psig after xx hours

2nd Producing Formation Marcellus Pay Zone Depth xx ft to xx ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure xx psig after xx hours

3rd Producing Formation Marcellus Pay Zone Depth xx ft to xx ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure xx psig after xx hours

Chesapeake Energy
Well No.: 831257

Perforated Intervals

1st Stage	Marcellus	50	holes from	12,713 ft	to	13,035 ft
2nd Stage	Marcellus	50	holes from	12,313 ft	to	12,635 ft
3rd Stage	Marcellus	50	holes from	11,913 ft	to	12,235 ft
4th Stage	Marcellus	50	holes from	11,513 ft	to	11,835 ft
5th Stage	Marcellus	50	holes from	11,113 ft	to	11,435 ft
6th Stage	Marcellus	50	holes from	10,713 ft	to	11,035 ft
7th Stage	Marcellus	50	holes from	10,313 ft	to	10,635 ft
8th Stage	Marcellus	50	holes from	9,913 ft	to	10,253 ft
9th Stage	Marcellus	50	holes from	9,513 ft	to	9,835 ft
10th Stage	Marcellus	50	holes from	9,113 ft	to	9,435 ft
11th Stage	Marcellus	50	holes from	8,713 ft	to	9,035 ft
12th Stage	Marcellus	50	holes from	8,063 ft	to	8,635 ft

Fracturing / Stimulation

1st Stage		Type of Treatment Slickwater		
	Total Acid 5,000 Gal of 15% HCl		Breakdown Pressure 5,580 psi	
	Average Rate 87 scf/min ☐ or bpm ☒		ATP 7,389 psi	MTP 9,064 psi
	Total Fluid 12,418 bbl	Total Nitrogen 0 scf	Total Sand 280,529 lb of 100 mesh	
			Total Sand 299,311 lb of 40/70	
	ISIP 5,190 psi	5 min 4,460 psi		
2nd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,980 psi	
	Average Rate 89 scf/min ☐ or bpm ☒		ATP 7,581 psi	MTP 8,954 psi
	Total Fluid 13,470 bbl	Total Nitrogen 0 scf	Total Sand 310,400 lb of 100 mesh	
			Total Sand 302,200 lb of 40/70	
	ISIP 5,780 psi	5 min 5,234 psi		
3rd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,955 psi	
	Average Rate 10 scf/min ☐ or bpm ☒		ATP 6,942 psi	MTP 8,888 psi
	Total Fluid 5,451 bbl	Total Nitrogen 0 scf	Total Sand 298,000 lb of 100 mesh	
			Total Sand 274,300 lb of 40/70	
	ISIP 5,780 psi	5 min 5,748 psi		
4th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,950 psi	
	Average Rate 82 scf/min ☐ or bpm ☒		ATP 7,485 psi	MTP 9,032 psi
	Total Fluid 12,760 bbl	Total Nitrogen 0 scf	Total Sand 309,300 lb of 100 mesh	
			Total Sand 315,400 lb of 40/70	
	ISIP 6,496 psi	5 min 5,523 psi		
5th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,572 psi	
	Average Rate 86 scf/min ☐ or bpm ☒		ATP 8,140 psi	MTP 8,990 psi
	Total Fluid 12,628 bbl	Total Nitrogen 0 scf	Total Sand 301,300 lb of 100 mesh	
			Total Sand 296,500 lb of 40/70	
	ISIP 5,538 psi	5 min 4,979 psi		
6th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,454 psi	
	Average Rate 71 scf/min ☐ or bpm ☒		ATP 8,245 psi	MTP 9,435 psi
	Total Fluid 22,449 bbl	Total Nitrogen 0 scf	Total Sand 330,890 lb of 100 mesh	
			Total Sand 283,200 lb of 40/70	
	ISIP 6,433 psi	5 min 6,151 psi		
7th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,940 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 7,871 psi	MTP 8,849 psi
	Total Fluid 13,403 bbl	Total Nitrogen 0 scf	Total Sand 308,300 lb of 100 mesh	
			Total Sand 294,600 lb of 40/70	
	ISIP 5,356 psi	5 min 5,262 psi		

8th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,635 psi	
	Average Rate 80 scf/min ☐ or bpm ☒		ATP 7,652 psi	MTP 9,109 psi
	Total Fluid 14,602 bbl	Total Nitrogen 0 scf	Total Sand 321,900 lb of 100 mesh	
			Total Sand 299,560 lb of 40/70	
	ISIP 6,304 psi	5 min 5,734 psi		
9th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 8,810 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,299 psi	MTP 8,810 psi
	Total Fluid 12,870 bbl	Total Nitrogen 0 scf	Total Sand 311,000 lb of 100 mesh	
			Total Sand 309,900 lb of 40/70	
	ISIP 5,640 psi	5 min 5,493 psi		
10th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,545 psi	
	Average Rate 96 scf/min ☐ or bpm ☒		ATP 8,038 psi	MTP 9,017 psi
	Total Fluid 12,010 bbl	Total Nitrogen 0 scf	Total Sand 300,000 lb of 100 mesh	
			Total Sand 295,800 lb of 40/70	
	ISIP 6,089 psi	5 min 5,752 psi		
11th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,879 psi	
	Average Rate 94 scf/min ☐ or bpm ☒		ATP 8,345 psi	MTP 9,072 psi
	Total Fluid 12,017 bbl	Total Nitrogen 0 scf	Total Sand 301,000 lb of 100 mesh	
			Total Sand 300,200 lb of 40/70	
	ISIP 5,907 psi	5 min 6,074 psi		
12th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,160 psi	
	Average Rate 88 scf/min ☐ or bpm ☒		ATP 7,293 psi	MTP 9,066 psi
	Total Fluid 13,733 bbl	Total Nitrogen 0 scf	Total Sand 324,000 lb of 100 mesh	
			Total Sand 315,000 lb of 40/70	
	ISIP 6,533 psi	5 min 5,276 psi		

Well Log

Formation Name		Top	Bottom	Comments
Sand and Shale		0	700	All depths in feet KBTVD
Shale		700	850	
Silt		850	936	
Big Lime		936	1087	
Big Injun		1087	1225	
Silt		1225	1270	
Shale		1270	1332	
Sand and Silt		1332	1930	
Shale		1930	2259	
Sand		2259	2290	
Shale		2290	2800	
Sand		2800	2860	
Shale		2860	2980	
Balltown Sand		2980	3010	
Shale and Silt		3010	3820	
Sand		3820	3850	
Shale and Silt		3850	3920	
Shale		3920	4720	
Silt		4720	4840	
Shale		4840	7455	
Geneseo Shale		7455	7510	
Tully		7510	7564	
Hamilton		7564	7880	
Marcellus		7880	8001	
Onondaga		8001	8018	

Huntersville		8018	8149	
Needmore		8149	8161	
Oriskany		8161		

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: Bonnie Griggs

CHESAPEAKE APPALACHIA, LLC

By: Bonnie Griggs – Regulatory Compliance Specialist

Date: 5-6-2011

✓ UK

WR-35
Rev (8-10)

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

DATE: 6-2-11
API #: 47-7700567

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Environmental Protection

Farm name: **Grimm Lumber** _____ Operator Well No.: **1H**

LOCATION: Elevation: **2635** _____ Quadrangle: **Terra Alta 7.5**

District: **Union** _____ County: **Preston**
Latitude: **14,810** Feet South of **39** Deg. **25** Min. **00** Sec.
Longitude: **2,980** Feet West of **79** Deg. **30** Min. **00** Sec.
Company: **Chief Oil & Gas LLC**

Address: **5956 Sherry Lane STE 1500**	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Dallas, TX 75225	**20"**	**36'**	**36'**	**Sanded In**
Agent: **Chad Lovejoy**	**13 3/8"**	**482'**	**482'**	**452**
Inspector: **Brian Harris**	**9 5/8"**	**2481'**	**2481'**	**1032**
Date Permit Issued: **12-27-10**	**5 ½"**	**8992'**	**8992'**	**1526**
Date Well Work Commenced: **2-8-11**				
Date Well Work Completed: **3-27-11**				
Verbal Plugging:				
Date Permission granted on:				
Rotary **X** Cable Rig				
Total Vertical Depth (ft): **8310**				
Total Measured Depth (ft): **9005**				
Fresh Water Depth (ft.): **N/A**				
Salt Water Depth (ft.): **N/A**				
Is coal being mined in area (N/Y)? **N**				
Coal Depths (ft.): **N/A**				
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 **N/A** _____ 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

Second producing formation **N/A** _____ 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

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.

Signature

6-2-11
Date

Were core samples taken? Yes_____ No_____
Were cuttings caught during drilling? Yes_____ No_____

Were __X___ Electrical, ____Mechanical, _____ or Geophysical logs recorded on this well? LWD GR

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:

Perfs: 8071' – 8473'

4/29/11 Pumpco Frac w/13,574 BFW (Treated) & 200,400# 100 Mesh, 201,000# 40/70 Sand & 129,800# 30/50 Sand

Formations Encountered: Top Depth / Bottom Depth

Surface: 1975 (GL)

Next Page

Formations Encountered:	Top Depth /	Bottom Depth	
Surface: 2635' (GL)			

DRILLERS LOG:

Silt and Sand	0	26	
Gray Sandstone	26	48	
Tan Sandstone	48	50	
Coal	50	55	
Tan Sandstone	55	65	
Tan Sanstone	65	110	3"Water @70'
Shale/Sandstone	110	320	
Shale	320	660	
Sandstone/Shale	660	1280	
Shale	1280	1550	
Shale-Red/Gray	1550	1650	
Shale Drk/Lt Gray	1650	1675	
Shale Gray/Green	1675	1700	
Shale Red/Green	1700	1730	
Sand Stone	1730	1800	
Shale Gray	1800	1850	
Shale Gray/Brown	1850	1900	
Sand Stone	1900	2000	
Shale Lt Gray	2000	2030	
Shale Gray/Brown	2030	2060	
Shale/Sand	2060	2090	
Sand Stone	2090	2220	
Shale Red/Green	2220	2390	
Shale Green/Gray	2390	2450	
Shale Green/Red	2450	2560	
Shale Gray/Green	2560	2750	
Shale Red/Gray	2750	3050	
Shale Gray	3050	4000	
Shale Brown	4000	4060	
Shale Gray/Brown	4060	5700	
Shale Brown/Black	5700	5830	
Shale Gray	5830	7070	
Shale Black/Gray	7070	7684	
Burkett	7684	7695	
Tully	7695	7721	
Hamilton	7721	8039	
Upper Marcellus	8039	8114	
Purcell	8114	8133	
Lower Marcellus	8133	8175	
Onondaga	8175	8196	
Oriskany	8196	8310	
TD	8310		

WR-35
Rev (8-10)

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

DATE: 6-2-11
API #: 47-7700568

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WV Department of
Environmental Protection

Farm name: **Grimm Lumber** _____ Operator Well No.: **2H**

LOCATION: Elevation: **2635** _____ Quadrangle: **Terra Alta 7.5**

District: **Union** _____ County: **Preston**
Latitude: **14,800** Feet South of **39** Deg. **25** Min. **00** Sec.
Longitude: **2,970** Feet West of **79** Deg. **30** Min. **00** Sec.
Company: **Chief Oil & Gas LLC**

Address: **5956 Sherry Lane STE 1500**	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Dallas, TX 75225	**20"**	**36'**	**36'**	**Sanded In**
Agent: **Chad Lovejoy**	**13 3/8"**	**539'**	**539'**	**516**
Inspector: **Brian Harris**	**9 5/8"**	**2346'**	**2346'**	**955**
Date Permit Issued: **12-14-10**	**5 ½"**	**8230'**	**8230'**	**362**
Date Well Work Commenced: **3-31-11**				
Date Well Work Completed: **4-14-11**				
Verbal Plugging:				
Date Permission granted on:				
Rotary **X** Cable Rig				
Total Vertical Depth (ft): **8250**				
Total Measured Depth (ft): **8250**				
Fresh Water Depth (ft.): **N/A**				
Salt Water Depth (ft.): **N/A**				
Is coal being mined in area (N/Y)? **N**				
Coal Depths (ft.): **N/A**				
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 **N/A** _____ 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

Second producing formation **N/A** _____ 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

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.

Signature

6-2-11
Date

Were core samples taken? Yes_____ No_____
Were cuttings caught during drilling? Yes_____ No_____

Were __X___ Electrical, ____Mechanical, _____ or Geophysical logs recorded on this well? LWD GR

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:

NONE

Formations Encountered: Top Depth / Bottom Depth

Surface: 1975 (GL)

Next Page

Formations Encountered:	Top Depth /	Bottom Depth	
Surface: 2635' (GL)			

DRILLERS LOG:

Silt and Sand	0	26	
Gray Sandstone	26	48	
Tan Sandstone	48	50	
Coal	50	55	
Tan Sandstone	55	65	
Tan Sanstone	65	110	3"Water @70'
Shale/Sandstone	110	320	
Shale	320	660	
Sandstone/Shale	660	1280	
Shale	1280	1550	
Shale-Red/Gray	1550	1650	
Shale Drk/Lt Gray	1650	1675	
Shale Gray/Green	1675	1700	
Shale Red/Green	1700	1730	
Sand Stone	1730	1800	
Shale Gray	1800	1850	
Shale Gray/Brown	1850	1900	
Sand Stone	1900	2000	
Shale Lt Gray	2000	2030	
Shale Gray/Brown	2030	2060	
Shale/Sand	2060	2090	
Sand Stone	2090	2220	
Shale Red/Green	2220	2390	
Shale Green/Gray	2390	2450	
Shale Green/Red	2450	2560	
Shale Gray/Green	2560	2750	
Shale Red/Gray	2750	3050	
Shale Gray	3050	4000	
Shale Brown	4000	4060	
Shale Gray/Brown	4060	5700	
Shale Brown/Black	5700	5830	
Shale Gray	5830	7070	
Shale Black/Gray	7070	7684	
Burkett	7684	7695	
Tully	7695	7721	
Hamilton	7721	8039	
Upper Marcellus	8039	8114	
Purcell	8114	8133	
Lower Marcellus	8133	8175	
Onondaga	8175	8196	
Oriskany	8196	8250	
TD	8250		

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WR-35
Rev (8-10)

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

DATE: 4/15/2008
API #: 47-079-01492

Farm name: M. S. Pinkerton Operator Well No.: Pinkerton #1

LOCATION: Elevation: 643 Quadrangle: St Albans

District: Poca County: Putnam
Latitude: 10240 Feet South of 38 Deg. 30 Min. 00 Sec.
Longitude 240 Feet West of 81 Deg. 45 Min. 00 Sec.

Company:

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Viking Energy, PO Box 13366, Sissonville WV 25360	9 5/8	587	587	252
Agent: Mickey Pinkerton	7	1985	1985	389
Inspector: James Stevens	4.5	4560	4560	273
Date Permit Issued: 10/06/2008				
Date Well Work Commenced: 11/13/2008				
Date Well Work Completed: 12/4/2008				
Verbal Plugging:				
Date Permission granted on:				
Rotary X Cable Rig				
Total Vertical Depth (ft): 4570				
Total Measured Depth (ft): 4570				
Fresh Water Depth (ft.): 223				
Salt Water Depth (ft.): 1155				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.):				
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) 4490 - 4550
Gas: Initial open flow 70 MCF/d Oil: Initial open flow 0 Bbl/d
Final open flow 65 MCF/d Final open flow 0 Bbl/d
Time of open flow between initial and final tests 24 Hours
Static rock Pressure 630 psig (surface pressure) after 24 Hours

Second producing formation Rhinestreet Pay zone depth (ft) 4231 - 4446
Gas: Initial open flow 70 MCF/d Oil: Initial open flow 0 Bbl/d
Final open flow 65 MCF/d Final open flow 0 Bbl/d
Time of open flow between initial and final tests 24 Hours
Static rock Pressure 630 psig (surface pressure) after 24 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.

Michael S Pinkerton
Signature

4-15-2008
Date

Were core samples taken? Yes_____ No N_____ Were cuttings caught during drilling? Yes_____ No N_____

Were Y_____ Electrical, N_____ Mechanical, N_____ or Geophysical logs recorded on this well?
Y/N Y/N Y/N

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:

4490 - 4550	Marcellus Pumped 900,000 N2 @ 50,000 scf/min
4231 - 4466	Rhinestreet Pumped 350 gals 15% Hcl acid & 800,000 Scf N2 @ 62,000 scf/min
3351 - 4050	Huron Shale Pumped 350 gals 15% Hcl acid & 1,000,000 Scf N2 @ 61,000 Scf/min
2131 - 2138	Berea sand Pumped 250 Gals 15% Hcl acid. Placed 29,500 #s 20/40 sand using 116 bbls water & 516,000 scf N2 (75Q foam
2064 - 2110	Shale/sand Pumped 250 gals 15% Hcl acid. Placed 7,760 #s 20/40 sand using 79 bbls water & 288,000 scf N2 (75Q foam)

Formations Encountered: Top Depth / Bottom Depth
Surface:

Clay/sand/shale	0 / 350	Marcellus shale	4480 / 4545
Shales/sand	350 / 602	Onandaga	4545 / 4565
Shale	602 / 643		
Shales/sands	643 / 1052		
Salt Sands	1052 / 1640		
Shale	1640 / 1660		
Sand/shale	1660 / 1700		
Shale/silts	1700 / 1987		
Shale/silt	1987 / 2110		
Coffee shale	2110 / 2130		
Berea sand	2130 / 2140		
Brown shales	2140 / 3345		
Huron shale	3345 / 3942		
Shale	3942 / 4188		
Rhinestreet shale	4188 / 4480		

WR-35
Rev (8-10)

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

DATE: August 9, 2011
API #: 47-081-01454

Farm name: Beaver Coal Company Operator Well No.: CO-4C

LOCATION: Elevation: 2294.78' Quadrangle: Eccles

District: Trap Hill County: Raleigh
Latitude: 6544 Feet South of 37 Deg. 47 Min. 30 Sec.
Longitude 1190 Feet West of 81 Deg. 17 Min. 30 Sec.

Company: Vitruvian Exploration, LLC

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
4 Waterway Square, Ste 400, The Woodlands, TX 77380	13-3/8"	505'	505'	351
Agent:	9-5/8"	801'	801'	251
Inspector:	7"	1,014'	1,014'	165
Date Permit Issued: 10/25/2007	2-7/8"		1,065'	
Date Well Work Commenced: 4/8/2008				
Date Well Work Completed: 08/01/2011				
Verbal Plugging:				
Date Permission granted on:				
Rotary X Cable Rig				
Total Vertical Depth (ft): 1,220'				
Total Measured Depth (ft): 1,220'				
Fresh Water Depth (ft.): 490'				
Salt Water Depth (ft.): NA				
Is coal being mined in area (N/Y)? Y				
Coal Depths (ft.):	Lower Beckley - 750'	Poca 3 - 1,056'	Poca 2A - 1,071'	
Void(s) encountered (N/Y) Depth(s) N				

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Environmental Protection

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

Producing formation Poca 3 Pay zone depth (ft) 1,056'
Gas: Initial open flow NA MCF/d Oil: Initial open flow NA Bbl/d
Final open flow NA MCF/d Final open flow NA Bbl/d
Time of open flow between initial and final tests NA Hours
Static rock Pressure NA psig (surface pressure) after NA Hours

Second producing formation Poca 2A Pay zone depth (ft) 1,071'
Gas: Initial open flow NA MCF/d Oil: Initial open flow NA Bbl/d
Final open flow NA MCF/d Final open flow NA Bbl/d
Time of open flow between initial and final tests NA Hours
Static rock Pressure NA psig (surface pressure) after NA Hours

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.

Rhuben E. Coffey
Signature

08/08/2011
Date

Were core samples taken? Yes_____ No X

Were cuttings caught during drilling? Yes_____ No X

Were N Electrical, N Mechanical, Y or Geophysical logs recorded on this well?
Y/N Y/N Y/N

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:

None

Formations Encountered: Top Depth / Bottom Depth
Surface:

(see attached page for Formations Encountered)

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CO-4C TD = 1216 (MD)

Formations Encountered:	Total Depth	Bottom Depth
Sandstone	0	15
Sandy-Shale	15	67
Shale	67	123
Sandy-Shale	123	167
Shale	167	233
SandStone	233	277
Shale	277	381
Sandy-Shale	381	396
Sandstone	396	474
Sewell Coal	474	477
Shale	477	504
Sandy-Shale	504	560
Sandstone	560	587
Siltstone	587	609
Sandstone	609	633
Shale	633	717
Sandy-Shale	717	725
Shale	725	729
Sandstone	729	743
Upper Beckley Coal	743	746
Shale	746	751
Lower Beckley Coal	751	755
Sandy-Shale	755	801
Shale	801	821
Sandstone	821	826
Shale	826	846
Fire Creek Coal	846	848
Shale	848	860
Sandy-Shale	860	865
Shale	865	869
Sandy-Shale	869	873
Shale with thin beds of sandstone	873	903
Sandstone	903	910
Sandy-Shale	910	924
Sandstone	924	926
Sandy-Shale	926	947
Sandstone	947	950
Shale	950	955
Pocahontas 6 Coal	955	957
Sandy-Shale	957	961
Shale	961	993
Sandy-Shale	993	997
Pocahontas 4 Coal	997	1002
Sandstone	1002	1005

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Sandy-Shale	1005	1022
Sandstone	1022	1037
Shale	1037	1056
Pocahontas 3 Coal	1056	1060
Shale	1060	1067
Sandstone	1067	1069
Sandy-Shale	1069	1070
Pocahontas 2A Coal	1070	1072
Sandy-Shale	1072	1082
Sandstone	1082	1123
Sandy-Shale	1123	1132
Sandstone	1132	1144
Sandy-Shale	1144	1216

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85-093K3F

WR-35
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DATE : July 28, 2011
API # 47-085-09313

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas

Well Operator's Report of Well Work

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Environmental Protection

Farm name: Robert Haught, etal Operator Well No.: Warner P-2

LOCATION: Elevation: 1100' Quadrangle: Smithville

District: Murphy County: Ritchie
Latitude: 39.08239 Feet South of_____Deg. _____Min._____Sec.
Longitude -81.12283 Feet West of _____Deg._____Min._____Sec.

Company: _Quest Eastern Resource_____	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address:101 West Main St				
Harrisville, WV 26362				
Agent: Gary Laswell				
Inspector: David Cowan				
Date Permit Issued: 4/07/2008				
Date Well Work Commenced: 7/30/2008				
Date Well Work Completed: 8/06/2008				
Verbal Plugging:	13 3/8"	27'	27'	Surface
Date Permission granted on:	9 5/8"	355'	355'	Surface 140 cu ft
Rotary Cable Rig	7 "	2031'	2031'	Surface 404 cu ft
Total Depth (feet): 6204 ', 6132' PBTD	4 ½"		6132'	3760' 314 cu ft
Fresh Water Depth (ft.): 120'				
Salt Water Depth (ft.):				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.):_No coal in area.				

OPEN FLOW DATA

Producing formation_ Marcellus Shale__Pay zone depth (ft)
Gas: Initial open flow_00 _MCF/d Oil: Initial open flow____Bbl/d
Final open flow_00__MCF/d Final open flow _____Bbl/d
Time of open flow between initial and final tests_5_Hours
Static rock Pressure_300 psig (surface pressure) after _5_Hours

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

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: _____
By:_Gary Laswell_____
Date:_7/29/2011_____

WR-35
Rev (5-01)
State of West Virginia

DATE: July 28, 2011
API # 47-085-09313

Department of Environmental Protection
Office of Oil and Gas

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JUL 29 2011
WV Department of
Environmental Protection

Well Operator's Report of Well Work

Farm name: Robert Haught, etal Operator Well No: Warner P-2

LOCATION: Elevation: 1100' Quadrangle: Smithville

District: _Murphy_____ County: _Ritchie
Latitude: 39.08239 Feet South of_____Deg. _____Min._____Sec.
Longitude -81.12283 Feet West of _____Deg._____Min._____Sec.

Perforations: 6010-6013 (2spf)
6018-6027 (2spf)
6032-6034 (2spf)
6035-6044 (2spf)
6058-6062 (2spf)

3360 Bbls water and 31,711 #'s sand

PetroEdge had run 2 7/8" tubing in on packers to isolate existing Devonian perfs from 4982'-5994'. The tubing was set too low and the frac went into the Alexander. They realized there was a problem and shut down. That is where the well sits at this time. That is why there is no initial or final flow.

Formation	RKB TVD	Remarks
Big Lime	1975-2050'	Lime
Big Injun	2073-2090'	Siltstone
Riley	4487-4530'	Silty Black Shale
Rhinestreet	5284-5320'	Black Shale
Hamilton	5547-5560'	Grey Shale
Middlesex	5856-5864'	Shale
West River	5933-5964'	Silty Shale
Marcellus	6020-6075'	Black Shale
Onondaga	6088'	Limestone

WR-35
Rev (5-01)

DATE : July 28, 2011
API # 47-085-09335 F

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas

Well Operator's Report of Well Work

Farm name: Loretta Maxine & Rosie Simmons Operator Well No.: Flesher P-1

LOCATION: Elevation: 1080' Quadrangle: Smithville

District: Murphy County: Ritchie
Latitude: 39.10685 Feet South of_____Deg. _____Min._____Sec.
Longitude -81.08935 Feet West of _____Deg._____Min._____Sec.

Company: _Quest Eastern Resource_____

	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address:101 West Main St				
Harrisville, WV 26362				
Agent: Gary Laswell				
Inspector: David Cowan				
Date Permit Issued: 4/07/2008				
Date Well Work Commenced: 8/15/2008				
Date Well Work Completed: 6/7/2010				
Verbal Plugging:	13 3/8"	32'	32'	Surface
Date Permission granted on:	9 5/8"	336'	336'	Surface 140 cu ft
Rotary Cable Rig	7 "	2031'	2031'	Surface 409 cu ft
Total Depth (feet): 6243 ', 6180' PBTD	4 ½"		6180'	3890' 280 cu ft
Fresh Water Depth (ft.): 120'				
Salt Water Depth (ft.):				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.):_No coal in area.				

OPEN FLOW DATA

Producing formation_ Marcellus Shale__Pay zone depth (ft)
Gas: Initial open flow_100 _MCF/d Oil: Initial open flow____Bbl/d
Final open flow_00__MCF/d Final open flow _____Bbl/d
Time of open flow between initial and final tests_72_Hours
Static rock Pressure_300 psig (surface pressure) after _72_Hours

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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

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: _____
By:_Gary Laswell_____
Date:_____7/28/11_____

WR-35
Rev (5-01)
State of West Virginia

DATE: July 28, 2011
API # 47-085-09335

Department of Environmental Protection
Office of Oil and Gas

Well Operator's Report of Well Work

Farm name: Loretta Maxine & Rosie Simmons Operator Well No: Flesher P-1

LOCATION: Elevation: 1080' Quadrangle: Smithville

District: _Murphy_____ County: _Ritchie
Latitude: 39.10685 Feet South of_____Deg. _____Min._____Sec.
Longitude -81.08935 Feet West of_____Deg._____Min._____Sec.

Perforations: 6110-6140 (3spf)

12,883 Bbls water and 251,500 #'s sand

Formation	RKB TVD	Remarks
Big Lime	1990-2043'	Lime
Big Injun	2061-2078'	Siltstone
Riley	4521-4565'	Silty Black Shale
Java/Benson	4804-4812'	Black Shale
Hamilton	5580-5600'	Grey Shale
Middlesex	5895-5910'	Shale
West River	5980-6030'	Silty Shale
Marcellus	6100-6148'	Black Shale
Onodaga	6148	Lime

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DATE : July 28, 2011
API # 47-085-09342

State of West Virginia
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Well Operator's Report of Well Work

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WV Department of
Environmental Protection

Farm name: Robert L. Bills Operator Well No.: Grimm Morris P6

LOCATION: Elevation: 1080' Quadrangle: Smithville

District: Murphy County: Ritchie
Latitude: 39.1088166 Feet South of_____Deg. _____Min._____Sec.
Longitude: -81.1231461 Feet West of_____Deg._____Min._____Sec.

Company: _Quest Eastern Resource_____

	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address:101 West Main St				
Harrisville, WV 26362				
Agent: Gary Laswell				
Inspector: David Cowan				
Date Permit Issued: 5/08/2006				
Date Well Work Commenced: 3/15/07				
Date Well Work Completed: 7/20/07				
Verbal Plugging:	13 3/8"	24'	24'	Surface
Date Permission granted on:	9 5/8"	321'	321'	Surface 140 cu ft
Rotary Cable Rig	7 "	2012'	2012'	Surface 409 cu ft
Total Depth (feet): 6120 ', 6105' PBTD	4 ½"		6105'	2980' 385 cu ft
Fresh Water Depth (ft.): 120'				
Salt Water Depth (ft.): 1400				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.):_No coal in area.				

OPEN FLOW DATA

Producing formation_ Marcellus Shale__Pay zone depth (ft)
Gas: Initial open flow_170 _MCF/d Oil: Initial open flow_0___Bbl/d
Final open flow_100__MCF/d Final open flow ____0____Bbl/d
Time of open flow between initial and final tests_48_Hours
Static rock Pressure_1200 psig (surface pressure) after _48_Hours

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

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: _____
By:_Gary Laswell_____
Date:_____7/29/11_____

WR-35
Rev (5-01)
State of West Virginia

DATE: July 28, 2011
API # 47-085- 09342

Department of Environmental Protection
Office of Oil and Gas

Well Operator's Report of Well Work

Farm name: Robert L. Bills Operator Well No: Grimm Morris P6

LOCATION: Elevation: 1080' Quadrangle: Smithville

District: _Murphy_____ County: _Ritchie
Latitude: 39.1088166 Feet South of_____Deg. _____Min._____Sec.
Longitude: -81.1231461 Feet West of _____Deg._____Min._____Sec.

Perforations: 6002-6042 (3spf)

7,130 Bbls water and 136,100 #'s sand

Formation	RKB TVD	Remarks
Big Injun	2042-2095'	Siltstone
Riley	4465-4509'	Silty Black Shale
Benson	4764-4810'	Silt y Shale
Cashaqua	5650-5670'	Grey Shale
Middlesex	5814-5820'	Shale
West River	5894-5935'	Silty Shale
Marcellus	5995-6050'	Black Shale
Onodaga	6050'	Lime

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WR -35

Date: October 1, 2010
API #: 47-097-03502

CR

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm Name: Ralph H Harper Lumber Co 1H **Operator Well No.:** 626742

LOCATION	**Elevation:**	1,305'					**Quadrangle:**	582 – Rock Cave
	District:01	Banks					**County:**	097 - Upshur
Top Hole	**Latitude:**	10,735 ft	South of	38°	52'	30"		
Top Hole	**Longitude:**	10,735 ft	West of	80°	20'	00"		
Btm Hole	**Latitude:**	5,000 ft	South of	38°	50'	00"		
Btm Hole	**Longitude:**	500 ft	West of	80°	20'	00"		

Company: Chesapeake Appalachia, L.L.C.
P.O. Box 18496
OKC, OK 73154-0496

Agent: Eric Gillespie
Inspector: Bill Hatfield
Date Permit Issued: **Drill 6/4/2009**
Date Well work commenced: 9/22/2009
Date Well Work completed: 11/30/2009
Verbal Plugging Permission
Granted on / /
Rotary ☒ Cable☐ Rig
Total Depth (ft): 12,449 TVD (ft): 6906
Fresh Water Depth (ft): 148 ft
Salt Water Depth (ft.):NA
Is coal being mined in area (Yes ☐ No ☒)
Coal Depths (ft):
Was this well logged and plugged back?
Yes____ No____ if yes –
depth cement plug set _____'

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill-Up Cu.Ft.
20"	40'	40'	
13 3/8"	340'	340'	290 sxs - CTS
9 5/8"	1,180'	1,180'	500 sxs - CTS
5 ½"	12,449'	12,449'	2,378 sxs

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Open Flow Data

1st Producing Formation Pay Zone Depth 7,342 ft to 12,064 ft
Gas: Initial Open Flow 807 Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow N/A Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests In Line hours
Static Rock Pressure 3108 psig after N/A hours

2nd Producing Formation Pay Zone Depth ft to ft
Gas: Initial Open Flow N/A Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow N/A Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests hours
Static Rock Pressure N/A psig after hours

3rd Producing Formation Pay Zone Depth ft to ft
Gas: Initial Open Flow N/A Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow N/A Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests hours
Static Rock Pressure N/A psig after hours

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Chesapeake Energy
Well No.:

97-3502

Perforated Intervals

1st Stage	Marcellus	10	holes from	11,742 ft to 12,064 ft
2nd Stage	Marcellus	10	holes from	11,342 ft to 11,664 ft
3rd Stage	Marcellus	10	holes from	10,942 ft to 11,264 ft
4th Stage	Marcellus	10	holes from	10,542 ft to 10,864 ft
5th Stage	Marcellus	10	holes from	10,142 ft to 10,464 ft
6th Stage	Marcellus	10	holes from	9,742 ft to 10,064 ft
7th Stage	Marcellus	10	holes from	9,342 ft to 9,664 ft
8th Stage	Marcellus	10	holes from	8,942 ft to 9,264 ft
9th Stage	Marcellus	10	holes from	8,542 ft to 8,864 ft
10th Stage	Marcellus	10	holes from	8,142 ft to 8,464 ft
11th Stage	Marcellus	10	holes from	7,742 ft to 8,064 ft
12th Stage	Marcellus	10	holes from	7,342 ft to 7,664 ft

Fracturing / Stimulation

1st Stage		Type of Treatment Slickwater		
	Total Acid 5,000 Gal of 15% HCl		Breakdown Pressure 1,648 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 8,476 psi	MTP 8,961 psi
	Total Fluid 9,698 bbl	Total Nitrogen 0 scf	Total Sand 134,000 lb of 100 mesh	
			Total Sand 93,688 lb of 30/50	
	ISIP 4,674 psi	5 min 3,804psi		
2nd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,795 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 8,476 psi	MTP 9,035 psi
	Total Fluid 10,792 bbl	Total Nitrogen 0 scf	Total Sand 120,529 lb of 100 mesh	
			Total Sand 297,465 lb of 30/50	
	ISIP 4,392 psi	5 min 3,217 psi		
3rd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,239 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,696 psi	MTP 9,041 psi
	Total Fluid 8,873 bbl	Total Nitrogen 0 scf	Total Sand 120,529 lb of 100 mesh	
			Total Sand 297,434 lb of 30/50	
	ISIP 4,392 psi	5 min 3,217 psi		
4th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,117 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,867 psi	MTP 8,888 psi
	Total Fluid 10,603 bbl	Total Nitrogen 0 scf	Total Sand 113,354 lb of 100 mesh	
			Total Sand 166,952 lb of 30/50	
	ISIP 4,716 psi	5 min 3,406 psi		
5th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,194 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,585psi	MTP 8,524 psi
	Total Fluid 10,382 bbl	Total Nitrogen 0 scf	Total Sand 119,791 lb of 100 mesh	
			Total Sand 292,670 lb of 30/50	
	ISIP 4,380 psi	5 min 3,217 psi		
6th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,051 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,513 psi	MTP 8,882 psi
	Total Fluid 9,201 bbl	Total Nitrogen 0 scf	Total Sand 120,000 lb of 100 mesh	
			Total Sand 278,000 lb of 30/50	
	ISIP 4,664 psi	5 min 3,986 psi		
7th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,340 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,585 psi	MTP 8,877 psi
	Total Fluid 10,682 bbl	Total Nitrogen 0 scf	Total Sand 123,090 lb of 100 mesh	
			Total Sand 299,900 lb of 30/50	
	ISIP 4,380 psi	5 min 3,217 psi		
8th Stage		Type of Treatment Slickwater		

	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,912 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 6,818 psi	MTP 7,204 psi
	Total Fluid 8,709 bbl	Total Nitrogen 0 scf	Total Sand 124,950 lb of 100 mesh	
			Total Sand 278,974 lb of 30/50	
	ISIP 5,413 psi	5 min 4,150 psi		
9th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,570 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,096 psi	MTP 8,313 psi
	Total Fluid 9,818 bbl	Total Nitrogen 0 scf	Total Sand 119,741 lb of 100 mesh	
			Total Sand 300,652 lb of 30/50	
	ISIP 4,550 psi	5 min 4,045 psi		
10th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,728 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 6,865 psi	MTP 7,990 psi
	Total Fluid 8,873 bbl	Total Nitrogen 0 scf	Total Sand 120,089 lb of 100 mesh	
			Total Sand 279,153 lb of 30/50	
	ISIP 4,009 psi	5 min 3,206 psi		
11th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,352 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,326 psi	MTP 8,143 psi
	Total Fluid 8,569 bbl	Total Nitrogen 0 scf	Total Sand 120,729 lb of 100 mesh	
			Total Sand 279,311 lb of 30/50	
	ISIP 4,156 psi	5 min 3,399 psi		
12th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,352 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,164 psi	MTP 7,656 psi
	Total Fluid 9,157 bbl	Total Nitrogen 0 scf	Total Sand 122,030 lb of 100 mesh	
			Total Sand 283,421 lb of 30/50	
	ISIP 5,599 psi	5 min 3,405 psi		

Well Log

Formation Name	Top	Bottom	Comments
COAL	392	395	
COAL	486	489	
SALT SANDS	578	1325	
MAXTON	1325	1512	
LITTLE LIME	1452	1512	
BIG LIME	1512	1719	
BIG INJUN	1719	1748	
GANTZ	1774	1806	
GORDON	1891	1922	
FOURTH SAND	2089	2144	
FIFTH SAND	2193	2240	
BAYARD	2330	2344	
ELIZABETH	2432	2485	
WARREN	2564	2616	
SPEECHLEY	2911	2955	
BALLTOWN	3167	3189	
RILEY	3844	3939	
BENSON	4182	4261	
ALEXANDER	4339	4402	
ANGOLA	4488	4820	
RHINESTREET	4820	5350	
ELK	5350	6049	
SYCAMORE	6049	6164	
MIDDLESEX	6748	6967	
GENESEO	6967	6895	
TULLY	6895	6924	
HAMILTON	6924	6992	
MARCELLUS	6992	6949	
ONONDAGA	6949		

97-3502

Signed: [signature]
CHESAPEAKE APPALACHIA, LLC
By: TAC Oberg Mgr Reg Eastern Div.
Date: 10/4/2010

SDI
Survey Report

97-3502

Company:	CHESAPEAKE OPERATING, INC.	**Date:** 2009/12/01	**Time:** 13:21:43	**Page:**	1
Field:	Upshur, WV	**Co-ordinate(NE) Reference:**	Well: 1H (626742), Grid North		
Site:	Ralph H Harper Lumber Co	**Vertical (TVD) Reference:**	GL 1672+15 1687.0		
Well:	1H (626742)	**Section (VS) Reference:**	Well (0.00N,0.00E,165.00Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

Field: Upshur, WV

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

Map Zone: West Virginia, Southern Zone
Coordinate System: Well Centre
Geomagnetic Model: igrf2005

Site: Ralph H Harper Lumber Co

Site Position: **Northing:** 672525.80 ft **Latitude:** 38 50 42.536 N
From: Map **Easting:** 2182682.17 ft **Longitude:** 80 21 31.042 W
Position Uncertainty: 0.00 ft **North Reference:** Grid
Ground Level: 1672.00 ft **Grid Convergence:** 0.40 deg

Well: 1H (626742) **Slot Name:**

Well Position: +N/-S 0.00 ft **Northing:** 672525.80 ft **Latitude:** 38 50 42.536 N
+E/-W 0.00 ft **Easting:** 2182682.17 ft **Longitude:** 80 21 31.042 W
Position Uncertainty: 0.00 ft

Wellpath: OH **Drilled From:** Surface
Tie-on Depth: 0.00 ft
Current Datum: GL 1672+15 **Height** 1687.00 ft **Above System Datum:** Mean Sea Level
Magnetic Data: 2009/10/07 **Declination:** -8.43 deg
Field Strength: 52573 nT **Mag Dip Angle:** 66.89 deg

Vertical Section:	Depth From (TVD) ft	+N/-S ft	+E/-W ft	Direction deg
	0.00	0.00	0.00	165.00

Survey Program for Definitive Wellpath
Date: 2009/12/01 **Validated:** No **Version:** 8

Actual From ft	To ft	Survey	Toolcode	Tool Name
0.00	1778.00	Survey #1 (0.00-1778.00)	GYRO	
1778.00	12449.00	Survey #2 (1778.00-12449.00)	MWD-SDI-SYS	Scientific MWD Systematic

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.000	TIE LINE
100.00	0.33	131.87	100.00	-0.19	0.21	0.24	0.330	0.330	0.000	GYRO
200.00	0.39	148.11	200.00	-0.67	0.61	0.81	0.118	0.060	16.240	GYRO
300.00	0.21	147.49	300.00	-1.12	0.89	1.31	0.180	-0.180	-0.620	GYRO
400.00	0.28	156.84	400.00	-1.50	1.08	1.73	0.080	0.070	9.350	GYRO
500.00	0.25	144.41	499.99	-1.90	1.30	2.17	0.065	-0.030	-12.430	GYRO
600.00	0.31	150.76	599.99	-2.31	1.56	2.64	0.067	0.060	6.350	GYRO
700.00	0.35	162.25	699.99	-2.84	1.79	3.20	0.077	0.040	11.490	GYRO
800.00	0.41	166.16	799.99	-3.48	1.97	3.87	0.065	0.060	3.910	GYRO
900.00	0.41	153.33	899.99	-4.14	2.21	4.58	0.092	0.000	-12.830	GYRO
1000.00	0.48	175.62	999.98	-4.88	2.41	5.34	0.185	0.070	22.290	GYRO
1100.00	0.58	166.41	1099.98	-5.79	2.56	6.26	0.131	0.100	-9.210	GYRO
1200.00	0.56	179.06	1199.97	-6.77	2.68	7.24	0.127	-0.020	12.650	GYRO
1300.00	0.58	157.15	1299.97	-7.73	2.89	8.21	0.218	0.020	-21.910	GYRO
1400.00	0.47	101.29	1399.97	-8.27	3.49	8.89	0.501	-0.110	-55.860	GYRO
1500.00	0.58	133.22	1499.96	-8.70	4.26	9.51	0.308	0.110	31.930	GYRO
1600.00	0.39	57.43	1599.96	-8.86	4.91	9.83	0.614	-0.190	-75.790	GYRO
1700.00	0.47	62.77	1699.96	-8.49	5.57	9.64	0.089	0.080	5.340	GYRO
1778.00	0.50	72.30	1777.95	-8.24	6.17	9.56	0.110	0.038	12.218	GYRO
1837.00	0.37	143.96	1836.95	-8.32	6.53	9.73	0.881	-0.220	121.458	MWD-SDI-SYS
1869.00	0.24	187.39	1868.95	-8.47	6.58	9.88	0.800	-0.406	135.719	MWD-SDI-SYS
1932.00	1.81	42.70	1931.94	-7.87	7.24	9.47	3.191	2.492	-229.667	MWD-SDI-SYS

SDI
Survey Report

97-3502

Company:	CHESAPEAKE OPERATING, INC.	**Date:** 2009/12/01	**Time:** 13:21:43	**Page:**	2
Field:	Upshur, WV	**Co-ordinate(NE) Reference:**	Well: 1H (626742), Grid North		
Site:	Ralph H Harper Lumber Co	**Vertical (TVD) Reference:**	GL 1672+15 1687.0		
Well:	1H (626742)	**Section (VS) Reference:**	Well (0.00N,0.00E,165.00Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

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
1995.00	3.09	45.73	1994.88	-5.95	9.13	8.11	2.041	2.032	4.810	MWD-SDI-SYS
2058.00	3.90	38.53	2057.77	-3.09	11.68	6.01	1.460	1.286	-11.429	MWD-SDI-SYS
2121.00	5.03	47.30	2120.57	0.46	15.05	3.45	2.091	1.794	13.921	MWD-SDI-SYS
2184.00	5.71	50.24	2183.30	4.34	19.49	0.85	1.164	1.079	4.667	MWD-SDI-SYS
2247.00	6.20	51.79	2245.96	8.45	24.57	-1.80	0.819	0.778	2.460	MWD-SDI-SYS
2310.00	7.23	50.60	2308.52	13.07	30.31	-4.78	1.650	1.635	-1.889	MWD-SDI-SYS
2373.00	8.25	48.80	2370.95	18.56	36.77	-8.41	1.664	1.619	-2.857	MWD-SDI-SYS
2438.00	8.58	50.56	2435.25	24.71	44.02	-12.48	0.644	0.508	2.708	MWD-SDI-SYS
2501.00	10.92	55.76	2497.34	31.06	52.59	-16.39	3.965	3.714	8.254	MWD-SDI-SYS
2564.00	11.44	59.99	2559.14	37.54	62.93	-19.97	1.541	0.825	6.714	MWD-SDI-SYS
2627.00	11.49	62.70	2620.89	43.54	73.92	-22.93	0.859	0.079	4.302	MWD-SDI-SYS
2689.00	11.02	62.55	2681.69	49.10	84.66	-25.52	0.760	-0.758	-0.242	MWD-SDI-SYS
2749.00	11.31	62.36	2740.56	54.48	94.96	-28.04	0.487	0.483	-0.317	MWD-SDI-SYS
2812.00	11.66	61.91	2802.30	60.34	106.05	-30.84	0.573	0.556	-0.714	MWD-SDI-SYS
2875.00	12.56	63.02	2863.89	66.45	117.77	-33.70	1.476	1.429	1.762	MWD-SDI-SYS
2938.00	12.11	64.30	2925.44	72.42	129.83	-36.35	0.836	-0.714	2.032	MWD-SDI-SYS
3001.00	11.63	61.47	2987.09	78.32	141.37	-39.06	1.197	-0.762	-4.492	MWD-SDI-SYS
3064.00	11.62	65.11	3048.80	84.02	152.70	-41.64	1.164	-0.016	5.778	MWD-SDI-SYS
3127.00	11.89	68.50	3110.48	89.07	164.50	-43.46	1.177	0.429	5.381	MWD-SDI-SYS
3190.00	11.41	65.40	3172.18	94.04	176.20	-45.24	1.252	-0.762	-4.921	MWD-SDI-SYS
3253.00	11.81	64.76	3233.89	99.39	187.70	-47.42	0.667	0.635	-1.016	MWD-SDI-SYS
3316.00	11.79	65.61	3295.56	104.79	199.39	-49.62	0.278	-0.032	1.349	MWD-SDI-SYS
3379.00	11.37	62.99	3357.28	110.27	210.79	-51.96	1.068	-0.667	-4.159	MWD-SDI-SYS
3442.00	11.72	65.07	3419.01	115.79	222.12	-54.36	0.863	0.556	3.302	MWD-SDI-SYS
3504.00	11.62	66.79	3479.72	120.90	233.57	-56.33	0.584	-0.161	2.774	MWD-SDI-SYS
3567.00	11.52	64.28	3541.44	126.14	245.07	-58.41	0.815	-0.159	-3.984	MWD-SDI-SYS
3630.00	11.70	64.84	3603.16	131.58	256.52	-60.71	0.337	0.286	0.889	MWD-SDI-SYS
3692.00	11.62	68.01	3663.88	136.59	268.00	-62.57	1.041	-0.129	5.113	MWD-SDI-SYS
3755.00	11.25	65.49	3725.63	141.52	279.47	-64.36	0.987	-0.587	-4.000	MWD-SDI-SYS
3818.00	11.40	68.60	3787.40	146.34	290.86	-66.07	0.998	0.238	4.937	MWD-SDI-SYS
3881.00	11.35	71.15	3849.16	150.61	302.53	-67.18	0.802	-0.079	4.048	MWD-SDI-SYS
3944.00	11.79	68.96	3910.88	154.93	314.40	-68.28	0.987	0.698	-3.476	MWD-SDI-SYS
4006.00	12.46	67.89	3971.50	159.72	326.51	-69.77	1.140	1.081	-1.726	MWD-SDI-SYS
4069.00	11.52	66.87	4033.13	164.75	338.59	-71.50	1.529	-1.492	-1.619	MWD-SDI-SYS
4132.00	12.32	63.60	4094.77	170.21	350.40	-73.72	1.661	1.270	-5.190	MWD-SDI-SYS
4195.00	12.88	62.04	4156.25	176.49	362.62	-76.62	1.040	0.889	-2.476	MWD-SDI-SYS
4258.00	12.72	62.25	4217.68	183.01	374.96	-79.73	0.264	-0.254	0.333	MWD-SDI-SYS
4322.00	12.43	61.11	4280.15	189.62	387.23	-82.94	0.596	-0.453	-1.781	MWD-SDI-SYS
4385.00	12.30	60.54	4341.69	196.19	399.00	-86.24	0.283	-0.206	-0.905	MWD-SDI-SYS
4448.00	12.00	61.56	4403.28	202.61	410.61	-89.44	0.586	-0.476	1.619	MWD-SDI-SYS
4511.00	11.68	61.48	4464.94	208.78	421.97	-92.45	0.509	-0.508	-0.127	MWD-SDI-SYS
4574.00	12.54	62.26	4526.53	215.01	433.62	-95.45	1.390	1.365	1.238	MWD-SDI-SYS
4637.00	12.64	61.63	4588.02	221.46	445.74	-98.55	0.270	0.159	-1.000	MWD-SDI-SYS
4699.00	12.54	62.59	4648.53	227.79	457.69	-101.57	0.374	-0.161	1.548	MWD-SDI-SYS
4762.00	12.58	63.20	4710.02	234.03	469.88	-104.44	0.220	0.063	0.968	MWD-SDI-SYS
4825.00	12.08	62.37	4771.57	240.18	481.85	-107.28	0.842	-0.794	-1.317	MWD-SDI-SYS
4888.00	12.20	62.03	4833.16	246.36	493.57	-110.22	0.222	0.190	-0.540	MWD-SDI-SYS
4951.00	12.36	61.75	4894.72	252.67	505.39	-113.26	0.271	0.254	-0.444	MWD-SDI-SYS
5014.00	12.29	60.40	4956.26	259.18	517.15	-116.49	0.471	-0.111	-2.143	MWD-SDI-SYS
5077.00	12.99	58.79	5017.74	266.16	529.04	-120.16	1.244	1.111	-2.556	MWD-SDI-SYS
5140.00	13.40	58.64	5079.07	273.62	541.33	-124.19	0.653	0.651	-0.238	MWD-SDI-SYS
5203.00	12.33	61.33	5140.49	280.65	553.47	-127.84	1.946	-1.698	4.270	MWD-SDI-SYS
5266.00	12.42	61.18	5202.03	287.14	565.30	-131.05	0.152	0.143	-0.238	MWD-SDI-SYS

SDI
Survey Report

97-3502

Company:	CHESAPEAKE OPERATING, INC.	**Date:** 2009/12/01	**Time:** 13:21:43	**Page:**	3
Field:	Upshur, WV	**Co-ordinate(NE) Reference:**	Well: 1H (626742), Grid North		
Site:	Ralph H Harper Lumber Co	**Vertical (TVD) Reference:**	GL 1672+15 1687.0		
Well:	1H (626742)	**Section (VS) Reference:**	Well (0.00N,0.00E,165.00Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

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
5329.00	11.40	61.17	5263.67	293.41	576.69	-134.15	1.619	-1.619	-0.016	MWD-SDI-SYS
5392.00	10.89	60.38	5325.48	299.36	587.32	-137.15	0.845	-0.810	-1.254	MWD-SDI-SYS
5455.00	11.26	59.37	5387.31	305.43	597.79	-140.30	0.663	0.587	-1.603	MWD-SDI-SYS
5518.00	11.89	57.98	5449.03	312.01	608.58	-143.86	1.094	1.000	-2.206	MWD-SDI-SYS
5580.00	11.95	60.77	5509.69	318.53	619.60	-147.31	0.934	0.097	4.500	MWD-SDI-SYS
5643.00	11.87	63.29	5571.34	324.62	631.08	-150.23	0.835	-0.127	4.000	MWD-SDI-SYS
5706.00	12.39	64.05	5632.93	330.49	642.95	-152.83	0.863	0.825	1.206	MWD-SDI-SYS
5769.00	12.35	61.08	5694.47	336.71	654.92	-155.73	1.012	-0.063	-4.714	MWD-SDI-SYS
5832.00	12.81	56.62	5755.96	343.81	666.65	-159.55	1.705	0.730	-7.079	MWD-SDI-SYS
5895.00	11.67	60.27	5817.52	350.81	678.02	-163.38	2.186	-1.810	5.794	MWD-SDI-SYS
5958.00	11.78	60.46	5879.21	357.14	689.14	-166.61	0.185	0.175	0.302	MWD-SDI-SYS
6021.00	11.23	61.37	5940.94	363.25	700.12	-169.67	0.919	-0.873	1.444	MWD-SDI-SYS
6084.00	10.89	58.54	6002.77	369.30	710.58	-172.80	1.017	-0.540	-4.492	MWD-SDI-SYS
6145.00	9.23	69.22	6062.84	374.04	720.07	-174.93	4.083	-2.721	17.508	MWD-SDI-SYS
6208.00	7.65	73.84	6125.16	377.00	728.83	-175.52	2.727	-2.508	7.333	MWD-SDI-SYS
6277.00	6.55	74.74	6193.63	379.32	737.03	-175.63	1.602	-1.594	1.304	MWD-SDI-SYS
6340.00	6.68	67.05	6256.21	381.69	743.88	-176.16	1.420	0.206	-12.206	MWD-SDI-SYS
6403.00	7.52	62.08	6318.72	385.05	750.89	-177.59	1.651	1.333	-7.889	MWD-SDI-SYS
6466.00	8.81	66.00	6381.09	388.94	758.94	-179.26	2.229	2.048	6.222	MWD-SDI-SYS
6529.00	10.79	64.43	6443.16	393.45	768.67	-181.10	3.171	3.143	-2.492	MWD-SDI-SYS
6592.00	11.71	65.46	6504.95	398.65	779.81	-183.24	1.495	1.460	1.635	MWD-SDI-SYS
6623.00	12.00	79.32	6535.30	400.56	785.84	-183.52	9.210	0.935	44.710	MWD-SDI-SYS
6654.00	12.35	89.05	6565.60	401.21	792.32	-182.47	6.707	1.129	31.387	MWD-SDI-SYS
6686.00	12.95	102.21	6596.83	400.51	799.25	-180.00	9.178	1.875	41.125	MWD-SDI-SYS
6717.00	14.77	114.45	6626.93	398.14	806.24	-175.90	11.101	5.871	39.484	MWD-SDI-SYS
6748.00	16.14	119.57	6656.81	394.37	813.59	-170.36	6.233	4.419	16.516	MWD-SDI-SYS
6780.00	17.04	126.47	6687.49	389.39	821.23	-163.57	6.763	2.812	21.562	MWD-SDI-SYS
6811.00	18.39	134.46	6717.02	383.27	828.37	-155.81	8.961	4.355	25.774	MWD-SDI-SYS
6843.00	20.32	140.02	6747.21	375.47	835.54	-146.42	8.333	6.031	17.375	MWD-SDI-SYS
6874.00	22.90	142.95	6776.03	366.53	842.64	-135.95	9.019	8.323	9.452	MWD-SDI-SYS
6906.00	25.98	142.75	6805.16	355.98	850.63	-123.69	9.628	9.625	-0.625	MWD-SDI-SYS
6937.00	29.49	142.75	6832.59	344.50	859.36	-110.34	11.323	11.323	0.000	MWD-SDI-SYS
6969.00	31.99	146.12	6860.10	331.19	868.86	-95.03	9.485	7.812	10.531	MWD-SDI-SYS
7001.00	35.20	146.08	6886.75	316.49	878.73	-78.28	10.031	10.031	-0.125	MWD-SDI-SYS
7032.00	39.25	146.57	6911.43	300.89	889.13	-60.51	13.099	13.065	1.581	MWD-SDI-SYS
7063.00	43.64	147.07	6934.66	283.72	900.35	-41.02	14.201	14.161	1.613	MWD-SDI-SYS
7095.00	47.36	147.16	6957.09	264.55	912.74	-19.30	11.627	11.625	0.281	MWD-SDI-SYS
7126.00	51.42	148.38	6977.26	244.65	925.28	3.17	13.433	13.097	3.935	MWD-SDI-SYS
7158.00	54.95	150.99	6996.43	222.53	938.20	27.87	12.817	11.031	8.156	MWD-SDI-SYS
7189.00	59.35	150.90	7013.25	199.77	950.84	53.13	14.196	14.194	-0.290	MWD-SDI-SYS
7221.00	64.31	151.37	7028.35	175.07	964.45	80.51	15.554	15.500	1.469	MWD-SDI-SYS
7252.00	69.60	151.53	7040.48	150.02	978.08	108.23	17.071	17.065	0.516	MWD-SDI-SYS
7284.00	74.37	151.83	7050.37	123.24	992.51	137.84	14.933	14.906	0.937	MWD-SDI-SYS
7316.00	79.47	152.15	7057.61	95.73	1007.15	168.20	15.967	15.937	1.000	MWD-SDI-SYS
7347.00	84.89	153.06	7061.83	68.48	1021.27	198.18	17.724	17.484	2.935	MWD-SDI-SYS
7410.00	93.22	154.30	7062.87	12.06	1049.17	259.89	13.368	13.222	1.968	MWD-SDI-SYS
7474.00	92.22	153.16	7059.83	-45.26	1077.47	322.59	2.368	-1.562	-1.781	MWD-SDI-SYS
7537.00	94.61	153.52	7056.08	-101.46	1105.68	384.17	3.836	3.794	0.571	MWD-SDI-SYS
7600.00	93.33	153.60	7051.72	-157.73	1133.67	445.77	2.036	-2.032	0.127	MWD-SDI-SYS
7663.00	90.87	154.33	7049.41	-214.30	1161.30	507.56	4.073	-3.905	1.159	MWD-SDI-SYS
7726.00	92.35	156.34	7047.64	-271.52	1187.58	569.64	3.961	2.349	3.190	MWD-SDI-SYS
7789.00	93.43	157.03	7044.46	-329.30	1212.48	631.89	2.034	1.714	1.095	MWD-SDI-SYS
7853.00	91.45	157.81	7041.74	-388.34	1237.03	695.27	3.325	-3.094	1.219	MWD-SDI-SYS
7916.00	91.61	159.84	7040.05	-447.06	1259.78	757.88	3.231	0.254	3.222	MWD-SDI-SYS

SDI
Survey Report

97-3502

Company:	CHESAPEAKE OPERATING, INC.	**Date:** 2009/12/01	**Time:** 13:21:43	**Page:**	4
Field:	Upshur, WV	**Co-ordinate(NE) Reference:**	Well: 1H (626742), Grid North		
Site:	Ralph H Harper Lumber Co	**Vertical (TVD) Reference:**	GL 1672+15 1687.0		
Well:	1H (626742)	**Section (VS) Reference:**	Well (0.00N,0.00E,165.00Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

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
7979.00	93.43	161.60	7037.28	-506.46	1280.56	820.64	4.017	2.889	2.794	MWD-SDI-SYS
8042.00	92.55	162.01	7034.00	-566.23	1300.20	883.46	1.541	-1.397	0.651	MWD-SDI-SYS
8104.00	90.74	162.21	7032.22	-625.21	1319.24	945.35	2.937	-2.919	0.323	MWD-SDI-SYS
8167.00	91.51	163.17	7030.98	-685.34	1337.98	1008.28	1.953	1.222	1.524	MWD-SDI-SYS
8230.00	92.32	164.23	7028.88	-745.77	1355.65	1071.23	2.117	1.286	1.683	MWD-SDI-SYS
8294.00	93.06	164.80	7025.87	-807.38	1372.72	1135.16	1.459	1.156	0.891	MWD-SDI-SYS
8358.00	93.16	163.93	7022.40	-868.92	1389.94	1199.06	1.366	0.156	-1.359	MWD-SDI-SYS
8421.00	92.89	163.64	7019.07	-929.33	1407.51	1261.96	0.628	-0.429	-0.460	MWD-SDI-SYS
8485.00	93.43	165.10	7015.55	-990.87	1424.73	1325.85	2.429	0.844	2.281	MWD-SDI-SYS
8548.00	92.39	166.01	7012.35	-1051.80	1440.42	1388.77	2.192	-1.651	1.444	MWD-SDI-SYS
8612.00	92.15	167.10	7009.81	-1113.99	1455.29	1452.69	1.743	-0.375	1.703	MWD-SDI-SYS
8675.00	91.38	168.03	7007.87	-1175.49	1468.85	1515.60	1.916	-1.222	1.476	MWD-SDI-SYS
8738.00	91.24	169.08	7006.43	-1237.22	1481.35	1578.46	1.681	-0.222	1.667	MWD-SDI-SYS
8802.00	91.11	168.96	7005.12	-1300.03	1493.53	1642.29	0.276	-0.203	-0.187	MWD-SDI-SYS
8866.00	91.34	168.20	7003.75	-1362.75	1506.20	1706.15	1.240	0.359	-1.187	MWD-SDI-SYS
8929.00	91.54	167.79	7002.17	-1424.35	1519.30	1769.04	0.724	0.317	-0.651	MWD-SDI-SYS
8991.00	92.39	168.23	7000.04	-1484.96	1532.17	1830.92	1.544	1.371	0.710	MWD-SDI-SYS
9054.00	92.45	168.93	6997.38	-1546.66	1544.64	1893.74	1.114	0.095	1.111	MWD-SDI-SYS
9117.00	92.42	168.83	6994.71	-1608.42	1556.78	1956.54	0.166	-0.048	-0.159	MWD-SDI-SYS
9180.00	92.62	169.22	6991.94	-1670.21	1568.76	2019.32	0.695	0.317	0.619	MWD-SDI-SYS
9243.00	92.38	168.22	6989.19	-1731.93	1581.07	2082.13	1.631	-0.381	-1.587	MWD-SDI-SYS
9305.00	92.18	168.78	6986.72	-1792.64	1593.42	2143.97	0.958	-0.323	0.903	MWD-SDI-SYS
9368.00	91.54	168.94	6984.68	-1854.42	1605.59	2206.79	1.047	-1.016	0.254	MWD-SDI-SYS
9431.00	91.38	168.34	6983.07	-1916.17	1617.99	2269.64	0.985	-0.254	-0.952	MWD-SDI-SYS
9494.00	90.44	168.22	6982.07	-1977.84	1630.79	2332.53	1.504	-1.492	-0.190	MWD-SDI-SYS
9557.00	89.53	168.85	6982.09	-2039.59	1643.31	2395.41	1.757	-1.444	1.000	MWD-SDI-SYS
9620.00	92.15	169.80	6981.16	-2101.48	1654.98	2458.22	4.424	4.159	1.508	MWD-SDI-SYS
9683.00	93.39	169.77	6978.12	-2163.41	1666.14	2520.92	1.969	1.968	-0.048	MWD-SDI-SYS
9746.00	93.76	169.24	6974.19	-2225.24	1677.59	2583.60	1.025	0.587	-0.841	MWD-SDI-SYS
9809.00	92.83	169.53	6970.57	-2287.05	1689.18	2646.32	1.546	-1.476	0.460	MWD-SDI-SYS
9872.00	92.15	168.57	6967.83	-2348.85	1701.13	2709.10	1.866	-1.079	-1.524	MWD-SDI-SYS
9935.00	91.82	167.99	6965.65	-2410.50	1713.92	2771.96	1.059	-0.524	-0.921	MWD-SDI-SYS
9998.00	91.92	167.18	6963.59	-2471.99	1727.46	2834.86	1.295	0.159	-1.286	MWD-SDI-SYS
10061.00	91.55	166.79	6961.69	-2533.34	1741.64	2897.79	0.853	-0.587	-0.619	MWD-SDI-SYS
10124.00	91.21	166.45	6960.17	-2594.62	1756.21	2960.75	0.763	-0.540	-0.540	MWD-SDI-SYS
10187.00	91.58	166.07	6958.64	-2655.79	1771.17	3023.71	0.842	0.587	-0.603	MWD-SDI-SYS
10250.00	90.60	165.05	6957.44	-2716.79	1786.88	3086.70	2.245	-1.556	-1.619	MWD-SDI-SYS
10313.00	91.44	165.58	6956.32	-2777.72	1802.85	3149.69	1.576	1.333	0.841	MWD-SDI-SYS
10376.00	91.18	165.82	6954.88	-2838.76	1818.40	3212.66	0.562	-0.413	0.381	MWD-SDI-SYS
10439.00	91.01	164.73	6953.67	-2899.67	1834.41	3275.65	1.751	-0.270	-1.730	MWD-SDI-SYS
10501.00	91.34	164.27	6952.40	-2959.41	1850.98	3337.64	0.913	0.532	-0.742	MWD-SDI-SYS
10564.00	90.17	162.79	6951.57	-3019.81	1868.84	3400.61	2.994	-1.857	-2.349	MWD-SDI-SYS
10627.00	90.57	162.43	6951.16	-3079.93	1887.67	3463.55	0.854	0.635	-0.571	MWD-SDI-SYS
10690.00	90.20	160.29	6950.74	-3139.62	1907.80	3526.42	3.447	-0.587	-3.397	MWD-SDI-SYS
10768.00	90.57	160.57	6950.22	-3213.11	1933.93	3604.17	0.595	0.474	0.359	MWD-SDI-SYS
10830.00	91.08	162.64	6949.32	-3271.94	1953.49	3666.05	3.438	0.823	3.339	MWD-SDI-SYS
10893.00	91.14	165.46	6948.10	-3332.49	1970.80	3729.02	4.476	0.095	4.476	MWD-SDI-SYS
10956.00	92.29	167.20	6946.22	-3393.68	1985.68	3791.97	3.310	1.825	2.762	MWD-SDI-SYS
11019.00	92.59	167.20	6943.54	-3455.06	1999.62	3854.87	0.476	0.476	0.000	MWD-SDI-SYS
11082.00	92.05	166.01	6940.98	-3516.29	2014.21	3917.79	2.073	-0.857	-1.889	MWD-SDI-SYS
11144.00	89.73	164.11	6940.02	-3576.18	2030.19	3979.78	4.836	-3.742	-3.065	MWD-SDI-SYS
11206.00	90.17	166.23	6940.08	-3636.11	2046.06	4041.77	3.492	0.710	3.419	MWD-SDI-SYS
11267.00	91.08	167.82	6939.41	-3695.55	2059.75	4102.73	3.003	1.492	2.607	MWD-SDI-SYS

SDI
Survey Report

97-3502

Company:	CHESAPEAKE OPERATING, INC.	**Date:** 2009/12/01 **Time:** 13:21:43	**Page:** 5
Field:	Upshur, WV	**Co-ordinate(NE) Reference:**	Well: 1H (626742), Grid North
Site:	Ralph H Harper Lumber Co	**Vertical (TVD) Reference:**	GL 1672+15 1687.0
Well:	1H (626742)	**Section (VS) Reference:**	Well (0.00N,0.00E,165.00Azi)
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature **Db:** Sybase

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
11329.00	90.64	167.08	6938.48	-3756.06	2073.22	4164.67	1.388	-0.710	-1.194	MWD-SDI-SYS
11391.00	92.28	167.87	6936.90	-3816.56	2086.66	4226.58	2.936	2.645	1.274	MWD-SDI-SYS
11452.00	92.56	166.97	6934.32	-3876.05	2099.94	4287.48	1.544	0.459	-1.475	MWD-SDI-SYS
11514.00	93.30	167.43	6931.16	-3936.42	2113.65	4349.35	1.405	1.194	0.742	MWD-SDI-SYS
11576.00	93.40	166.48	6927.53	-3996.72	2127.62	4411.21	1.538	0.161	-1.532	MWD-SDI-SYS
11638.00	92.32	166.53	6924.44	-4056.93	2142.07	4473.11	1.744	-1.742	0.081	MWD-SDI-SYS
11700.00	92.15	167.20	6922.02	-4117.26	2156.15	4535.03	1.114	-0.274	1.081	MWD-SDI-SYS
11762.00	92.38	166.75	6919.57	-4177.62	2170.11	4596.94	0.815	0.371	-0.726	MWD-SDI-SYS
11824.00	92.99	166.76	6916.67	-4237.91	2184.30	4658.84	0.984	0.984	0.016	MWD-SDI-SYS
11886.00	90.24	165.75	6914.92	-4298.10	2199.03	4720.80	4.725	-4.435	-1.629	MWD-SDI-SYS
11948.00	90.50	165.83	6914.52	-4358.20	2214.25	4782.79	0.439	0.419	0.129	MWD-SDI-SYS
12010.00	90.87	165.85	6913.78	-4418.31	2229.41	4844.78	0.598	0.597	0.032	MWD-SDI-SYS
12071.00	92.05	166.17	6912.22	-4477.48	2244.16	4905.75	2.004	1.934	0.525	MWD-SDI-SYS
12133.00	91.14	166.76	6910.50	-4537.74	2258.66	4967.70	1.749	-1.468	0.952	MWD-SDI-SYS
12195.00	90.74	167.33	6909.48	-4598.15	2272.56	5029.65	1.123	-0.645	0.919	MWD-SDI-SYS
12258.00	90.77	167.75	6908.65	-4659.66	2286.15	5092.59	0.668	0.048	0.667	MWD-SDI-SYS
12320.00	90.61	168.35	6907.90	-4720.31	2298.99	5154.49	1.001	-0.258	0.968	MWD-SDI-SYS
12382.00	91.01	167.99	6907.03	-4780.99	2311.69	5216.39	0.868	0.645	-0.581	MWD-SDI-SYS
12397.00	90.81	167.68	6906.79	-4795.65	2314.86	5231.37	2.459	-1.333	-2.067	MWD-SDI-SYS
12449.00	90.81	167.68	6906.05	-4846.45	2325.95	5283.31	0.000	0.000	0.000	MWD-SDI-SYS

WR -35

Date October 1, 2010
API # 4709703671

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm Name: Craig Bessinger 8H Operator Well No.: 831201

LOCATION Elevation: 2097' Quadrangle: Rock Cave
District: Meade County: Upshur

Top Hole	Latitude:	6800 ft	South of	38 °	52 '	30 "
Top Hole	Longitude:	6150 ft	West of	80 °	15 '	00 "
Btm Hole	Latitude:	14850 ft	South of	38 °	52 '	00 "
Btm Hole	Longitude:	3600 ft	West of	xx °	xx '	xx "

Company: Chesapeake Appalachia, LLC
P.O. Box 18496
Oklahoma City, OK 73154-0496

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill-Up Cu.Ft.
20"		40'	
13 3/8"	505'	505'	CTS
9 5/8"	1850'	1850'	CTS
7"	7539'	7539'	3789' Calc.
4 ½"	12124'	12124'	6540' Calc.
2 3/8"	7750'	7750'	

Agent: Eric Gillespie
Inspector: Bill Hatfield
Date Permit Issued: 08/25/2009
Date Well work commenced: 04/15/2010
Date Well Work completed: 05/22/2010
Verbal Plugging Permission
Granted on / /
Rotary ☒ Cable ☐ Rig
Total Depth (ft): 13582' TVD: 7316'
Fresh Water Depth (ft):540'
Salt Water Depth (ft.):NA
Is coal being mined in area (Yes ☐ No ☒)
Coal Depths (ft): 233' 271' 341'

RECEIVED
Office of Oil & Gas
OCT 05 2010
WV Department of
Environmental Protection

Open Flow Data

1st Producing Formation Marcellus Pay Zone Depth 7,758 ft to 13,582 ft
Gas: Initial Open Flow 2,386 Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests hours
Static Rock Pressure 3,292 psig after hours

2nd Producing Formation Marcellus Pay Zone Depth xx ft to xx ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure xx psig after xx hours

3rd Producing Formation Marcellus Pay Zone Depth xx ft to xx ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure xx psig after xx hours

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Chesapeake Energy
Well No.:831201

Perforated Intervals

1st Stage	Marcellus	50	holes from	12,146 ft	to	13,582 ft
3rd Stage	Marcellus	50	holes from	11,758 ft	to	12,080 ft
4th Stage	Marcellus	50	holes from	11,358 ft	to	11,680 ft
5th Stage	Marcellus	50	holes from	10,958 ft	to	11,280 ft
6th Stage	Marcellus	50	holes from	10,558 ft	to	10,880 ft
7th Stage	Marcellus	50	holes from	10,158 ft	to	10,480 ft
8th Stage	Marcellus	50	holes from	9,758 ft	to	10,080 ft
9th Stage	Marcellus	50	holes from	9,358 ft	to	9,680 ft
10th Stage	Marcellus	50	holes from	8,958 ft	to	9,280 ft
11th Stage	Marcellus	50	holes from	8,558 ft	to	8,880 ft
12th Stage	Marcellus	50	holes from	8,158 ft	to	8,480 ft
13th Stage	Marcellus	50	holes from	7,758 ft	to	8,080 ft

97-3671

Fracturing / Stimulation

1st Stage		Type of Treatment Slickwater		
	Total Acid 5,000 Gal of 15% HCl		Breakdown Pressure 8,005 psi	
	Average Rate 76 scf/min ☐ or bpm ☒		ATP 7,687 psi	MTP 7,995 psi
	Total Fluid 12,727 bbl	Total Nitrogen 0 scf	Total Sand 200,500 lb of 100 mesh	
			Total Sand 221,600 lb of 40/70	
	ISIP 7,728 psi	5 min 0 psi		
3rd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,811 psi	
	Average Rate 86 scf/min ☐ or bpm ☒		ATP 7,752 psi	MTP 8,404 psi
	Total Fluid 10,081 bbl	Total Nitrogen 0 scf	Total Sand 202,000 lb of 100 mesh	
			Total Sand 202,200 lb of 40/70	
	ISIP 4,285 psi	5 min 3,709 psi		
4rd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,660 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 7,522 psi	MTP 7,733 psi
	Total Fluid 12,486 bbl	Total Nitrogen 0 scf	Total Sand 201,000 lb of 100 mesh	
			Total Sand 203,000 lb of 40/70	
	ISIP 4,446 psi	5 min 3,957 psi		
5th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,672 psi	
	Average Rate 83 scf/min ☐ or bpm ☒		ATP 7,182 psi	MTP 8,714 psi
	Total Fluid 10,430 bbl	Total Nitrogen 0 scf	Total Sand 201,000 lb of 100 mesh	
			Total Sand 200,000 lb of 40/70	
	ISIP 4,879 psi	5 min 3,867 psi		
6th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,563 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 6,774 psi	MTP 8,052 psi
	Total Fluid 9,996 bbl	Total Nitrogen 0 scf	Total Sand 201,000 lb of 100 mesh	
			Total Sand 204,000 lb of 40/70	
	ISIP 4,259 psi	5 min 3,615 psi		
7th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,944 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 6,999 psi	MTP 7,950 psi
	Total Fluid 9,303 bbl	Total Nitrogen 0 scf	Total Sand 202,000 lb of 100 mesh	
			Total Sand 204,000 lb of 40/70	
	ISIP 4,037 psi	5 min 3,373 psi		

8th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,033 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 6,895 psi	MTP 7,896 psi
	Total Fluid 8,978 bbl	Total Nitrogen 0 scf	Total Sand 200,000 lb of 100 mesh	
			Total Sand 201,000 lb of 40/70	
	ISIP 3,755 psi	5 min 3,138 psi		
9th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,950 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 6,511 psi	MTP 7,150 psi
	Total Fluid 9,091 bbl	Total Nitrogen 0 scf	Total Sand 200,000 lb of 100 mesh	
			Total Sand 200,000 lb of 40/70	
	ISIP 3,705 psi	5 min 3,183 psi		
10th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,618 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 6,167 psi	MTP 6,730 psi
	Total Fluid 8,780 bbl	Total Nitrogen 0 scf	Total Sand 200,000 lb of 100 mesh	
			Total Sand 200,000 lb of 40/70	
	ISIP 4,179 psi	5 min 3,389 psi		
11th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,858 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 5,831 psi	MTP 6,870 psi
	Total Fluid 8,792 bbl	Total Nitrogen 0 scf	Total Sand 200,000 lb of 100 mesh	
			Total Sand 200,000 lb of 40/70	
	ISIP 4,373 psi	5 min 3,310 psi		
12th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,950 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 5,846 psi	MTP 6,787 psi
	Total Fluid 11,126 bbl	Total Nitrogen 0 scf	Total Sand 200,000 lb of 100 mesh	
			Total Sand 200,000 lb of 40/70	
	ISIP 4,324 psi	5 min 3,414 psi		
13th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,005 psi	
	Average Rate 86 scf/min ☐ or bpm ☒		ATP 5,592 psi	MTP 6,164 psi
	Total Fluid 8,888 bbl	Total Nitrogen 0 scf	Total Sand 180,000 lb of 100 mesh	
			Total Sand 229,000 lb of 40/70	
	ISIP 4,044 psi	5 min 3,342 psi		

97-3671

Well Log

Formation Name	Top	Bottom	Comments
Geneseo	7096	7139	All depths KBTVD
Tully	7139	7154	
Hamilton	7154	7241	
Marcellus	7241		Did not penetrate base Marcellus

Signed: _____

CHESAPEAKE APPALACHIA, LLC

By: TAL OBEN Mgr Ry Eastern Div.

Date: 10/4/2010

Ryan The leader in UNDERGROUND INTELLIGENCE™

Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 8H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/M. Layfield

DIRECTIONAL DRILLERS: A. Palmer/D. Cornell
Magnetic Declination: -9.01
Job #: 4378
Vertical Section 165.01

97-3671

Minimum Curvature Calculation

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
Tie-In	1830	0.66	125.82	1829.73	-15.57	22.42	20.83	0.00
1	1898	0.50	107.10	1897.73	-15.89	23.02	21.30	0.36
2	2025	0.60	131.00	2024.72	-16.49	24.05	22.15	0.20
3	2151	0.80	113.20	2150.71	-17.26	25.36	23.24	0.23
4	2279	0.80	119.40	2278.70	-18.06	26.96	24.41	0.07
5	2405	0.80	110.60	2404.69	-18.80	28.55	25.54	0.10
6	2529	0.80	117.90	2528.67	-19.51	30.12	26.63	0.08
7	2656	0.90	114.60	2655.66	-20.34	31.81	27.87	0.09
8	2782	0.90	109.90	2781.65	-21.09	33.64	29.07	0.06
9	2908	0.60	289.30	2907.64	-21.20	33.95	29.26	1.19
10	3031	2.50	300.30	3030.59	-19.64	31.03	26.99	1.56
11	3155	4.60	297.40	3154.35	-15.98	24.28	21.72	1.70
12	3281	6.40	297.50	3279.76	-10.42	13.56	13.57	1.43
13	3405	7.60	302.80	3402.84	-2.78	0.54	2.83	1.10
14	3529	7.40	300.60	3525.77	5.72	-13.23	-8.95	0.28
15	3653	6.70	297.40	3648.84	13.12	-26.52	-19.53	0.65
16	3779	7.30	301.80	3773.90	20.72	-39.85	-30.32	0.64
17	3906	6.30	299.80	3900.00	28.43	-52.76	-41.11	0.81
18	4031	6.60	304.70	4024.21	35.93	-64.61	-51.42	0.50
19	4156	7.70	306.80	4148.24	45.04	-77.23	-63.48	0.90
20	4283	7.00	304.20	4274.20	54.48	-90.44	-76.02	0.61
21	4407	7.40	301.20	4397.22	62.87	-103.52	-87.50	0.44
22	4531	6.60	297.70	4520.29	70.32	-116.66	-98.10	0.73
23	4657	7.00	302.20	4645.41	77.77	-129.57	-108.64	0.53
24	4783	7.80	302.40	4770.36	86.45	-143.28	-120.57	0.64
25	4909	6.80	299.70	4895.33	94.72	-156.98	-132.11	0.84
26	5035	6.80	300.00	5020.45	102.15	-169.92	-142.62	0.03
27	5160	7.40	300.80	5144.49	109.97	-183.25	-153.63	0.49
28	5286	8.10	285.50	5269.35	116.50	-198.77	-163.95	1.72
29	5413	7.20	295.50	5395.22	122.32	-214.58	-173.66	1.26
30	5538	5.70	310.40	5519.44	129.71	-226.38	-183.85	1.79
31	5664	6.70	307.00	5644.70	138.19	-237.01	-194.79	0.85
32	5787	6.20	302.90	5766.92	146.12	-248.32	-205.38	0.55
33	5911	6.20	310.70	5890.20	154.12	-259.02	-215.87	0.68
34	6034	6.10	306.20	6012.49	162.31	-269.33	-226.45	0.40
35	6157	7.10	309.20	6134.68	170.98	-280.49	-237.71	0.86
36	6281	8.40	305.70	6257.54	181.11	-293.79	-250.93	1.11
37	6405	6.60	298.00	6380.48	189.74	-307.43	-262.80	1.66

Ryan The leader in UNDERGROUND INTELLIGENCE™

Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 8H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/M. Layfield

DIRECTIONAL DRILLERS: A. Palmer/D. Cornell
Magnetic Declination: -9.01
Job #: 4378
Vertical Section 165.01

G7-3671

Minimum Curvature Calculation

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
38	6533	6.30	304.30	6507.67	197.15	-319.73	-273.14	0.60
39	6653	7.80	298.40	6626.76	204.73	-332.33	-283.73	1.39
40	6702	8.50	294.30	6675.27	207.81	-338.56	-288.30	1.86
41	6734	6.80	270.70	6706.99	208.80	-342.61	-290.31	11.05
42	6765	7.00	231.80	6737.78	207.66	-345.93	-290.07	14.80
43	6797	8.40	200.30	6769.50	204.26	-348.28	-287.39	13.69
44	6829	9.10	190.40	6801.13	199.58	-349.54	-283.19	5.18
45	6861	11.40	191.10	6832.62	193.98	-350.61	-278.07	7.20
46	6893	14.20	181.00	6863.83	186.95	-351.29	-271.45	11.17
47	6924	17.60	176.20	6893.64	178.47	-351.04	-263.20	11.75
48	6954	20.40	174.10	6922.00	168.74	-350.21	-253.58	9.61
49	6986	23.30	171.70	6951.70	156.93	-348.72	-241.79	9.48
50	7017	26.30	168.70	6979.84	144.13	-346.49	-228.84	10.49
51	7048	29.80	166.90	7007.19	129.88	-343.39	-214.28	11.61
52	7079	33.20	164.50	7033.62	114.20	-339.38	-198.09	11.69
53	7110	36.80	163.50	7059.01	97.11	-334.47	-180.32	11.76
54	7141	39.00	165.40	7083.47	78.77	-329.38	-161.28	8.03
55	7172	40.70	165.40	7107.27	59.54	-324.37	-141.42	5.48
56	7203	43.60	165.40	7130.25	39.41	-319.12	-120.61	9.35
57	7234	47.30	163.70	7152.00	18.13	-313.23	-98.53	12.56
58	7265	51.00	163.10	7172.27	-4.34	-306.53	-75.09	12.02
59	7296	54.20	163.30	7191.10	-27.91	-299.41	-50.48	10.34
60	7327	57.70	164.50	7208.45	-52.59	-292.30	-24.81	11.74
61	7358	60.80	165.70	7224.30	-78.33	-285.45	1.83	10.54
62	7389	63.00	166.60	7238.90	-104.88	-278.91	29.17	7.54
63	7420	65.30	168.00	7252.42	-132.09	-272.78	57.04	8.46
64	7451	69.00	169.70	7264.45	-160.11	-267.26	85.54	12.96
65	7482	72.00	170.60	7274.80	-188.90	-262.27	114.64	10.06
66	7513	75.40	169.90	7283.50	-218.22	-257.23	144.26	11.18
67	7545	79.50	168.00	7290.45	-248.87	-251.24	175.42	14.06
68	7577	82.60	165.90	7295.43	-279.66	-244.10	207.00	11.66
69	7592	80.70	167.20	7297.61	-294.09	-240.65	221.84	15.30
70	7623	80.90	167.80	7302.56	-323.97	-234.02	252.41	2.02
71	7655	80.40	167.80	7307.76	-354.83	-227.35	283.95	1.56
72	7686	83.10	167.20	7312.21	-384.78	-220.71	314.60	8.92
73	7718	86.10	167.00	7315.22	-415.83	-213.60	346.43	9.40
74	7750	90.40	167.30	7316.20	-447.00	-206.49	378.38	13.47
75	7781	93.90	166.10	7315.04	-477.15	-199.36	409.34	11.93

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Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 8H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/M. Layfield

DIRECTIONAL DRILLERS: A. Palmer/D. Cornell
Magnetic Declination: -9.01
Job #: 4378
Vertical Section 165.01

97-3671

Minimum Curvature Calculation

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
76	7845	94.20	164.20	7310.52	-538.85	-183.00	473.18	3.00
77	7909	90.90	163.20	7307.67	-600.21	-165.06	537.09	5.39
78	7972	90.40	161.90	7306.95	-660.30	-146.17	600.03	2.21
79	8036	92.70	164.10	7305.22	-721.48	-127.47	663.96	4.97
80	8099	90.40	162.20	7303.52	-781.74	-109.21	726.89	4.73
81	8162	90.20	163.80	7303.19	-841.99	-90.79	789.85	2.56
82	8289	88.90	164.80	7304.19	-964.24	-56.43	916.83	1.29
83	8416	91.40	165.70	7303.85	-1087.04	-24.10	1043.82	2.09
84	8543	92.20	164.50	7299.86	-1209.71	8.54	1170.75	1.14
85	8670	93.40	163.80	7293.66	-1331.73	43.18	1297.58	1.09
86	8797	92.70	162.90	7286.90	-1453.23	79.52	1424.35	0.90
87	8923	93.20	162.00	7280.42	-1573.21	117.46	1550.06	0.82
88	9049	91.00	164.50	7275.80	-1693.76	153.75	1675.89	2.64
89	9176	91.50	165.30	7273.03	-1816.35	186.82	1802.86	0.74
90	9303	91.70	166.20	7269.48	-1939.39	218.07	1929.80	0.73
91	9430	90.80	167.50	7266.71	-2063.03	246.96	2056.70	1.24
92	9557	91.10	167.40	7264.61	-2186.98	274.55	2183.57	0.25
93	9684	91.80	166.20	7261.39	-2310.58	303.54	2310.46	1.09
94	9812	92.60	167.40	7256.48	-2435.10	332.74	2438.30	1.13
95	9939	91.60	166.90	7251.83	-2558.84	360.97	2565.13	0.88
96	10066	91.20	168.90	7248.72	-2682.97	387.58	2691.92	1.61
97	10193	89.10	168.30	7248.39	-2807.46	412.68	2818.66	1.72
98	10319	89.80	169.60	7249.60	-2931.11	436.83	2944.36	1.17
99	10446	91.70	172.00	7247.94	-3056.45	457.13	3070.68	2.41
100	10573	90.00	171.00	7246.05	-3182.04	475.90	3196.85	1.55
101	10701	85.20	164.20	7251.42	-3306.83	503.33	3324.49	6.50
102	10828	85.50	160.40	7261.72	-3427.40	541.80	3450.91	2.99
103	10956	88.50	159.10	7268.42	-3547.31	586.04	3578.18	2.55
104	11083	91.10	161.20	7268.86	-3666.75	629.16	3704.70	2.63
105	11209	90.40	159.10	7267.21	-3785.24	671.94	3830.23	1.76
106	11335	92.30	161.10	7264.24	-3903.67	714.81	3955.72	2.19
107	11462	91.30	162.70	7260.25	-4024.32	754.25	4082.47	1.49
108	11589	93.70	164.80	7254.71	-4146.12	789.75	4209.30	2.51
109	11715	90.80	163.70	7249.77	-4267.28	823.92	4335.17	2.46
110	11842	94.60	166.70	7243.78	-4389.89	856.32	4461.99	3.81
111	11969	91.70	165.20	7236.81	-4512.89	887.10	4588.77	2.57
112	12096	90.60	166.10	7234.26	-4635.90	918.57	4715.73	1.12
113	12223	90.40	167.10	7233.15	-4759.43	948.00	4842.68	0.80
114	12350	91.10	165.40	7231.49	-4882.78	978.19	4969.63	1.45

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Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 8H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/M. Layfield

97-3671

DIRECTIONAL DRILLERS: A. Palmer/D. Cornell
Magnetic Declination: -9.01
Job #: 4378

Minimum Curvature Calculation

Vertical Section 165.01

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
115	12476	89.80	164.90	7230.50	-5004.56	1010.48	5095.62	1.11
116	12600	91.40	163.90	7229.20	-5123.98	1043.82	5219.60	1.52
117	12727	89.90	163.30	7227.76	-5245.80	1079.67	5346.55	1.27
118	12854	91.40	162.50	7226.32	-5367.18	1117.01	5473.45	1.34
119	12980	90.30	162.20	7224.45	-5487.23	1155.21	5599.30	0.90
120	13108	91.30	164.10	7222.66	-5609.72	1192.31	5727.22	1.68
121	13234	90.40	163.60	7220.79	-5730.73	1227.35	5853.17	0.82
122	13361	91.80	163.70	7218.35	-5852.57	1263.09	5980.11	1.11
123	13488	91.10	161.90	7215.14	-5973.84	1300.64	6106.97	1.52
124	13540	89.70	160.80	7214.78	-6023.11	1317.26	6158.86	3.42
PTB	13582	89.70	160.80	7215.00	-6062.77	1331.08	6200.75	0.00

WR -35

Date October 1, 2010
API # 4709703672

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm Name: Craig Bessinger 10H **Operator Well No.:** 831202

LOCATION **Elevation:** 2097' **Quadrangle:** Rock Cave
District: Meade **County:** Upshur

Top Hole	**Latitude:**	6800 ft	**South of**	38 °	52 '	30"
Top Hole	**Longitude:**	14850 ft	**West of**	80 °	15 '	00 "
Btm Hole	**Latitude:**	5100 ft	**South of**	38 °	50 '	00 "
Btm Hole	**Longitude:**	3800 ft	**West of**	xx °	xx '	xx "

Company: Chesapeake Appalachia, LLC
P.O. Box 18496
Oklahoma City, OK 73154-0496

Agent: Eric Gillespie
Inspector: Bill Hatfield

Date Permit Issued: 08/25/2009
Date Well work commenced: 02/01/2010
Date Well Work completed: 03/18/2010
Verbal Plugging Permission
Granted on / /
Rotary ☒ Cable☐ Rig
Total Depth (ft): 13143' TVD: 7328'
Fresh Water Depth (ft):540'
Salt Water Depth (ft.):NA
Is coal being mined in area (Yes ☐ No ☒)
Coal Depths (ft): 233' 271' 339'

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill-Up Cu.Ft.
20"		40'	
13 3/8"	505'	505'	CTS
9 5/8"	1848'	1848'	CTS
5 ½"	13065'	13065'	4132' Calc.
2 3/8"	7749'	7749'	

RECEIVED
Office of Oil & Gas
OCT 05 2010
WV Department of
Environmental Protection

Open Flow Data

1st Producing Formation Marcellus Pay Zone Depth 7,776 ft to 12,898 ft
Gas: Initial Open Flow 1,707 Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests hours
Static Rock Pressure 3,298 psig after hours

2nd Producing Formation Marcellus Pay Zone Depth xx ft to xx ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure xx psig after xx hours

3rd Producing Formation Marcellus Pay Zone Depth xx ft to xx ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow xx Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests xx hours
Static Rock Pressure xx psig after xx hours

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Chesapeake Energy
Well No.: 831202

Perforated Intervals

1st Stage	Marcellus	50	holes from	12,576 ft	to	12,898 ft
2nd Stage	Marcellus	50	holes from	12,176 ft	to	12,498 ft
3rd Stage	Marcellus	50	holes from	11,776 ft	to	12,098 ft
4th Stage	Marcellus	50	holes from	11,376 ft	to	11,698 ft
5th Stage	Marcellus	50	holes from	10,976 ft	to	11,298 ft
6th Stage	Marcellus	50	holes from	10,576 ft	to	10,898 ft
7th Stage	Marcellus	50	holes from	10,176 ft	to	10,498 ft
8th Stage	Marcellus	50	holes from	9,776 ft	to	10,098 ft
9th Stage	Marcellus	50	holes from	9,376 ft	to	9,618 ft
10th Stage	Marcellus	50	holes from	8,976 ft	to	9,298 ft
11th Stage	Marcellus	50	holes from	8,576 ft	to	8,898 ft
12th Stage	Marcellus	50	holes from	8,176 ft	to	8,498 ft
13th Stage	Marcellus	50	holes from	7,776 ft	to	8,098 ft

97-3672

Fracturing / Stimulation

1st Stage		Type of Treatment Slickwater		
	Total Acid 5,000 Gal of 15% HCl		Breakdown Pressure 5,502 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 7,331 psi	MTP 7,906 psi
	Total Fluid 9,233 bbl	Total Nitrogen 0 scf	Total Sand 201,600 lb of 100 mesh	
			Total Sand 202,300 lb of 40/70	
	ISIP 4,833 psi	5 min 3,103 psi		
2nd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,309 psi	
	Average Rate 86 scf/min ☐ or bpm ☒		ATP 7,197 psi	MTP 8,026 psi
	Total Fluid 9,474 bbl	Total Nitrogen 0 scf	Total Sand 201,000 lb of 100 mesh	
			Total Sand 205,600 lb of 40/70	
	ISIP 3,900 psi	5 min 3,380 psi		
3rd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,800 psi	
	Average Rate 87 scf/min ☐ or bpm ☒		ATP 7,419 psi	MTP 7,941 psi
	Total Fluid 9,438 bbl	Total Nitrogen 0 scf	Total Sand 203,200 lb of 100 mesh	
			Total Sand 200,700 lb of 40/70	
	ISIP 4,048 psi	5 min 3,338 psi		
4th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,314 psi	
	Average Rate 86 scf/min ☐ or bpm ☒		ATP 7,667 psi	MTP 7,941 psi
	Total Fluid 14,558 bbl	Total Nitrogen 0 scf	Total Sand 209,000 lb of 100 mesh	
			Total Sand 114,750 lb of 40/70	
	ISIP 4,064 psi	5 min 3,047 psi		
5th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,120 psi	
	Average Rate 86 scf/min ☐ or bpm ☒		ATP 7,398 psi	MTP 7,985 psi
	Total Fluid 11,966 bbl	Total Nitrogen 0 scf	Total Sand 200,400 lb of 100 mesh	
			Total Sand 200,000 lb of 40/70	
	ISIP 4,232 psi	5 min 3,555 psi		
6th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,079 psi	
	Average Rate 87 scf/min ☐ or bpm ☒		ATP 7,364 psi	MTP 7,834 psi
	Total Fluid 9,264 bbl	Total Nitrogen 0 scf	Total Sand 200,200 lb of 100 mesh	
			Total Sand 203,000 lb of 40/70	
	ISIP 4,237 psi	5 min 3,439 psi		
7th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,042 psi	
	Average Rate 87 scf/min ☐ or bpm ☒		ATP 7,102 psi	MTP 7,628 psi
	Total Fluid 9,040 bbl	Total Nitrogen 0 scf	Total Sand 201,400 lb of 100 mesh	
			Total Sand 201,500 lb of 40/70	
	ISIP 4,211 psi	5 min 3,399 psi		

8th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,345 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 6,806 psi	MTP 7,345 psi
	Total Fluid 10,219 bbl	Total Nitrogen 0 scf	Total Sand 199,000 lb of 100 mesh	
			Total Sand 197,600 lb of 40/70	
	ISIP 4,334 psi	5 min 3,288 psi		
9th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 4,956 psi	
	Average Rate 86 scf/min ☐ or bpm ☒		ATP 6,810 psi	MTP 7,368 psi
	Total Fluid 9,384 bbl	Total Nitrogen 0 scf	Total Sand 208,900 lb of 100 mesh	
			Total Sand 204,900 lb of 40/70	
	ISIP 4,388 psi	5 min 3,619 psi		
10th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 4,968 psi	
	Average Rate 84 scf/min ☐ or bpm ☒		ATP 6,547 psi	MTP 6,932 psi
	Total Fluid 9,099 bbl	Total Nitrogen 0 scf	Total Sand 205,000 lb of 100 mesh	
			Total Sand 205,000 lb of 40/70	
	ISIP 3,700 psi	5 min 3,110 psi		
11th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 4,893 psi	
	Average Rate 83 scf/min ☐ or bpm ☒		ATP 6,743 psi	MTP 7,294 psi
	Total Fluid 9,094 bbl	Total Nitrogen 0 scf	Total Sand 205,000 lb of 100 mesh	
			Total Sand 200,000 lb of 40/70	
	ISIP 4,074 psi	5 min 3,192 psi		
12th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,473 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 6,755 psi	MTP 7,165 psi
	Total Fluid 6,702 bbl	Total Nitrogen 0 scf	Total Sand 202,900 lb of 100 mesh	
			Total Sand 200,100 lb of 40/70	
	ISIP 4,133 psi	5 min 3,328 psi		
13th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,445 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 6,502 psi	MTP 6,885 psi
	Total Fluid 6,553 bbl	Total Nitrogen 0 scf	Total Sand 202,100 lb of 100 mesh	
			Total Sand 200,400 lb of 40/70	
	ISIP 3,941 psi	5 min 3,227 psi		

Well Log

Formation Name	Top	Bottom	Comments
Geneseo	7092	7121	ALL DEPTHS KBTVD
Tully	7121	7143	
Hamilton	7143	7231	
Marcellus	7231		DID NOT PENETRATE BASE MARCELLUS

97-3672

Signed: Tal Odell

CHESAPEAKE APPALACHIA, LLC

By: TAL ODELL Mgr Reg Eastern Div.

Date: 10/4/2010

Ryan The leader in UNDERGROUND INTELLIGENCE™

Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 10H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/D. Scruggs

DIRECTIONAL DRILLERS: A. Palmer/S. McCune
Magnetic Declination: -9.00
Job #: 4320

97-3672

Minimum Curvature Calculation *Vertical Section* 165.0

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
Tie	6838	10.50	45.20	6767.37	625.32	466.38	-483.31	6.90
1	6865	8.70	49.30	6793.99	628.39	469.67	-485.41	7.13
2	6896	8.40	77.60	6824.66	630.40	473.66	-486.33	13.47
3	6927	12.30	101.00	6855.16	630.26	479.12	-484.78	18.26
4	6959	15.80	113.40	6886.21	627.88	486.47	-480.57	14.37
5	6991	18.70	127.50	6916.78	623.02	494.54	-473.79	15.84
6	7023	20.20	139.70	6946.96	615.68	502.19	-464.72	13.50
7	7054	21.90	153.60	6975.91	606.41	508.23	-454.21	16.97
8	7086	24.00	161.70	7005.39	594.88	512.93	-441.86	11.84
9	7117	27.40	167.80	7033.32	581.92	516.41	-428.43	13.88
10	7148	31.20	169.10	7060.35	567.06	519.44	-413.30	12.43
11	7180	35.40	167.40	7087.09	549.87	523.03	-395.76	13.44
12	7212	38.90	165.40	7112.59	531.09	527.59	-376.45	11.57
13	7244	43.60	163.40	7136.65	510.78	533.28	-355.36	15.25
14	7276	48.00	162.90	7158.95	488.83	539.93	-332.43	13.80
15	7308	53.10	163.10	7179.28	465.21	547.15	-307.75	15.94
16	7339	57.80	164.20	7196.85	440.72	554.33	-282.23	15.44
17	7371	63.00	164.30	7212.65	413.95	561.88	-254.42	16.25
18	7403	66.20	164.10	7226.38	386.13	569.75	-225.52	10.02
19	7435	68.40	164.10	7238.73	357.74	577.83	-196.00	6.88
20	7466	70.20	163.50	7249.68	329.90	585.92	-167.01	6.08
21	7498	72.20	163.20	7259.99	300.88	594.60	-136.73	6.31
22	7530	73.80	162.10	7269.35	271.67	603.73	-106.16	5.98
23	7561	75.40	161.90	7277.58	243.25	612.97	-76.31	5.20
24	7592	78.10	160.60	7284.69	214.68	622.67	-46.20	9.62
25	7623	80.70	160.40	7290.39	185.96	632.84	-15.83	8.41
26	7655	82.60	160.70	7295.04	156.10	643.38	15.73	6.01
27	7687	85.00	161.40	7298.49	126.02	653.71	47.47	7.81
28	7717	87.40	162.80	7300.48	97.54	662.91	77.36	9.26
29	7749	89.40	163.10	7301.37	66.96	672.29	109.33	6.32
30	7781	89.40	163.70	7301.71	36.29	681.43	141.31	1.87
31	7844	90.50	164.10	7301.76	-24.24	698.90	204.30	1.86
32	7908	92.30	165.20	7300.20	-85.93	715.83	268.28	3.30
33	7969	91.50	165.00	7298.18	-144.85	731.51	329.24	1.35
34	8032	90.90	163.30	7296.86	-205.44	748.71	392.22	2.86
35	8096	90.20	162.60	7296.24	-266.62	767.48	456.17	1.55
36	8159	91.30	163.30	7295.42	-326.85	785.95	519.13	2.07
37	8223	91.70	163.80	7293.74	-388.20	804.06	583.08	1.00

Ryan The leader in UNDERGROUND INTELLIGENCE™

Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 10H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/D. Scruggs

DIRECTIONAL DRILLERS: A. Palmer/S. McCune
Magnetic Declination: -9.00
Job #: 4320

Minimum Curvature Calculation

Vertical Section 165.0

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
38	8288	89.40	164.10	7293.12	-450.66	822.03	648.07	3.57
39	8350	90.00	164.40	7293.44	-510.33	838.86	710.06	1.08
40	8413	89.30	163.40	7293.83	-570.86	856.33	773.04	1.94
41	8476	89.10	163.70	7294.71	-631.28	874.17	836.02	0.57
42	8539	90.40	164.50	7294.98	-691.86	891.43	899.01	2.42
43	8602	90.40	164.30	7294.54	-752.54	908.37	962.00	0.32
44	8665	91.10	164.90	7293.72	-813.27	925.10	1025.00	1.46
45	8729	91.40	164.60	7292.32	-875.01	941.93	1088.98	0.66
46	8857	91.40	165.70	7289.20	-998.69	974.72	1216.94	0.86
47	8984	90.20	163.90	7287.42	-1121.23	1008.02	1343.92	1.70
48	9110	90.20	163.60	7286.98	-1242.19	1043.27	1469.89	0.24
49	9237	92.20	167.00	7284.32	-1364.99	1075.49	1596.83	3.11
50	9365	90.70	167.90	7281.08	-1489.88	1103.29	1724.67	1.37
51	9492	90.60	168.30	7279.64	-1614.15	1129.48	1851.48	0.32
52	9620	91.10	168.00	7277.74	-1739.40	1155.76	1979.27	0.46
53	9747	90.80	166.80	7275.64	-1863.32	1183.46	2106.14	0.97
54	9874	91.30	166.60	7273.31	-1986.90	1212.67	2233.06	0.42
55	10001	90.40	164.90	7271.43	-2109.97	1243.93	2360.03	1.51
56	10126	91.00	164.10	7269.90	-2230.41	1277.33	2485.01	0.80
57	10252	90.90	163.90	7267.81	-2351.52	1312.06	2610.98	0.18
58	10376	89.90	164.00	7266.94	-2470.68	1346.34	2734.95	0.81
59	10499	88.90	162.30	7268.23	-2588.39	1381.99	2857.87	1.60
60	10623	90.90	163.40	7268.45	-2706.86	1418.55	2981.78	1.84
61	10748	90.60	164.90	7266.81	-2827.10	1452.69	3106.75	1.22
62	10872	88.60	165.80	7267.68	-2947.06	1484.04	3230.74	1.77
63	10996	89.10	165.80	7270.17	-3067.24	1514.46	3354.70	0.40
64	11120	90.20	165.80	7270.92	-3187.45	1544.87	3478.68	0.89
65	11244	91.20	165.30	7269.41	-3307.52	1575.81	3602.67	0.90
66	11368	93.10	166.10	7264.76	-3427.58	1606.42	3726.56	1.66
67	11491	89.90	164.10	7261.54	-3546.38	1638.03	3849.50	3.07
68	11615	90.50	164.20	7261.11	-3665.67	1671.90	3973.48	0.49
69	11738	90.50	163.60	7260.03	-3783.84	1706.01	4096.45	0.49
70	11862	89.50	161.40	7260.03	-3902.09	1743.29	4220.33	1.95
71	11985	90.90	161.20	7259.60	-4018.59	1782.72	4343.07	1.15
72	12109	93.30	162.60	7255.06	-4136.37	1821.22	4466.79	2.24
73	12233	93.50	162.30	7247.70	-4254.39	1858.54	4590.45	0.29
74	12357	92.00	162.80	7241.76	-4372.54	1895.68	4714.19	1.27
75	12481	91.50	164.10	7237.97	-4491.35	1930.99	4838.08	1.12

97-3672

Ryan The leader in UNDERGROUND INTELLIGENCE™

Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 10H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/D. Scruggs

DIRECTIONAL DRILLERS: A. Palmer/S. McCune
Magnetic Declination: -9.00
Job #: 4320
Vertical Section 165.0

Minimum Curvature Calculation

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
76	12603	89.80	165.90	7236.58	-4609.17	1962.56	4960.07	2.03
77	12728	92.30	167.30	7234.29	-4730.74	1991.52	5084.98	2.29
78	12851	93.00	166.90	7228.61	-4850.50	2018.95	5207.77	0.66
79	12975	91.60	166.90	7223.63	-4971.17	2047.03	5331.60	1.13
80	13097	90.90	166.40	7220.97	-5089.85	2075.19	5453.52	0.71
PTB	13143	90.90	166.40	7220.25	-5134.55	2086.01	5499.50	0.00

97-3672

Chesapeake Energy
Well No.: 831200

97-3673

Perforated Intervals

1st Stage	Marcellus	50	holes from	12,782 ft	to 13,104 ft
2nd Stage	Marcellus	50	holes from	12,382 ft	to 12,704 ft
3rd Stage	Marcellus	50	holes from	11,982 ft	to 12,304 ft
4th Stage	Marcellus	50	holes from	11,582 ft	to 11,904 ft
5th Stage	Marcellus	50	holes from	11,182 ft	to 11,504 ft
6th Stage	Marcellus	50	holes from	10,782 ft	to 11,104 ft
7th Stage	Marcellus	50	holes from	10,382 ft	to 10,704 ft
8th Stage	Marcellus	50	holes from	9,982 ft	to 10,304 ft
9th Stage	Marcellus	50	holes from	9,582 ft	to 9,904 ft
10th Stage	Marcellus	50	holes from	9,182 ft	to 9,504 ft
11th Stage	Marcellus	50	holes from	8,782 ft	to 9,104 ft
12th Stage	Marcellus	50	holes from	8,382 ft	to 8,704 ft
13th Stage	Marcellus	50	holes from	7,982 ft	to 8,304 ft

Fracturing / Stimulation

1st Stage		Type of Treatment Slickwater		
	Total Acid 5,000 Gal of 15% HCl		Breakdown Pressure 5,870 psi	
	Average Rate 85 scf/min ☐	or bpm ☒	ATP 7,430 psi	MTP 7,966 psi
	Total Fluid 9,931 bbl	Total Nitrogen 0 scf	Total Sand 205,000 lb of 100 mesh	
			Total Sand 67,600 lb of 40/70	
	ISIP 4,822 psi	5 min 3,562 psi		
2nd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,237 psi	
	Average Rate 86 scf/min ☐	or bpm ☒	ATP 7,112 psi	MTP 7,741 psi
	Total Fluid 9,691 bbl	Total Nitrogen 0 scf	Total Sand 201,000 lb of 100 mesh	
			Total Sand 200,000 lb of 40/70	
	ISIP 4,244 psi	5 min 3,178 psi		
3rd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 4,971 psi	
	Average Rate 86 scf/min ☐	or bpm ☒	ATP 7,147 psi	MTP 7,867 psi
	Total Fluid 9,474 bbl	Total Nitrogen 0 scf	Total Sand 201,000 lb of 100 mesh	
			Total Sand 202,000 lb of 40/70	
	ISIP 4,460 psi	5 min 3,655 psi		
4th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,400 psi	
	Average Rate 87 scf/min ☐	or bpm ☒	ATP 7,267 psi	MTP 7,953 psi
	Total Fluid 9,646 bbl	Total Nitrogen 0 scf	Total Sand 201,000 lb of 100 mesh	
			Total Sand 202,000 lb of 40/70	
	ISIP 4,019 psi	5 min 3,274 psi		
5th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 4,884 psi	
	Average Rate 87 scf/min ☐	or bpm ☒	ATP 6,614 psi	MTP 7,192 psi
	Total Fluid 9,241 bbl	Total Nitrogen 0 scf	Total Sand 200,500 lb of 100 mesh	
			Total Sand 201,000 lb of 40/70	
	ISIP 3,780 psi	5 min 3,080 psi		
6th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,481 psi	
	Average Rate 88 scf/min ☐	or bpm ☒	ATP 7,035 psi	MTP 7,577 psi
	Total Fluid 9,331 bbl	Total Nitrogen 0 scf	Total Sand 202,000 lb of 100 mesh	
			Total Sand 204,000 lb of 40/70	
	ISIP 3,762 psi	5 min 3,078 psi		
7th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,080 psi	
	Average Rate 86 scf/min ☐	or bpm ☒	ATP 6,982 psi	MTP 7,493 psi
	Total Fluid 9,366 bbl	Total Nitrogen 0 scf	Total Sand 205,000 lb of 100 mesh	
			Total Sand 201,000 lb of 40/70	

	ISIP 4,250 psi	5 min 3,290 psi		
8th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,040 psi	
	Average Rate 87 scf/min ☐	or bpm ☒	ATP 6,911 psi	MTP 7,505 psi
	Total Fluid 9,108 bbl	Total Nitrogen 0 scf	Total Sand 204,000 lb of 100 mesh	
			Total Sand 203,000 lb of 40/70	
	ISIP 4,039 psi	5 min 3,250 psi		
9th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,548 psi	
	Average Rate 87 scf/min ☐	or bpm ☒	ATP 6,769 psi	MTP 7,562 psi
	Total Fluid 9,364 bbl	Total Nitrogen 0 scf	Total Sand 202,000 lb of 100 mesh	
			Total Sand 201,800 lb of 40/70	
	ISIP 3,792 psi	5 min 2,999 psi		
10th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,395 psi	
	Average Rate 87 scf/min ☐	or bpm ☒	ATP 6,772 psi	MTP 7,516 psi
	Total Fluid 8,605 bbl	Total Nitrogen 0 scf	Total Sand 200,000 lb of 100 mesh	
			Total Sand 202,000 lb of 40/70	
	ISIP 3,790 psi	5 min 3,070 psi		
11th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 2,288 psi	
	Average Rate 86 scf/min ☐	or bpm ☒	ATP 6,292 psi	MTP 7,239 psi
	Total Fluid 8,587 bbl	Total Nitrogen 0 scf	Total Sand 205,000 lb of 100 mesh	
			Total Sand 201,000 lb of 40/70	
	ISIP 3,907 psi	5 min 3,191 psi		
12th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,311 psi	
	Average Rate 86 scf/min ☐	or bpm ☒	ATP 6,724 psi	MTP 7,338 psi
	Total Fluid 8,859 bbl	Total Nitrogen 0 scf	Total Sand 203,000 lb of 100 mesh	
			Total Sand 202,000 lb of 40/70	
	ISIP 4,204 psi	5 min 3,316 psi		
13th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,864 psi	
	Average Rate 82 scf/min ☐	or bpm ☒	ATP 5,823 psi	MTP 7,035 psi
	Total Fluid 8,870 bbl	Total Nitrogen 0 scf	Total Sand 204,000 lb of 100 mesh	
			Total Sand 201,500 lb of 40/70	
	ISIP 4,251 psi	5 min 3,003 psi		

Well Log

Formation Name	Top	Bottom	Comments
Geneseo	7092	7121	All depths KBTVD
Tully	7121	7143	
Hamilton	7143	7231	
Marcellus	7231		Did not penetrate base Marcellus

97-3673

Signed: [signature]

CHESAPEAKE APPALACHIA, LLC

By: TAL ODEN Mgr Reg Eastern Div

Date: 10/4/2010

Ryan The leader in UNDERGROUND INTELLIGENCE™

Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 6H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/D. Scruggs/M. Layfield

DIRECTIONAL DRILLERS: A. Palmer/K. Edwards/R. Calcote

Magnetic Declination: -9.00

Job #: 4331

97-3673

Minimum Curvature Calculation

Vertical Section 165.0

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
Tie	1700	1.03	133.49	1699.77	-17.95	15.51	21.35	0.16
1	1782	0.88	147.60	1781.76	-18.99	16.38	22.58	0.34
2	1910	2.02	274.80	1909.73	-19.63	14.66	22.76	2.07
3	2037	4.40	292.60	2036.53	-17.57	7.93	19.02	2.01
4	2164	7.70	288.40	2162.80	-13.01	-4.64	11.37	2.62
5	2292	9.70	283.30	2289.33	-7.82	-23.28	1.53	1.67
6	2419	10.00	282.50	2414.45	-2.98	-44.45	-8.63	0.26
7	2545	11.20	282.60	2538.30	2.06	-67.08	-19.35	0.95
8	2672	12.20	279.30	2662.66	6.92	-92.36	-30.59	0.95
9	2799	13.10	277.90	2786.58	11.07	-119.86	-41.71	0.75
10	2927	14.60	279.10	2910.85	15.61	-150.16	-53.94	1.19
11	3054	14.70	276.10	3033.73	19.86	-181.98	-66.28	0.60
12	3181	16.20	279.70	3156.14	24.56	-215.47	-79.49	1.40
13	3308	16.50	280.10	3278.00	30.70	-250.69	-94.54	0.25
14	3435	16.40	276.80	3399.81	35.99	-286.25	-108.85	0.74
15	3563	16.70	277.70	3522.50	40.59	-322.42	-122.66	0.31
16	3690	16.00	276.00	3644.37	44.87	-357.91	-135.97	0.67
17	3817	15.20	277.40	3766.69	48.84	-391.83	-148.59	0.70
18	3942	16.40	277.10	3886.96	53.13	-425.59	-161.47	0.96
19	4070	15.50	278.90	4010.04	58.01	-460.42	-175.20	0.80
20	4197	16.10	281.80	4132.24	64.24	-494.42	-190.02	0.78
21	4324	17.50	281.50	4253.81	71.65	-530.37	-206.48	1.10
22	4451	15.80	273.80	4375.50	76.60	-566.34	-220.57	2.19
23	4578	14.50	268.50	4498.09	77.33	-599.49	-229.86	1.49
24	4704	13.60	276.10	4620.33	78.49	-629.99	-238.87	1.63
25	4832	16.20	279.90	4744.02	83.16	-662.55	-251.81	2.17
26	4957	19.50	282.80	4862.99	90.78	-700.08	-268.89	2.73
27	5083	17.60	273.90	4982.46	96.74	-739.61	-284.87	2.70
28	5209	16.30	264.50	5103.01	96.34	-776.22	-293.96	2.40
29	5337	14.90	262.40	5226.29	92.44	-810.42	-299.04	1.18
30	5464	14.80	270.40	5349.06	90.40	-842.83	-305.46	1.62
31	5592	15.20	283.80	5472.74	94.51	-875.48	-317.89	2.72
32	5717	19.50	287.90	5592.03	104.84	-911.26	-337.12	3.57
33	5845	20.30	287.00	5712.38	117.90	-952.83	-360.49	0.67
34	5972	18.50	281.20	5832.18	128.26	-993.67	-381.07	2.07
35	6098	16.90	275.10	5952.22	133.77	-1031.53	-396.19	1.94
36	6225	17.40	279.60	6073.58	138.58	-1068.64	-410.44	1.12
37	6353	18.60	272.40	6195.33	142.62	-1107.91	-424.51	1.97

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Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 6H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/D. Scruggs/M. Layfield

DIRECTIONAL DRILLERS: A. Palmer/K. Edwards/R. Calcote

Magnetic Declination: -9.00

Job #: 4331

97-3673

Minimum Curvature Calculation

Vertical Section 165.0

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
38	6480	17.80	271.60	6315.97	144.01	-1147.55	-436.11	0.66
39	6607	16.80	275.40	6437.23	146.28	-1185.23	-448.06	1.19
40	6734	16.30	282.90	6558.98	151.99	-1220.88	-462.80	1.73
41	6840	18.10	281.90	6660.24	158.71	-1251.49	-477.21	1.72
42	6872	18.20	285.80	6690.65	161.09	-1261.16	-482.02	3.81
43	6903	16.40	297.40	6720.25	164.43	-1269.71	-487.45	12.52
44	6935	14.10	300.80	6751.12	168.50	-1277.07	-493.29	7.71
45	6967	13.20	282.80	6782.23	171.31	-1283.99	-497.79	13.51
46	6999	14.30	265.40	6813.33	171.80	-1291.49	-500.21	13.32
47	7030	16.50	250.20	6843.23	170.00	-1299.45	-500.53	14.77
48	7060	18.90	237.40	6871.81	165.94	-1307.56	-498.70	15.20
49	7092	20.90	226.20	6901.91	159.19	-1316.05	-494.39	13.43
50	7123	22.80	215.00	6930.70	150.44	-1323.49	-487.86	14.75
51	7155	24.60	205.40	6960.01	139.34	-1329.91	-478.80	13.29
52	7187	27.00	196.10	6988.83	126.34	-1334.78	-467.50	14.68
53	7219	30.20	190.40	7016.93	111.43	-1338.25	-454.00	13.13
54	7251	32.50	184.40	7044.26	94.94	-1340.36	-438.62	12.11
55	7282	35.20	179.40	7070.01	77.70	-1340.91	-422.10	12.51
56	7314	37.90	176.00	7095.71	58.66	-1340.12	-403.51	10.54
57	7346	40.80	174.60	7120.46	38.45	-1338.46	-383.55	9.48
58	7378	45.60	173.70	7143.78	16.66	-1336.22	-361.93	15.12
59	7410	50.20	173.30	7165.22	-6.92	-1333.53	-338.46	14.40
60	7441	54.20	171.70	7184.22	-31.20	-1330.32	-314.18	13.53
61	7472	57.70	170.20	7201.58	-56.56	-1326.27	-288.63	11.98
62	7504	61.70	169.50	7217.72	-83.75	-1321.40	-261.11	12.64
63	7535	64.80	169.90	7231.67	-110.98	-1316.45	-233.52	10.07
64	7567	67.50	170.50	7244.61	-139.82	-1311.48	-204.38	8.61
65	7599	70.20	170.60	7256.15	-169.26	-1306.58	-174.68	8.44
66	7631	72.30	169.90	7266.44	-199.12	-1301.44	-144.51	6.88
67	7663	73.60	169.70	7275.82	-229.23	-1296.03	-114.02	4.11
68	7694	76.30	167.70	7283.87	-258.58	-1290.16	-84.15	10.71
69	7726	80.00	166.60	7290.44	-289.11	-1283.19	-52.86	12.04
70	7758	82.70	165.30	7295.25	-319.79	-1275.51	-21.23	9.34
71	7789	85.30	164.70	7298.49	-349.57	-1267.53	9.60	8.61
72	7820	87.70	164.70	7300.39	-379.41	-1259.37	40.54	7.74
73	7851	88.60	165.00	7301.39	-409.32	-1251.27	71.52	3.06
74	7914	89.30	165.10	7302.54	-470.18	-1235.02	134.51	1.12
75	7978	89.80	164.90	7303.04	-531.99	-1218.46	198.51	0.84

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Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 6H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/D. Scruggs/M. Layfield

DIRECTIONAL DRILLERS: A. Palmer/K. Edwards/R. Calcote

Magnetic Declination: -9.00

Job #: 4331

Minimum Curvature Calculation

Vertical Section 165.0

97-3673

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
76	8041	90.70	165.50	7302.77	-592.90	-1202.36	261.50	1.72
77	8105	90.70	165.50	7301.99	-654.86	-1186.34	325.50	0.00
78	8169	90.10	164.80	7301.54	-716.72	-1169.94	389.49	1.44
79	8231	91.70	165.80	7300.57	-776.68	-1154.21	451.48	3.04
80	8294	91.60	165.50	7298.75	-837.69	-1138.60	514.45	0.50
81	8358	90.80	164.40	7297.41	-899.48	-1121.99	578.44	2.12
82	8420	90.10	162.80	7296.93	-958.95	-1104.48	640.41	2.82
83	8546	90.70	163.40	7296.05	-1079.51	-1067.86	766.34	0.67
84	8672	90.60	163.10	7294.62	-1200.15	-1031.54	892.27	0.25
85	8799	91.40	164.40	7292.40	-1322.06	-996.01	1019.22	1.20
86	8927	91.00	164.20	7289.72	-1445.25	-961.38	1147.18	0.35
87	9053	91.00	166.20	7287.52	-1567.05	-929.20	1273.16	1.59
88	9180	90.70	167.00	7285.64	-1690.58	-899.78	1400.09	0.67
89	9306	92.50	170.60	7282.12	-1814.10	-875.31	1525.74	3.19
90	9433	90.70	167.40	7278.57	-1938.70	-851.09	1652.36	2.89
91	9560	92.00	168.30	7275.58	-2062.81	-824.37	1779.16	1.24
92	9684	90.50	165.80	7272.87	-2183.62	-796.59	1903.04	2.35
93	9810	91.40	164.30	7270.78	-2305.33	-764.09	2029.02	1.39
94	9937	90.10	162.30	7269.12	-2426.96	-727.60	2155.94	1.88
95	10064	91.60	164.20	7267.24	-2548.55	-691.01	2282.86	1.91
96	10189	89.80	162.60	7265.71	-2668.32	-655.30	2407.79	1.93
97	10315	91.90	165.60	7263.84	-2789.46	-620.79	2533.74	2.91
98	10440	91.80	166.20	7259.80	-2910.63	-590.36	2658.66	0.49
99	10566	90.50	165.10	7257.28	-3032.67	-559.14	2784.62	1.35
100	10691	90.10	165.10	7256.62	-3153.47	-527.00	2909.62	0.32
101	10815	90.90	167.50	7255.54	-3273.93	-497.63	3033.57	2.04
102	10939	92.10	167.10	7252.29	-3394.85	-470.38	3157.43	1.02
103	11064	91.40	165.10	7248.48	-3516.12	-440.37	3282.34	1.69
104	11188	89.90	163.70	7247.07	-3635.54	-407.02	3406.32	1.65
105	11312	90.20	165.00	7246.96	-3754.94	-373.57	3530.31	1.08
106	11437	90.40	164.00	7246.31	-3875.39	-340.17	3655.30	0.82
107	11560	90.60	164.20	7245.23	-3993.68	-306.48	3778.28	0.23
108	11684	90.30	163.70	7244.26	-4112.85	-272.19	3902.25	0.47
109	11807	91.10	164.70	7242.76	-4231.19	-238.71	4025.23	1.04
110	11930	91.90	164.90	7239.54	-4349.84	-206.47	4148.19	0.67
111	12053	91.90	165.60	7235.46	-4468.72	-175.17	4271.12	0.57
112	12178	91.90	165.20	7231.31	-4589.62	-143.68	4396.05	0.32
113	12301	90.10	164.80	7229.17	-4708.41	-111.85	4519.02	1.50
114	12425	89.80	166.30	7229.28	-4828.48	-80.91	4643.01	1.23

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Survey Calculation Program

Chesapeake Operating Inc.
Craig Bessinger 6H
Upshur Co, WV

M.W.D. OPERATOR: T. Parrilla/D. Scruggs/M. Layfield

DIRECTIONAL DRILLERS: A. Palmer/K. Edwards/R. Calcote

Magnetic Declination: -9.00

Job #: 4331

Minimum Curvature Calculation

Vertical Section 165.0

97-3673

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100
115	12549	91.00	168.10	7228.41	-4949.39	-53.44	4766.91	1.74
116	12672	90.70	165.40	7226.58	-5069.09	-25.25	4889.83	2.21
117	12796	89.10	163.90	7226.80	-5188.66	7.57	5013.82	1.77
118	12920	89.50	163.80	7228.32	-5307.76	42.06	5137.78	0.33
119	13044	89.80	164.20	7229.07	-5426.95	76.24	5261.76	0.40
120	13167	89.60	164.50	7229.72	-5545.39	109.42	5384.75	0.29
121	13238	89.90	164.70	7230.03	-5613.84	128.27	5455.75	0.51
PTB	13282	89.90	164.70	7230.10	-5656.28	139.88	5499.75	0.00

WR-35

5/5/2008

API # 47 103 1632 W

COPY

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

Farm name: WV PUBLIC LAND CORP. Operator Well No.: REILLY N-19

LOCATION: Elevation: 1,445' Quadrangle: CENTERPOINT 7.5'

District: GREEN County: WETZEL
Latitude: 3,500 Feet south of 39 Deg 30 Min 0 Sec.
Longitude: 1,200 Feet west of 80 Deg 40 Min 0 Sec.

Company: EAST RESOURCES, INC.
P.O. BOX 5519
VIENNA, WV 26105-5519

Agent: PHILIP S. ONDRUSEK

Inspector: DAVID SCRANAGE
Permit Issued: 05/05/08
Well work Commenced: 06/12/08
Well work Completed: 06/12/08
Verbal plugging permission granted on:
Rotary X Cable Rig
Total Depth (feet) 3492'
Fresh water depths (ft)
Salt water depths (ft)
Is coal being mined in area (Y/N) N
Coal Depths (ft): NA

Casing Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
8 5/8"	706'	706'	to surface 50 sks
4 1/2"	3395.9'	3395.9'	300 sks

OPEN FLOW DATA * WATERFLOOD INJECTOR

3326'-3330'
3334'-3339'
3344'-3350'
3352'-3356'

Producing formation Gordon 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

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

NOTE: ON BACK OF THIS FORM, 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

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Office of Oil & Gas
AUG 08 2011
WV Department of Environmental Protection

For: EAST RESOURCES, INC
By:
Date: 9/20/10

Treatment : Reperforated (3326'-3330', 3334'-3339', 3344'-3350', 3352'-3356'), shot w/ Gas Gun, & Treated perfs. w/ 1000 gals. 15% HCl acid.

Well Log : See Original WR35

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WR-35

5/5/2008

API # 47 103 1633 W

COPY

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

Farm name: WV PUBLIC LANDS

Operator Well No.: M.J. REILLY O-19

LOCATION: Elevation: 1,438'

Quadrangle: CENTERPOINT 7.5'

District: GREEN

County: WETZEL

Latitude: 3,550 Feet south of 39 Deg 30 Min 0 Sec.

Longitude: 1,150 Feet west of 80 Deg 40 Min 0 Sec.

Company: EAST RESOURCES, INC.
P.O. BOX 5519
VIENNA, WV 26105-5519

Agent: PHILIP S. ONDRUSEK

Inspector: DAVID SCRANAGE

Permit Issued: 05/05/08

Well work Commenced: 06/12/08

Well work Completed: 06/12/08

Verbal plugging permission granted on:

Rotary X Cable Rig

Total Depth (feet) 3656

Fresh water depths (ft)

Salt water depths (ft)

Is coal being mined in area (Y/N) N

Coal Depths (ft): NA

Casing Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
8 5/8"	710.85'	710.85'	290 sks
4 1/2"	3566'	3566'	300 sks

OPEN FLOW DATA * WATERFLOOD INJECTOR

Producing formation Gordon Pay zone depth (ft) 3495'-3502' 3506'-3517'

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

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

NOTE: ON BACK OF THIS FORM, 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

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For: EAST RESOURCES, INC.

By:

Date: 9/28/10

Treatment: Reperforated (3495'-3502', 3506'-3517'), shot w/ Gas Gun, & Treated perfs. w/ 1000 gals. 15% HCl acid.

Well Log: See Original WR35

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12/30/2009

API # 47 103 01672 F

COPY

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

Farm name: WV PUBLIC LAND CORP. Operator Well No.: FLUHARTY E-16

LOCATION: Elevation: 963' Quadrangle: CENTERPOINT 7.5'

District: GREEN County: WETZEL
Latitude: 6,625 Feet south of 39 Deg 30 Min 0 Sec.
Longitude: 9,650 Feet west of 80 Deg 40 Min 0 Sec.

Company: EAST RESOURCES, INC.
P.O. BOX 5519
VIENNA, WV 26105-5519

Agent: PHILIP S. ONDRUSEK

Inspector: DAVID SCRANAGE
Permit Issued: 12/30/09
Well work Commenced: 03/25/10
Well work Completed: 03/26/10
Verbal plugging permission granted on:
Rotary X Cable Rig
Total Depth (feet) 2942'
Fresh water depths (ft) NA

Salt water depths (ft) NA

Is coal being mined in area (Y/N) N
Coal Depths (ft): NA

Casing Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
8 5/8"	219'	219'	75 sks
4 1/2"	2877.45'	2877.45'	170 sks

OPEN FLOW DATA * WATERFLOOD INJECTOR

Producing formation Gordon Pay zone depth (ft) 2814'-2829'
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

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

NOTE: ON BACK OF THIS FORM, 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

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For: EAST RESOURCES, INC.
By: Ben Eldon
Date: 5/12/10

103-1672

Treatment : Treated perfs. 2814'-2829' w/ 250 gals. 15% HCl acid, 329 bbls cross linked gel, and 19,000 # 20/40 sand.

Well Log : SEE ORIGINAL WELL RECORD

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WR-35

1/4/2010

API # 47 103 01692 F

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Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

Farm name: HEIMBROD, RICHARD

Operator Well No.: D. M. CUNNINGHAM F-18-B

LOCATION: Elevation: 915'

Quadrangle: CENTERPOINT 7.5'

District: GREEN

County: WETZEL

Latitude: 4,725 Feet south of 39 Deg 30 Min 0 Sec.

Longitude: 8,575 Feet west of 80 Deg 40 Min 0 Sec.

Company: EAST RESOURCES, INC.
P.O. BOX 5519
VIENNA, WV 26105-5519

Agent: PHILIP S. ONDRUSEK

Inspector: DAVID SCRANAGE

Permit Issued: 01/04/10

Well work Commenced: 03/25/10

Well work Completed: 03/26/10

Verbal plugging permission granted on:

Rotary X Cable Rig

Total Depth (feet) 2911

Fresh water depths (ft) 270

Salt water depths (ft) NA

Is coal being mined in area (Y/N) N

Coal Depths (ft): NA

Casing Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
8 5/8"	306'	306'	105 sks
4 1/2"	2846.7'	2846.7'	170 sks

OPEN FLOW DATA * WATERFLOOD INJECTOR

Producing formation Gordon Pay zone depth (ft) 2781'-2789'

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

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

NOTE: ON BACK OF THIS FORM, 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

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For: EAST RESOURCES, INC.

By:

Date: 5/12/10

Treatment : Treated perfs. 2781'-2789' w/ 250 gals. 15% HCl acid, 387 bbls cross linked gel, and 25,200 # 20/40 sand.

103-1692

Well Log : SEE ORIGINAL WELL RECORD

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WR-35

1/4/2010

API # 47 103 01695 F

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State of West Virginia
Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

Farm name: BOGGS, GERALD E., ETAL Operator Well No.: E. MILLER F-27

LOCATION: Elevation: 1,050' Quadrangle: PINE GROVE 7.5'

District: GREEN County: WETZEL
Latitude: 11,200 Feet south of 39 Deg 32 Min 30 Sec.
Longitude: 9,000 Feet west of 80 Deg 40 Min 0 Sec.

Company: EAST RESOURCES, INC.
P.O. BOX 5519
VIENNA, WV 26105-5519

Agent: PHILIP S. ONDRUSEK

Inspector: DAVID SCRANAGE
Permit Issued: 01/04/10
Well work Commenced: 02/02/10
Well work Completed: 03/26/10
Verbal plugging permission granted on:
Rotary X Cable ___ Rig
Total Depth (feet) 3052'
Fresh water depths (ft) NA
Salt water depths (ft) NA
Is coal being mined in area (Y/N) N
Coal Depths (ft): NA

Casing Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
8 5/8"	307'	307'	180 sks
4 1/2"	2868.95'	2868.95'	270 sks

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OPEN FLOW DATA * WATERFLOOD INJECTOR

Producing formation Gordon Pay zone depth (ft) 2878'-2806'
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

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

NOTE: ON BACK OF THIS FORM, 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For: EAST RESOURCES, INC.
By: Ben Kelder
Date: 5/12/10

Treatment : Treated open hole 2878'-2806' w/ 250 gals. 15% HCl acid, 309 bbls cross linked gel, and 22,500 # 20/40 sand.

103-1695

Well Log : SEE ORIGINAL WELL RECORD

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9/17/2008

API # 47 103 2390

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

COPY

Farm name: MILLER, ELIZABETH - HEIRS Operator Well No.: E. MILLER 6

LOCATION: Elevation: 802' Quadrangle: PINE GROVE 7.5'

District: GREEN County: WETZEL
Latitude: 10,600 Feet south of 39 Deg 32 Min 30 Sec.
Longitude: 8,375 Feet west of 80 Deg 40 Min 0 Sec.

Company: EAST RESOURCES, INC.
P.O. BOX 5519
VIENNA, WV 26105-5519

Agent: PHILIP S. ONDRUSEK

Inspector: DAVID SCRANAGE
Permit Issued: 09/17/08
Well work Commenced: 08/10/09
Well work Completed: 08/28/09
Verbal plugging
permission granted on:
Rotary X Cable Rig
Total Depth (feet) 2900'
Fresh water depths (ft)

Salt water depths (ft) 1070'

Is coal being mined in area (Y/N) N
Coal Depths (ft): NA

Casing Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
7"	224'	224'	60 sks
4 1/2"	2802.5'	2802.5'	150 sks

OPEN FLOW DATA * WATERFLOOD PRODUCER

Producing formation Gordon Pay zone depth (ft) 2627'-2641'
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

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

NOTE: ON BACK OF THIS FORM, 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For: EAST RESOURCES, INC.
By: [signature]
Date: 5/12/10

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Treatment: Treated perfs (2627'-2641') w/ 250 gals. 15% HCl acid, 256 bbls cross linked gel, and 15,800 # 30/50 sand.

103-2390

Well Log:

0	268	Sand and Shale
268	277	Sand
277	308	Shale
308	317	Sand
317	330	Shale
330	350	Sand
350	383	Shale
383	430	Sand
430	531	Shale
531	552	Sand
552	648	Shale
648	678	Sand
678	968	Shale
968	1010	Sand
1010	1066	Shale
1066	1100	Sand
1100	1113	Shale
1113	1133	Sand
1133	1150	Shale
1150	1202	Sand
1202	1232	Shale
1232	1246	Sand
1246	1310	Shale
1310	1320	Sand
1320	1349	Shale
1349	1350	Sand
1350	1400	Shale
1400	1422	Sand
1422	1467	Shale
1467	1493	Sand
1493	1562	Shale
1562	1592	Sand
1592	1698	Shale
1698	1706	Sand
1706	1728	Shale
1728	1742	Sand
1742	1754	Shale
1754	1765	Sand
1765	1820	Big Lime
1820	2026	Big Injun
2026	2595	Shale
2595	2614	Gordon Stray
2614	2624	Shale
2624	2644	Gordon
2644	2900	Shale
2900		TD

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WR -35

Date October 1, 2010
API # 47-10302440

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm Name: Martin R. Whiteman 8H **Operator Well No.:** 627375

LOCATION **Elevation:** 1391' **Quadrangle:** Wileyville
District: Center **County:** Wetzel
Latitude: 850 Ft **South of** 39° 42' 30"
Longitude: 3300 ft **West of** 80° 37' 30"

Company: Chesapeake Appalachia, L.L.C.
P.O. Box 18496
OKC, OK 73154-0496

Agent: James E. Grey
Inspector: David Scranage
Date Permit Issued: 12/10/2008
Date Well work commenced: 07/06/2009
Date Well Work completed: 09/19/2009
Verbal Plugging Permission
Granted on / /
Rotary ☒ Cable☐ Rig
Total Depth (ft): 12,005 TVD (ft): 7455
Fresh Water Depth (ft):
Salt Water Depth (ft.):NA
Is coal being mined in area (Yes ☐ No ☒)
Coal Depths (ft): 1233', 1810', 2200'
Was this well logged and plugged back?
Yes____ No__X_ if yes –
depth cement plug set _____'

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill-Up Cu.Ft.
20"		40'	
13 3/8"	1388'	1388'	CTS
9 5/8"	2770'	2770'	CTS
5 ½"	10410'	10410'	3932' Calc.
2 3/8"	7950'	7950'	

RECEIVED
Office of Oil & Gas
OCT 0 5 2010
WV Department of
Environmental Protection

Open Flow Data

1st Producing Formation Pay Zone Depth 7,723 ft to 11,839 ft
Gas: Initial Open Flow 5,015 Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests In Line hours
Static Rock Pressure 4,846 psig after hours

2nd Producing Formation Pay Zone Depth ft to ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests hours
Static Rock Pressure psig after hours

3rd Producing Formation Pay Zone Depth ft to ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests hours
Static Rock Pressure psig after hours

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Chesapeake Energy
Well No.:627375

Perforated Intervals

1st Stage	Marcellus	10	holes from	11,534 ft	to	11,836 ft
2nd Stage	Marcellus	10	holes from	11,159 ft	to	11,461 ft
3rd Stage	Marcellus	10	holes from	10,784 ft	to	11,086 ft
4th Stage	Marcellus	10	holes from	10,048 ft	to	10,350 ft
5th Stage	Marcellus	10	holes from	9,623 ft	to	9,975 ft
6th Stage	Marcellus	10	holes from	9,223 ft	to	9,570 ft
7th Stage	Marcellus	10	holes from	8,848 ft	to	9,150 ft
8th Stage	Marcellus	10	holes from	8,473 ft	to	8,775 ft
9th Stage	Marcellus	10	holes from	8,098 ft	to	8,400 ft
10th Stage	Marcellus	10	holes from	7,723 ft	to	8,025 ft

103-2440

Fracturing / Stimulation

1st Stage		Type of Treatment Slickwater		
	Total Acid 5,000 Gal of 15% HCl		Breakdown Pressure 5,290 psi	
	Average Rate 99 scf/min ☐ or bpm ☒		ATP 8,600 psi	MTP 9,056 psi
	Total Fluid 16,352 bbl	Total Nitrogen 0 scf	Total Sand 300,293 lb of 100 mesh	
			Total Sand 304,284 lb of 40/70	
	ISIP 4,624 psi	5 min 3,757 psi		
2nd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,233 psi	
	Average Rate 100 scf/min ☐ or bpm ☒		ATP 7,571 psi	MTP 9,066 psi
	Total Fluid 12,102 bbl	Total Nitrogen 0 scf	Total Sand 299,575 lb of 100 mesh	
			Total Sand 304,997 lb of 40/70	
	ISIP 6,033 psi	5 min 5,271 psi		
3rd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,563 psi	
	Average Rate 93 scf/min ☐ or bpm ☒		ATP 8,447 psi	MTP 9,664 psi
	Total Fluid 13,056 bbl	Total Nitrogen 0 scf	Total Sand 303,894 lb of 100 mesh	
			Total Sand 303,661 lb of 40/70	
	ISIP 5,706 psi	5 min 4,485 psi		
4th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,531 psi	
	Average Rate 94 scf/min ☐ or bpm ☒		ATP 8,241 psi	MTP 9,552 psi
	Total Fluid 14,039 bbl	Total Nitrogen 0 scf	Total Sand 299,959 lb of 100 mesh	
			Total Sand 299,369 lb of 40/70	
	ISIP 4,629 psi	5 min 4,003 psi		
5th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,767 psi	
	Average Rate 100 scf/min ☐ or bpm ☒		ATP 7,625 psi	MTP 9,446 psi
	Total Fluid 11,946 bbl	Total Nitrogen 0 scf	Total Sand 303,765 lb of 100 mesh	
			Total Sand 299,962 lb of 40/70	
	ISIP 5,250 psi	5 min 4,534 psi		
6th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,799 psi	
	Average Rate 100 scf/min ☐ or bpm ☒		ATP 7,678 psi	MTP 8,630 psi
	Total Fluid 11,718 bbl	Total Nitrogen 0 scf	Total Sand 304,530 lb of 100 mesh	
			Total Sand 301,570 lb of 40/70	
	ISIP 5,941 psi	5 min 4,628 psi		
7th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,767 psi	
	Average Rate 100 scf/min ☐ or bpm ☒		ATP 7,747 psi	MTP 8,177 psi
	Total Fluid 11,915 bbl	Total Nitrogen 0 scf	Total Sand 298,344 lb of 100 mesh	
			Total Sand 304,855 lb of 40/70	
	ISIP 4,826 psi	5 min 4,206 psi		

8th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,308 psi	
	Average Rate 100 scf/min ☐ or bpm ☒		ATP 7,645 psi	MTP 8,620 psi
	Total Fluid 11,219 bbl	Total Nitrogen 0 scf	Total Sand 301,572 lb of 100 mesh	
			Total Sand 302,018 lb of 40/70	
	ISIP 5,172 psi	5 min 4,294 psi		
9th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,530 psi	
	Average Rate 100 scf/min ☐ or bpm ☒		ATP 7,961 psi	MTP 9,399 psi
	Total Fluid 11,818 bbl	Total Nitrogen 0 scf	Total Sand 310,065 lb of 100 mesh	
			Total Sand 304,276 lb of 40/70	
	ISIP 5,713 psi	5 min 4,494 psi		
10th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,068 psi	
	Average Rate 76 scf/min ☐ or bpm ☒		ATP 8,644 psi	MTP 9,642 psi
	Total Fluid 16,622 bbl	Total Nitrogen 0 scf	Total Sand 312,121 lb of 100 mesh	
			Total Sand 240,788 lb of 40/70	
	ISIP 5,114 psi	5 min 3,868 psi		

103-2440

Well Log

Formation Name	Top	Bottom	Comments
PITTSBURGH COAL	1233		
SALT SANDS	2060		
BIG LIME	2362		
BIG INJUN	2415	2652	
GORDON	3254		
GENESEO	7350		
TULLY	7387		
MARCELLUS	7663		

Signed: [signature]

CHESAPEAKE APPALACHIA, LLC

By: Tal Oberl, Mgr Reg Eastern Div.

Date: 10/4/2010

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

REPORT SETUP INFORMATION			
Projection System	**NAD27 / Lambert West Virginia State Plane, Northern Zone (4701), US feet**	Software System	**WellArchitect® 2.0**
North Reference	**Grid**	User	**Lemachrl**
Scale	**0.999942**	Report Generated	**8/7/2009 at 9:21:27 AM**
Convergence at slot	**0.72° West**	Database/Source file	**WA_EasternUS/Well_#5H_ST1__AWB_.xml**

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	**East[ft]**	**Easting[USft]**	**Northing[USft]**	**Latitude**	**Longitude**
Slot Location	**0.00**	**0.00**	1682706.00	438724.00	39°41'56.692"N	80°37'39.596"W
Facility Reference Pt			**1682706.00**	**438724.00**	39°41'56.692"N	80°37'39.596"W
Field Reference Pt			**0.00**	**0.00**	38°17'12.460"N	86°28'23.077"W

WELLPATH DATUM			
Calculation method	**Minimum curvature**	NOMAC 241 (RKB) to Ground Level	**15.00ft**
Horizontal Reference Pt	**Slot**	NOMAC 241 (RKB) to Mean Sea Level	**1406.00ft**
Vertical Reference Pt	**NOMAC 241 (RKB)**	Ground Level to Mud Line (Facility)	**0.00ft**
MD Reference Pt	**NOMAC 241 (RKB)**	Section Origin	**N 0.00, E 0.00 ft**
Field Vertical Reference	**Mean Sea Level**	Section Azimuth	**313.02°**

103-2440

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

WELLPATH DATA (204 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
0.00	0.000	356.370	0.00	0.00	0.00	0.00	1682706.00	438724.00	39°41'56.692"N	80°37'39.596"W	0.00	0.000	0.00
100.00	0.650	356.370	100.00	0.41	0.57	-0.04	1682705.96	438724.57	39°41'56.698"N	80°37'39.597"W	0.57	356.370	0.65
200.00	0.810	350.200	199.99	1.39	1.83	-0.19	1682705.81	438725.83	39°41'56.710"N	80°37'39.599"W	1.84	354.002	0.18
300.00	0.940	27.510	299.98	2.17	3.25	0.07	1682706.07	438727.25	39°41'56.724"N	80°37'39.596"W	3.25	1.170	0.57
400.00	2.460	8.610	399.93	3.60	6.10	0.77	1682706.77	438730.10	39°41'56.752"N	80°37'39.587"W	6.15	7.161	1.60
500.00	3.810	9.130	499.78	6.67	11.50	1.62	1682707.62	438735.50	39°41'56.806"N	80°37'39.577"W	11.62	7.992	1.35
600.00	5.180	5.570	599.47	11.27	19.28	2.58	1682708.58	438743.28	39°41'56.883"N	80°37'39.566"W	19.45	7.624	1.40
700.00	4.140	4.260	699.14	16.27	27.37	3.29	1682709.29	438751.37	39°41'56.963"N	80°37'39.558"W	27.57	6.848	1.05
800.00	3.190	359.230	798.93	20.46	33.75	3.52	1682709.52	438757.75	39°41'57.026"N	80°37'39.556"W	33.94	5.950	1.00
900.00	1.520	348.820	898.85	23.46	37.84	3.22	1682709.22	438761.83	39°41'57.066"N	80°37'39.561"W	37.97	4.869	1.72
1000.00	1.080	344.770	998.82	25.33	40.05	2.72	1682708.72	438764.04	39°41'57.088"N	80°37'39.568"W	40.14	3.883	0.45
1100.00	0.710	338.530	1098.81	26.69	41.53	2.24	1682708.24	438765.53	39°41'57.103"N	80°37'39.574"W	41.59	3.093	0.38
1200.00	0.850	14.140	1198.80	27.61	42.83	2.20	1682708.20	438766.83	39°41'57.116"N	80°37'39.575"W	42.89	2.938	0.50
1300.00	0.700	3.030	1298.79	28.36	44.16	2.41	1682708.41	438768.16	39°41'57.129"N	80°37'39.572"W	44.22	3.126	0.21
1400.00	0.370	353.370	1398.79	29.00	45.09	2.41	1682708.41	438769.09	39°41'57.138"N	80°37'39.572"W	45.15	3.056	0.34
1500.00	0.440	292.290	1498.78	29.61	45.56	2.01	1682708.01	438769.55	39°41'57.142"N	80°37'39.577"W	45.60	2.532	0.42
1600.00	0.500	222.650	1598.78	29.96	45.38	1.36	1682707.36	438769.38	39°41'57.141"N	80°37'39.586"W	45.40	1.721	0.54
1700.00	0.490	238.110	1698.78	30.07	44.83	0.70	1682706.70	438768.83	39°41'57.135"N	80°37'39.594"W	44.84	0.901	0.13
1800.00	0.150	242.400	1798.78	30.23	44.55	0.23	1682706.23	438768.54	39°41'57.132"N	80°37'39.600"W	44.55	0.290	0.34
1900.00	0.360	259.900	1898.77	30.46	44.43	-0.20	1682705.80	438768.43	39°41'57.131"N	80°37'39.606"W	44.43	359.743	0.22
2000.00	0.300	0.960	1998.77	30.82	44.64	-0.50	1682705.50	438768.64	39°41'57.133"N	80°37'39.610"W	44.64	359.352	0.51
2100.00	0.420	352.120	2098.77	31.28	45.26	-0.55	1682705.45	438769.26	39°41'57.139"N	80°37'39.610"W	45.27	359.303	0.13
2200.00	0.440	334.900	2198.77	31.92	45.97	-0.76	1682705.24	438769.97	39°41'57.146"N	80°37'39.613"W	45.98	359.049	0.13
2300.00	0.590	224.210	2298.77	32.29	45.95	-1.29	1682704.71	438769.95	39°41'57.146"N	80°37'39.620"W	45.97	358.398	0.85
2400.00	0.380	219.380	2398.76	32.28	45.33	-1.85	1682704.15	438769.32	39°41'57.140"N	80°37'39.627"W	45.36	357.657	0.21
2500.00	0.660	275.010	2498.76	32.71	45.12	-2.64	1682703.36	438769.12	39°41'57.138"N	80°37'39.637"W	45.20	356.653	0.54
2600.00	0.960	278.690	2598.75	33.86	45.30	-4.04	1682701.96	438769.29	39°41'57.139"N	80°37'39.655"W	45.48	354.902	0.30
2700.00	0.970	266.200	2698.73	35.13	45.37	-5.71	1682700.29	438769.37	39°41'57.140"N	80°37'39.676"W	45.73	352.822	0.21
2733.00	0.890	268.280	2731.73	35.50	45.34	-6.25	1682699.75	438769.34	39°41'57.139"N	80°37'39.683"W	45.77	352.154	0.26
2858.00	0.700	291.800	2856.72	36.90	45.60	-7.93	1682698.07	438769.59	39°41'57.142"N	80°37'39.705"W	46.28	350.137	0.30

103-2440

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

WELLPATH DATA (204 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
2900.00	1.500	141.200	2898.71	36.60	45.26	-7.82	1682698.18	438769.26	39°41'57.138"N	80°37'39.703"W	45.93	350.196	5.09
2941.00	4.300	135.600	2939.66	34.53	43.75	-6.41	1682699.59	438767.74	39°41'57.124"N	80°37'39.685"W	44.21	351.665	6.86
2983.00	6.400	137.700	2981.47	30.62	40.89	-3.73	1682702.27	438764.89	39°41'57.096"N	80°37'39.650"W	41.06	354.785	5.02
3025.00	8.500	138.300	3023.12	25.20	36.84	-0.09	1682705.91	438760.84	39°41'57.056"N	80°37'39.603"W	36.84	359.858	5.00
3069.00	9.100	135.200	3066.60	18.48	32.03	4.61	1682710.61	438756.03	39°41'57.009"N	80°37'39.542"W	32.36	8.187	2.24
3114.00	9.000	124.900	3111.04	11.44	27.58	10.09	1682716.09	438751.58	39°41'56.966"N	80°37'39.471"W	29.37	20.094	2.91
3157.00	8.700	116.600	3153.53	4.99	24.20	15.76	1682721.76	438748.20	39°41'56.933"N	80°37'39.398"W	28.88	33.068	3.05
3198.00	8.500	107.100	3194.07	-0.71	21.92	21.43	1682727.42	438745.92	39°41'56.911"N	80°37'39.325"W	30.65	44.346	3.49
3239.00	8.400	96.900	3234.63	-5.85	20.67	27.29	1682733.29	438744.67	39°41'56.900"N	80°37'39.250"W	34.24	52.865	3.66
3281.00	8.600	90.000	3276.17	-10.63	20.30	33.48	1682739.48	438744.30	39°41'56.897"N	80°37'39.171"W	39.15	58.770	2.47
3322.00	9.000	88.000	3316.69	-15.14	20.41	39.75	1682745.75	438744.41	39°41'56.899"N	80°37'39.091"W	44.69	62.819	1.23
3364.00	9.700	84.700	3358.13	-19.81	20.85	46.56	1682752.55	438744.85	39°41'56.904"N	80°37'39.004"W	51.01	65.871	2.10
3406.00	10.200	81.700	3399.50	-24.49	21.72	53.76	1682759.76	438745.72	39°41'56.913"N	80°37'38.912"W	57.98	68.003	1.71
3447.00	10.600	80.000	3439.82	-29.03	22.90	61.07	1682767.06	438746.90	39°41'56.926"N	80°37'38.818"W	65.22	69.447	1.23
3490.00	11.000	78.800	3482.06	-33.81	24.38	68.99	1682774.98	438748.38	39°41'56.941"N	80°37'38.717"W	73.17	70.536	1.07
3532.00	11.500	73.600	3523.25	-38.28	26.34	76.93	1682782.93	438750.34	39°41'56.962"N	80°37'38.616"W	81.32	71.100	2.69
3574.00	12.300	68.300	3564.35	-42.32	29.18	85.11	1682791.10	438753.18	39°41'56.991"N	80°37'38.512"W	89.97	71.077	3.22
3615.00	13.000	63.000	3604.36	-45.76	32.89	93.27	1682799.27	438756.88	39°41'57.029"N	80°37'38.408"W	98.90	70.579	3.30
3657.00	13.700	58.500	3645.22	-48.70	37.63	101.72	1682807.72	438761.63	39°41'57.076"N	80°37'38.301"W	108.46	69.700	2.98
3698.00	14.300	54.700	3685.01	-51.02	43.09	110.00	1682815.99	438767.09	39°41'57.131"N	80°37'38.196"W	118.14	68.607	2.68
3740.00	14.100	52.700	3725.72	-52.93	49.19	118.30	1682824.29	438773.19	39°41'57.193"N	80°37'38.091"W	128.12	67.422	1.26
3782.00	14.300	51.600	3766.44	-54.57	55.51	126.43	1682832.43	438779.51	39°41'57.256"N	80°37'37.987"W	138.08	66.296	0.80
3823.00	14.700	51.000	3806.14	-56.05	61.93	134.44	1682840.44	438785.93	39°41'57.321"N	80°37'37.886"W	148.02	65.267	1.04
3865.00	15.300	51.400	3846.70	-57.59	68.74	142.92	1682848.91	438792.74	39°41'57.389"N	80°37'37.779"W	158.59	64.313	1.45
3909.00	15.900	51.100	3889.08	-59.29	76.15	152.14	1682858.13	438800.14	39°41'57.463"N	80°37'37.662"W	170.14	63.412	1.38
3954.00	16.600	50.500	3932.28	-60.99	84.11	161.90	1682867.89	438808.10	39°41'57.543"N	80°37'37.538"W	182.44	62.548	1.60
3995.00	17.300	51.300	3971.50	-62.63	91.64	171.18	1682877.17	438815.64	39°41'57.619"N	80°37'37.421"W	194.17	61.836	1.80
4037.00	18.600	52.700	4011.46	-64.66	99.61	181.38	1682887.37	438823.60	39°41'57.699"N	80°37'37.292"W	206.93	61.226	3.26
4082.00	20.100	51.800	4053.92	-67.05	108.74	193.17	1682899.15	438832.73	39°41'57.791"N	80°37'37.142"W	221.67	60.623	3.40
4127.00	21.600	50.900	4095.97	-69.36	118.75	205.67	1682911.66	438842.74	39°41'57.891"N	80°37'36.984"W	237.49	60.000	3.41

103-2446

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

WELLPATH DATA (204 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
4171.00	21.900	50.000	4136.84	-71.47	129.13	218.24	1682924.23	438853.12	39°41'57.995"N	80°37'36.825"W	253.58	59.388	1.02
4213.00	21.300	49.900	4175.89	-73.34	139.08	230.08	1682936.06	438863.07	39°41'58.095"N	80°37'36.675"W	268.85	58.848	1.43
4255.00	20.700	50.000	4215.10	-75.15	148.76	241.60	1682947.58	438872.75	39°41'58.192"N	80°37'36.529"W	283.73	58.378	1.43
4296.00	20.300	50.300	4253.50	-76.94	157.96	252.62	1682958.61	438881.95	39°41'58.284"N	80°37'36.390"W	297.94	57.983	1.01
4341.00	20.200	51.600	4295.72	-79.08	167.77	264.72	1682970.70	438891.76	39°41'58.383"N	80°37'36.237"W	313.41	57.634	1.02
4386.00	20.700	53.000	4337.88	-81.62	177.39	277.16	1682983.14	438901.38	39°41'58.479"N	80°37'36.079"W	329.06	57.380	1.55
4430.00	21.300	52.400	4378.96	-84.27	186.94	289.70	1682995.68	438910.93	39°41'58.575"N	80°37'35.920"W	344.78	57.166	1.45
4475.00	20.800	52.000	4420.96	-86.85	196.85	302.47	1683008.45	438920.84	39°41'58.675"N	80°37'35.758"W	360.89	56.944	1.16
4520.00	19.900	50.600	4463.15	-89.11	206.63	314.69	1683020.67	438930.62	39°41'58.773"N	80°37'35.604"W	376.46	56.710	2.27
4564.00	19.500	49.800	4504.57	-90.97	216.12	326.08	1683032.06	438940.11	39°41'58.868"N	80°37'35.459"W	391.20	56.464	1.10
4609.00	19.300	49.600	4547.02	-92.71	225.79	337.48	1683043.46	438949.78	39°41'58.965"N	80°37'35.315"W	406.05	56.216	0.47
4654.00	19.200	50.200	4589.50	-94.48	235.35	348.83	1683054.81	438959.33	39°41'59.061"N	80°37'35.171"W	420.80	55.993	0.49
4698.00	19.500	51.200	4631.02	-96.43	244.58	360.11	1683066.09	438968.56	39°41'59.154"N	80°37'35.029"W	435.32	55.817	1.02
4742.00	20.400	51.200	4672.38	-98.57	253.99	371.81	1683077.79	438977.97	39°41'59.248"N	80°37'34.880"W	450.28	55.663	2.05
4787.00	21.200	53.200	4714.44	-101.12	263.78	384.44	1683090.42	438987.76	39°41'59.346"N	80°37'34.720"W	466.23	55.545	2.38
4831.00	20.900	53.800	4755.51	-104.00	273.18	397.14	1683103.12	438997.16	39°41'59.441"N	80°37'34.559"W	482.02	55.478	0.84
4877.00	20.400	52.900	4798.55	-106.91	282.86	410.16	1683116.13	439006.84	39°41'59.538"N	80°37'34.394"W	498.24	55.409	1.29
4922.00	19.700	52.000	4840.82	-109.44	292.26	422.39	1683128.37	439016.24	39°41'59.633"N	80°37'34.239"W	513.64	55.320	1.70
4967.00	19.300	54.000	4883.24	-112.04	301.30	434.38	1683140.36	439025.28	39°41'59.723"N	80°37'34.087"W	528.65	55.254	1.73
5011.00	18.200	55.300	4924.91	-114.89	309.49	445.92	1683151.89	439033.47	39°41'59.806"N	80°37'33.941"W	542.79	55.238	2.67
5058.00	17.800	54.500	4969.61	-117.88	317.84	457.80	1683163.77	439041.82	39°41'59.890"N	80°37'33.791"W	557.31	55.229	1.00
5102.00	18.100	54.100	5011.47	-120.53	325.75	468.81	1683174.78	439049.73	39°41'59.969"N	80°37'33.651"W	570.87	55.207	0.74
5147.00	18.300	52.700	5054.21	-123.06	334.13	480.09	1683186.06	439058.11	39°42'00.053"N	80°37'33.508"W	584.92	55.163	1.07
5192.00	17.800	52.200	5097.00	-125.35	342.63	491.15	1683197.12	439066.61	39°42'00.139"N	80°37'33.368"W	598.85	55.100	1.16
5235.00	17.900	52.100	5137.93	-127.44	350.71	501.56	1683207.53	439074.69	39°42'00.220"N	80°37'33.236"W	612.01	55.037	0.24
5280.00	17.900	51.600	5180.75	-129.56	359.26	512.43	1683218.40	439083.24	39°42'00.306"N	80°37'33.098"W	625.82	54.966	0.34
5324.00	17.300	52.600	5222.69	-131.66	367.43	522.93	1683228.90	439091.41	39°42'00.388"N	80°37'32.965"W	639.11	54.907	1.53
5369.00	15.500	53.200	5265.86	-133.84	375.10	533.06	1683239.03	439099.07	39°42'00.465"N	80°37'32.837"W	651.81	54.867	4.02
5414.00	15.900	52.700	5309.18	-135.94	382.43	542.78	1683248.75	439106.41	39°42'00.539"N	80°37'32.714"W	663.98	54.832	0.94
5459.00	17.100	53.000	5352.33	-138.12	390.15	552.97	1683258.93	439114.13	39°42'00.616"N	80°37'32.585"W	676.75	54.795	2.67

103-24190

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

WELLPATH DATA (204 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
5504.00	18.600	56.300	5395.16	-140.92	398.12	564.22	1683270.19	439122.09	39°42'00.696"N	80°37'32.442"W	690.54	54.793	4.02
5547.00	19.900	57.400	5435.75	-144.31	405.86	576.09	1683282.06	439129.84	39°42'00.774"N	80°37'32.291"W	704.70	54.835	3.14
5591.00	19.800	59.200	5477.14	-148.25	413.71	588.80	1683294.77	439137.69	39°42'00.853"N	80°37'32.130"W	719.62	54.907	1.41
5636.00	18.700	57.500	5519.62	-152.18	421.49	601.43	1683307.40	439145.47	39°42'00.932"N	80°37'31.970"W	734.42	54.977	2.74
5681.00	18.600	56.200	5562.26	-155.62	429.36	613.48	1683319.44	439153.34	39°42'01.011"N	80°37'31.817"W	748.81	55.013	0.95
5726.00	18.500	56.300	5604.92	-158.89	437.32	625.38	1683331.35	439161.29	39°42'01.091"N	80°37'31.666"W	763.12	55.036	0.23
5769.00	18.400	55.800	5645.71	-161.96	444.91	636.67	1683342.63	439168.89	39°42'01.168"N	80°37'31.523"W	776.72	55.054	0.44
5814.00	19.500	57.100	5688.27	-165.36	452.99	648.85	1683354.81	439176.96	39°42'01.249"N	80°37'31.368"W	791.33	55.080	2.62
5859.00	19.700	57.400	5730.67	-169.07	461.15	661.55	1683367.51	439185.12	39°42'01.331"N	80°37'31.207"W	806.42	55.120	0.50
5900.00	19.100	59.100	5769.34	-172.65	468.32	673.13	1683379.09	439192.29	39°42'01.403"N	80°37'31.060"W	820.01	55.172	2.01
5942.00	18.600	57.000	5809.09	-176.17	475.50	684.64	1683390.60	439199.47	39°42'01.476"N	80°37'30.914"W	833.57	55.219	2.01
5984.00	18.600	56.800	5848.89	-179.38	482.81	695.86	1683401.82	439206.78	39°42'01.550"N	80°37'30.772"W	846.96	55.246	0.15
6025.00	18.700	55.900	5887.74	-182.41	490.08	706.78	1683412.73	439214.05	39°42'01.623"N	80°37'30.633"W	860.06	55.263	0.74
6070.00	20.600	56.900	5930.12	-185.91	498.45	719.38	1683425.34	439222.42	39°42'01.707"N	80°37'30.473"W	875.19	55.283	4.29
6115.00	22.500	57.300	5971.97	-189.94	507.42	733.26	1683439.22	439231.39	39°42'01.797"N	80°37'30.297"W	891.71	55.316	4.23
6159.00	22.700	56.200	6012.59	-193.95	516.69	747.40	1683453.36	439240.66	39°42'01.891"N	80°37'30.118"W	908.62	55.343	1.06
6201.00	23.200	54.900	6051.27	-197.50	525.96	760.90	1683466.86	439249.93	39°42'01.984"N	80°37'29.946"W	924.99	55.347	1.70
6243.00	21.700	54.000	6090.08	-200.69	535.28	773.96	1683479.91	439259.25	39°42'02.078"N	80°37'29.781"W	941.03	55.332	3.66
6287.00	20.300	53.100	6131.16	-203.57	544.65	786.64	1683492.59	439268.61	39°42'02.172"N	80°37'29.620"W	956.79	55.302	3.27
6332.00	20.500	54.000	6173.34	-206.44	553.96	799.26	1683505.21	439277.93	39°42'02.265"N	80°37'29.460"W	972.47	55.274	0.83
6377.00	20.200	54.500	6215.53	-209.49	563.11	811.96	1683517.91	439287.07	39°42'02.357"N	80°37'29.299"W	988.11	55.258	0.77
6421.00	18.700	54.600	6257.02	-212.42	571.60	823.89	1683529.84	439295.57	39°42'02.443"N	80°37'29.148"W	1002.76	55.248	3.41
6466.00	18.900	53.800	6299.62	-215.23	580.09	835.65	1683541.60	439304.05	39°42'02.528"N	80°37'28.999"W	1017.26	55.233	0.73
6508.00	17.700	52.300	6339.49	-217.53	588.01	846.20	1683552.14	439311.97	39°42'02.608"N	80°37'28.865"W	1030.44	55.205	3.07
6552.00	15.400	53.400	6381.67	-219.66	595.58	856.18	1683562.13	439319.55	39°42'02.684"N	80°37'28.739"W	1042.96	55.176	5.28
6597.00	13.500	55.200	6425.24	-221.85	602.15	865.29	1683571.24	439326.11	39°42'02.750"N	80°37'28.623"W	1054.18	55.166	4.34
6641.00	12.800	54.100	6468.09	-223.87	607.93	873.46	1683579.40	439331.90	39°42'02.808"N	80°37'28.520"W	1064.19	55.162	1.69
6686.00	13.900	56.700	6511.87	-226.10	613.83	882.01	1683587.96	439337.79	39°42'02.867"N	80°37'28.411"W	1074.58	55.164	2.78
6728.00	14.900	58.900	6552.55	-228.78	619.38	890.85	1683596.80	439343.35	39°42'02.923"N	80°37'28.299"W	1085.01	55.190	2.71
6769.00	16.800	61.700	6591.99	-232.12	624.92	900.58	1683606.53	439348.88	39°42'02.979"N	80°37'28.175"W	1096.16	55.243	4.99

103-2440

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

WELLPATH DATA (204 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
6814.00	19.600	64.200	6634.74	-236.93	631.29	913.11	1683619.05	439355.25	39°42'03.044"N	80°37'28.016"W	1110.08	55.342	6.46
6859.00	18.600	63.200	6677.26	-242.13	637.81	926.31	1683632.25	439361.77	39°42'03.110"N	80°37'27.848"W	1124.65	55.451	2.34
6903.00	18.600	64.600	6718.96	-247.13	643.98	938.91	1683644.85	439367.94	39°42'03.172"N	80°37'27.688"W	1138.54	55.555	1.01
6944.00	19.700	66.800	6757.69	-252.32	649.51	951.17	1683657.11	439373.47	39°42'03.228"N	80°37'27.532"W	1151.77	55.673	3.21
6986.00	21.300	69.300	6797.03	-258.56	654.99	964.81	1683670.76	439378.95	39°42'03.284"N	80°37'27.359"W	1166.14	55.828	4.34
7028.00	21.500	66.000	6836.14	-264.94	660.82	978.98	1683684.92	439384.78	39°42'03.344"N	80°37'27.178"W	1181.14	55.980	2.91
7070.00	23.000	53.600	6875.03	-269.46	668.83	992.62	1683698.56	439392.79	39°42'03.424"N	80°37'27.005"W	1196.93	56.028	11.71
7111.00	24.900	40.700	6912.52	-270.58	680.13	1004.71	1683710.65	439404.09	39°42'03.538"N	80°37'26.852"W	1213.27	55.904	13.56
7153.00	26.100	29.300	6950.46	-268.03	694.90	1015.00	1683720.94	439418.86	39°42'03.685"N	80°37'26.723"W	1230.09	55.603	12.01
7195.00	27.800	17.100	6987.92	-261.55	712.33	1022.41	1683728.35	439436.29	39°42'03.858"N	80°37'26.631"W	1246.09	55.134	13.75
7241.00	31.500	4.700	7027.93	-249.40	734.59	1026.56	1683732.49	439458.55	39°42'04.079"N	80°37'26.582"W	1262.32	54.413	15.54
7282.00	30.700	356.200	7063.05	-235.12	755.72	1026.74	1683732.68	439479.68	39°42'04.287"N	80°37'26.583"W	1274.88	53.645	10.88
7324.00	30.300	349.500	7099.25	-218.77	776.84	1024.10	1683730.04	439500.80	39°42'04.496"N	80°37'26.620"W	1285.40	52.817	8.15
7368.00	29.900	345.200	7137.32	-200.57	798.36	1019.27	1683725.21	439522.31	39°42'04.708"N	80°37'26.685"W	1294.72	51.930	4.98
7413.00	31.800	339.000	7175.96	-180.41	820.28	1012.16	1683718.09	439544.23	39°42'04.924"N	80°37'26.779"W	1302.81	50.978	8.23
7458.00	35.100	335.700	7213.51	-157.80	843.15	1002.58	1683708.52	439567.10	39°42'05.148"N	80°37'26.906"W	1309.99	49.937	8.37
7503.00	38.700	336.700	7249.49	-132.98	867.87	991.69	1683697.63	439591.82	39°42'05.391"N	80°37'27.049"W	1317.82	48.809	8.11
7547.00	44.200	334.300	7282.46	-106.06	894.35	979.58	1683685.53	439618.29	39°42'05.652"N	80°37'27.208"W	1326.44	47.604	13.01
7577.00	49.800	331.500	7302.91	-85.44	913.86	969.57	1683675.52	439637.80	39°42'05.843"N	80°37'27.339"W	1332.37	46.694	19.87
7619.00	55.400	329.200	7328.41	-53.59	942.83	953.05	1683659.00	439666.77	39°42'06.127"N	80°37'27.555"W	1340.61	45.309	14.02
7663.00	62.300	327.200	7351.16	-17.27	974.80	933.21	1683639.15	439698.74	39°42'06.441"N	80°37'27.814"W	1349.48	43.751	16.16
7705.00	69.800	327.000	7368.20	19.93	1007.00	912.37	1683618.31	439730.94	39°42'06.756"N	80°37'28.086"W	1358.85	42.177	17.86
7747.00	77.100	327.400	7380.16	58.94	1040.82	890.58	1683596.52	439764.76	39°42'07.088"N	80°37'28.370"W	1369.83	40.552	17.40
7788.00	82.700	328.800	7387.34	97.90	1075.07	869.26	1683575.21	439799.01	39°42'07.424"N	80°37'28.648"W	1382.53	38.958	14.07
7829.00	87.400	327.300	7390.88	137.33	1109.72	847.65	1683553.60	439833.66	39°42'07.764"N	80°37'28.930"W	1396.42	37.374	12.03
7871.00	86.700	322.900	7393.04	178.34	1144.11	823.66	1683529.61	439868.05	39°42'08.100"N	80°37'29.243"W	1409.76	35.750	10.59
7913.00	87.600	319.600	7395.13	219.85	1176.82	797.40	1683503.36	439900.75	39°42'08.420"N	80°37'29.584"W	1421.54	34.121	8.13
7954.00	93.500	319.700	7394.74	260.55	1208.06	770.87	1683476.83	439931.98	39°42'08.726"N	80°37'29.928"W	1433.05	32.542	14.39
7996.00	96.200	319.700	7391.19	302.12	1239.97	743.81	1683449.76	439963.89	39°42'09.038"N	80°37'30.280"W	1445.95	30.958	6.43
8038.00	96.500	318.800	7386.54	343.61	1271.59	716.56	1683422.52	439995.51	39°42'09.347"N	80°37'30.633"W	1459.59	29.402	2.25

10 3-2440

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

WELLPATH DATA (204 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
8079.00	96.800	319.600	7381.79	384.10	1302.42	689.95	1683395.91	440026.34	39°42'09.648"N	80°37'30.979"W	1473.88	27.912	2.07
8121.00	97.500	318.200	7376.57	425.55	1333.82	662.56	1683368.52	440057.74	39°42'09.955"N	80°37'31.334"W	1489.32	26.415	3.70
8162.00	98.900	317.400	7370.72	465.99	1363.88	635.30	1683341.26	440087.80	39°42'10.249"N	80°37'31.688"W	1504.59	24.976	3.92
8204.00	98.000	315.100	7364.55	507.46	1393.89	606.57	1683312.53	440117.81	39°42'10.542"N	80°37'32.060"W	1520.15	23.517	5.83
8246.00	96.200	312.800	7359.35	549.13	1422.81	576.57	1683282.53	440146.73	39°42'10.824"N	80°37'32.448"W	1535.20	22.059	6.92
8288.00	94.300	312.000	7355.51	590.95	1451.01	545.68	1683251.65	440174.92	39°42'11.099"N	80°37'32.848"W	1550.23	20.610	4.91
8329.00	92.800	311.400	7352.97	631.86	1478.23	515.13	1683221.10	440202.14	39°42'11.364"N	80°37'33.243"W	1565.42	19.212	3.94
8370.00	92.600	312.700	7351.04	672.81	1505.66	484.72	1683190.69	440229.57	39°42'11.631"N	80°37'33.637"W	1581.76	17.845	3.20
8412.00	91.600	312.000	7349.50	714.78	1533.94	453.70	1683159.68	440257.84	39°42'11.907"N	80°37'34.038"W	1599.63	16.477	2.91
8453.00	91.300	313.100	7348.46	755.76	1561.65	423.51	1683129.48	440285.56	39°42'12.177"N	80°37'34.429"W	1618.06	15.173	2.78
8495.00	91.500	313.400	7347.44	797.75	1590.42	392.93	1683098.90	440314.33	39°42'12.458"N	80°37'34.825"W	1638.24	13.877	0.86
8537.00	92.100	313.300	7346.12	839.73	1619.24	362.40	1683068.38	440343.14	39°42'12.739"N	80°37'35.220"W	1659.30	12.615	1.45
8578.00	92.500	314.000	7344.47	880.69	1647.52	332.76	1683038.74	440371.42	39°42'13.014"N	80°37'35.604"W	1680.78	11.419	1.97
8623.00	92.500	314.400	7342.51	925.64	1678.86	300.53	1683006.51	440402.76	39°42'13.320"N	80°37'36.021"W	1705.55	10.149	0.89
8668.00	92.700	314.900	7340.47	970.57	1710.45	268.55	1682974.53	440434.35	39°42'13.628"N	80°37'36.435"W	1731.40	8.923	1.20
8712.00	91.700	313.400	7338.78	1014.53	1741.07	237.00	1682942.99	440464.97	39°42'13.927"N	80°37'36.844"W	1757.13	7.752	4.10
8757.00	92.100	312.600	7337.29	1059.50	1771.75	204.11	1682910.10	440495.64	39°42'14.226"N	80°37'37.269"W	1783.47	6.572	1.99
8802.00	92.400	313.900	7335.52	1104.47	1802.56	171.36	1682877.35	440526.45	39°42'14.527"N	80°37'37.693"W	1810.68	5.430	2.96
8846.00	91.800	314.100	7333.91	1148.43	1833.10	139.73	1682845.72	440556.99	39°42'14.824"N	80°37'38.103"W	1838.42	4.359	1.44
8891.00	90.500	314.600	7333.01	1193.41	1864.55	107.56	1682813.55	440588.44	39°42'15.131"N	80°37'38.519"W	1867.65	3.301	3.10
8936.00	90.600	313.200	7332.57	1238.40	1895.75	75.13	1682781.13	440619.64	39°42'15.436"N	80°37'38.939"W	1897.24	2.270	3.12
8980.00	90.900	313.200	7332.00	1282.40	1925.87	43.06	1682749.06	440649.75	39°42'15.729"N	80°37'39.354"W	1926.35	1.281	0.68
9025.00	91.000	313.300	7331.25	1327.39	1956.70	10.29	1682716.29	440680.58	39°42'16.030"N	80°37'39.779"W	1956.72	0.301	0.31
9070.00	91.600	313.200	7330.23	1372.38	1987.52	-22.48	1682683.52	440711.40	39°42'16.330"N	80°37'40.203"W	1987.65	359.352	1.35
9115.00	92.000	313.600	7328.82	1417.36	2018.43	-55.16	1682650.85	440742.30	39°42'16.632"N	80°37'40.626"W	2019.18	358.435	1.26
9159.00	90.900	312.700	7327.70	1461.34	2048.51	-87.25	1682618.76	440772.38	39°42'16.925"N	80°37'41.041"W	2050.36	357.561	3.23
9204.00	91.300	314.200	7326.84	1506.33	2079.45	-119.91	1682586.10	440803.32	39°42'17.227"N	80°37'41.464"W	2082.90	356.700	3.45
9248.00	92.600	315.600	7325.34	1550.28	2110.49	-151.06	1682554.95	440834.36	39°42'17.530"N	80°37'41.867"W	2115.89	355.906	4.34
9293.00	91.700	316.400	7323.66	1595.18	2142.83	-182.29	1682523.72	440866.70	39°42'17.845"N	80°37'42.272"W	2150.57	355.137	2.68
9338.00	90.800	315.800	7322.67	1640.11	2175.25	-213.49	1682492.52	440899.12	39°42'18.162"N	80°37'42.677"W	2185.70	354.395	2.40

103-2440

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

WELLPATH DATA (204 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
9382.00	90.300	314.900	7322.25	1684.07	2206.55	-244.41	1682461.61	440930.42	39°42'18.467"N	80°37'43.077"W	2220.05	353.679	2.34
9426.00	90.100	314.700	7322.10	1728.05	2237.55	-275.63	1682430.39	440961.42	39°42'18.770"N	80°37'43.482"W	2254.47	352.977	0.64
9471.00	91.500	314.900	7321.47	1773.02	2269.26	-307.56	1682398.46	440993.12	39°42'19.079"N	80°37'43.895"W	2290.01	352.282	3.14
9516.00	93.000	316.200	7319.70	1817.94	2301.36	-339.04	1682366.98	441025.22	39°42'19.392"N	80°37'44.303"W	2326.20	351.619	4.41
9561.00	93.800	316.300	7317.03	1862.79	2333.81	-370.11	1682335.91	441057.66	39°42'19.709"N	80°37'44.706"W	2362.97	350.989	1.79
9606.00	92.800	314.800	7314.44	1907.67	2365.87	-401.57	1682304.46	441089.73	39°42'20.022"N	80°37'45.113"W	2399.71	350.367	4.00
9651.00	90.600	312.900	7313.11	1952.64	2397.03	-434.00	1682272.02	441120.89	39°42'20.326"N	80°37'45.533"W	2436.00	349.737	6.46
9695.00	89.900	311.300	7312.92	1996.63	2426.53	-466.65	1682239.38	441150.38	39°42'20.614"N	80°37'45.956"W	2470.99	349.114	3.97
9739.00	91.200	311.800	7312.49	2040.61	2455.71	-499.57	1682206.46	441179.56	39°42'20.898"N	80°37'46.382"W	2506.01	348.501	3.17
9784.00	92.900	311.400	7310.88	2085.57	2485.57	-533.20	1682172.83	441209.42	39°42'21.189"N	80°37'46.817"W	2542.12	347.892	3.88
9829.00	93.500	313.200	7308.37	2130.49	2515.80	-566.43	1682139.60	441239.65	39°42'21.483"N	80°37'47.247"W	2578.78	347.311	4.21
9874.00	94.100	312.900	7305.39	2175.39	2546.46	-599.24	1682106.79	441270.30	39°42'21.782"N	80°37'47.671"W	2616.01	346.758	1.49
9919.00	94.100	311.500	7302.17	2220.27	2576.60	-632.49	1682073.55	441300.45	39°42'22.076"N	80°37'48.102"W	2653.10	346.208	3.10
9963.00	94.500	312.300	7298.87	2264.14	2605.91	-665.15	1682040.89	441329.75	39°42'22.362"N	80°37'48.524"W	2689.46	345.681	2.03
10008.00	94.900	312.400	7295.19	2308.99	2636.12	-698.30	1682007.75	441359.96	39°42'22.656"N	80°37'48.953"W	2727.04	345.163	0.92
10053.00	94.300	312.000	7291.58	2353.84	2666.25	-731.52	1681974.52	441390.09	39°42'22.950"N	80°37'49.383"W	2764.78	344.658	1.60
10097.00	93.500	310.900	7288.58	2397.72	2695.31	-764.43	1681941.62	441419.14	39°42'23.233"N	80°37'49.809"W	2801.61	344.166	3.09
10142.00	93.600	311.700	7285.80	2442.61	2724.95	-798.17	1681907.88	441448.79	39°42'23.521"N	80°37'50.245"W	2839.44	343.674	1.79
10186.00	92.800	311.700	7283.34	2486.53	2754.17	-830.97	1681875.08	441478.01	39°42'23.806"N	80°37'50.669"W	2876.80	343.211	1.82
10231.00	92.700	311.500	7281.18	2531.46	2784.02	-864.58	1681841.47	441507.85	39°42'24.097"N	80°37'51.104"W	2915.18	342.748	0.50
10275.00	91.900	310.000	7279.42	2575.39	2812.71	-897.89	1681808.17	441536.54	39°42'24.376"N	80°37'51.535"W	2952.55	342.296	3.86
10318.00	92.900	310.400	7277.62	2618.30	2840.44	-930.70	1681775.36	441564.27	39°42'24.646"N	80°37'51.959"W	2989.03	341.858	2.50
10341.00	92.700	311.000	7276.49	2641.26	2855.42	-948.12	1681757.94	441579.25	39°42'24.792"N	80°37'52.184"W	3008.72	341.632	2.75
10407.00†	92.700	311.000	7273.38	2707.14	2898.68	-997.87	1681708.19	441622.50	39°42'25.213"N	80°37'52.828"W	3065.63	341.004	0.00

103-2440

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
PBHL (rev3)		7304.20	2883.17	-1008.06	**1681698.00**	**441607.00**	39°42'25.059"N	80°37'52.956"W	point
Target Entry		7334.50	1167.07	831.05	**1683537.00**	**439891.00**	39°42'08.328"N	80°37'29.152"W	point
LEASE LINE		8000.00	1300.38	1171.61	**1683877.54**	**440024.30**	39°42'09.688"N	80°37'24.816"W	polygon

WELLPATH COMPOSITION **Ref Wellbore: Well #5H ST1 [AWB]** **Ref Wellpath: MWD Surveys (2733') 2858'-10341' Proj: 10407'**

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	2733.00	Generic gyro - northseeking (Standard)	VES Gyro (0') 100'-2733'	AWB
2733.00	10341.00	NaviTrak (Standard)	BHI MWD (2733') 2858'-10341'	Well #5H ST1 [AWB]
10341.00	10407.00	Blind Drilling (std)	Projection to bit	Well #5H ST1 [AWB]

163-2440

Actual Wellpath Report

MWD Surveys (2733') 2858'-10341' Proj: 10407'

Chesapeake ENERGY

BAKER HUGHES INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**CHESAPEAKE ENERGY**	Slot	**Slot 1**
Area	**Wetzel County, WV**	Well	**Well #5H**
Field	**Victory Prospect**	Wellbore	**Well #5H [AWB]**
Facility	**Martin R Whiteman Jr 5H**	Sidetrack from	**AWB at 2733.00 MD**

COMMENTS

Wellpath general comments
API: 47-103-02440-00
Rig: Nomac 241
BHI Job: 2556596
Duration: 6/3/09-7/2/09
FSE's: J. Bruner, M. Muaket, L. Murray
VES Gyro (0') 100'-2733'
BHI MWD (2733') 2858'-10341'
TD Projected To MD: 10407'

103-2440

WR -35

CORRECTION

Date 10-27-2010
API # 47-103-02469

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas
Well Operator's Report of Well Work

Farm Name: Floyd Johnson 1H **Operator Well No.:** 627389

LOCATION **Elevation:** 1486' **Quadrangle:** Littleton
District: Center **County:** Wetzel
Latitude: 6560'ft **South of** 39° 45' 00"
Longitude: 11670'ft **West of** 80° 35' 30"

Company: Chesapeake Appalachia, L.L.C.
P.O. Box 18496
OKC, OK 73154-0496

Agent: Eric Gillespie
Inspector: Dave Scranage
Date Permit Issued: 06/16/2009
Date Well work commenced: 09/25/2009
Date Well Work completed: 4/16/2010
Verbal Plugging Permission
Granted on / /
Rotary ☒ Cable☐ Rig
Total Depth (ft):12075' TVD (ft):7291'
Fresh Water Depth (ft):300'
Salt Water Depth (ft.) NA
Is coal being mined in area (Yes ☐ No ☒)
Coal Depths (ft):1285', 950'
Was this well logged and plugged back?
Yes_x__ No____ if yes –
depth cement plug set ___6844'

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill-Up Cu.Ft.
20"	40'	40'	Driven
13 3/8"	1402'	1402'	1425 CF
9 5/8"	2817'	2817'	1193 CF
5 1/2 "	12063'	12063'	3043 CF

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Open Flow Data

1st Producing Formation Pay Zone Depth 7,869 ft to 11,871 ft
Gas: Initial Open Flow 3,600 Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests In Line hours
Static Rock Pressure 5,022 psig after hours

2nd Producing Formation Pay Zone Depth ft to ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests hours
Static Rock Pressure psig after hours

3rd Producing Formation Pay Zone Depth ft to ft
Gas: Initial Open Flow Mcf/day Oil: Initial Open Flow bbl/day
Final Open Flow Mcf/day Final Open Flow bbl/day
Time of Open Flow between Initial and Final Tests hours
Static Rock Pressure psig after hours

NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Chesapeake Energy
Well No.: 627389

Perforated Intervals

1st Stage	Marcellus	10	holes from	11,469 ft to	11,871 ft
2nd Stage	Marcellus	10	holes from	11,069 ft to	11,391 ft
3rd Stage	Marcellus	10	holes from	10,605 ft to	10,991 ft
4th Stage	Marcellus	10	holes from	10,269 ft to	10,586 ft
5th Stage	Marcellus	10	holes from	9,869 ft to	10,191 ft
6th Stage	Marcellus	10	holes from	9,469 ft to	9,791 ft
7th Stage	Marcellus	10	holes from	9,069 ft to	9,391 ft
8th Stage	Marcellus	10	holes from	8,669 ft to	8,991 ft
9th Stage	Marcellus	10	holes from	8,269 ft to	8,591 ft
10th Stage	Marcellus	10	holes from	7,869 ft to	8,191 ft

103-2469

Fracturing / Stimulation

1st Stage		Type of Treatment Slickwater		
	Total Acid 5,000 Gal of 15% HCl		Breakdown Pressure 6,200 psi	
	Average Rate 72 scf/min ☐ or bpm ☒		ATP 8,574 psi	MTP 9,089 psi
	Total Fluid 19,444 bbl	Total Nitrogen 0 scf	Total Sand 210,105 lb of 100 mesh	
			Total Sand 294,797 lb of 40/70	
	ISIP 5,543 psi	5 min 3,905 psi		
2nd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,780 psi	
	Average Rate 82 scf/min ☐ or bpm ☒		ATP 8,698 psi	MTP 9,054 psi
	Total Fluid 16,309 bbl	Total Nitrogen 0 scf	Total Sand 100,758 lb of 100 mesh	
			Total Sand 471,247 lb of 40/70	
	ISIP 4,842 psi	5 min 3,900 psi		
3rd Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,843 psi	
	Average Rate 89 scf/min ☐ or bpm ☒		ATP 8,250 psi	MTP 8,906 psi
	Total Fluid 13,435 bbl	Total Nitrogen 0 scf	Total Sand 120,131 lb of 100 mesh	
			Total Sand 359,902 lb of 40/70	
	ISIP 5,348 psi	5 min 4,350 psi		
4th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 5,646 psi	
	Average Rate 88 scf/min ☐ or bpm ☒		ATP 8,355 psi	MTP 8,990 psi
	Total Fluid 13,027 bbl	Total Nitrogen 0 scf	Total Sand 122,635 lb of 100 mesh	
			Total Sand 468,664 lb of 40/70	
	ISIP 5,966 psi	5 min 4,593 psi		
5th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,462 psi	
	Average Rate 90 scf/min ☐ or bpm ☒		ATP 7,930 psi	MTP 8,675 psi
	Total Fluid 12,115 bbl	Total Nitrogen 0 scf	Total Sand 122,253 lb of 100 mesh	
			Total Sand 479,715 lb of 40/70	
	ISIP 5,722 psi	5 min 5,450 psi		
6th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,510 psi	
	Average Rate 90 scf/min ☐ or bpm ☒		ATP 8,265 psi	MTP 8,876 psi
	Total Fluid 12,760 bbl	Total Nitrogen 0 scf	Total Sand 122,154 lb of 100 mesh	
			Total Sand 481,266 lb of 40/70	
	ISIP 5,658 psi	5 min 4,679 psi		
7th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,585 psi	
	Average Rate 87 scf/min ☐ or bpm ☒		ATP 8,345 psi	MTP 9,017 psi
	Total Fluid 12,491 bbl	Total Nitrogen 0 scf	Total Sand 119,985 lb of 100 mesh	
			Total Sand 484,191 lb of 40/70	
	ISIP 5,147 psi	5 min 4,340 psi		
8th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,239 psi	
	Average Rate 91 scf/min ☐ or bpm ☒		ATP 7,793 psi	MTP 8,908 psi
	Total Fluid 12,084 bbl	Total Nitrogen 0 scf	Total Sand 121,611 lb of 100 mesh	

			Total Sand 484,921 lb of 40/70	
	ISIP 4,707 psi	5 min 4,035 psi		
9th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 6,895 psi	
	Average Rate 91 scf/min ☐ or bpm ☒		ATP 7,852 psi	MTP 8,765 psi
	Total Fluid 12,012 bbl	Total Nitrogen 0 scf	Total Sand 122,054 lb of 100 mesh	
			Total Sand 480,298 lb of 40/70	
	ISIP 4,768 psi	5 min 3,448 psi		
10th Stage		Type of Treatment Slickwater		
	Total Acid 2,500 Gal of 15% HCl		Breakdown Pressure 7,017 psi	
	Average Rate 85 scf/min ☐ or bpm ☒		ATP 8,391 psi	MTP 9,085 psi
	Total Fluid 13,312 bbl	Total Nitrogen 0 scf	Total Sand 121,315 lb of 100 mesh	
			Total Sand 485,702 lb of 40/70	
	ISIP 4,392 psi	5 min 3,615 psi		

103-2469

Well Log

FORMATION/LITHOLOGY	TOP DEPTH (ft)	BOTTOM DEPTH (ft)
SS and SHALE	0	470
SHALE	470	530
SHALE and SLTST	530	590
SLTST and SHALE	590	620
SLTST and DOL	620	680
SHALE	680	712
SLTST and SS	712	740
SS and SHALE	740	768
SS	768	770
SHALE	770	832
SLTST	832	860
SHALE	860	920
SS	920	950
COAL	950	954
SHALE	954	1040
LMST and SHALE	1040	1070
SHALE and LMST	1070	1100
SS	1100	1130
LMST	1130	1160
LMST and SHALE	1160	1190
LMST	1190	1250
LMST and SHALE	1250	1280
SLTST and COAL	1280	1284
Pittsburgh Coal	1284	1293
SHALE and COAL	1293	1340
SHALE and SLTST	1340	1370
SS and GYP	1370	1400
SHALE and SS	1400	1432
SS	1432	1460
SHALE and SS	1460	1490
SHALE	1490	1550
SHALE and LMST	1550	1580
SHALE	1580	1700
SHALE and COAL	1700	1730
SHALE	1730	1850
SHALE and SS	1850	1880
SS and SHALE	1880	1940

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SS	1940	2000
SS and GYP	2000	2030
SHALE and SS	2030	2099
Salt Sands	2099	2136
SHALE	2136	2150
SHALE and SS	2150	2182
SHALE	2182	2202
Maxton	2202	2222
SHALE and SS	2222	2270
SHALE	2270	2360
SHALE and LMST	2360	2390
LMST	2390	2403
Big Lime	2403	2469
LMST and SS	2469	2493
Big Injun	2493	2742
SS	2742	2560
SS and SHALE	2560	2580
SS	2580	2680
SS and GYP	2680	2706
SHALE and SS	2706	2710
SHALE	2710	2850
SLTST and SHALE	2850	2880
SLTST and DOL	2880	2910
SHALE	2910	3060
SLTST and DOL	3060	3090
SHALE	3090	3312
Gordon	3312	3322
SLTST and DOL	3322	3360
SHALE	3360	3990
SHALE and SLTST	3990	4020
SHALE	4020	4475
Benson	4475	4485
SHALE and SLTST	4485	5340
SHALE	5340	5520
SHALE and SLTST	5520	5540
SHALE	5540	7328
Geneseo	7328	7339
Tully	7339	7379
Hamilton	7379	7474
LMST	7474	7470
LMST and SHALE	7470	7476
Marcellus	7476	12075

103 - 2469

Signed: Bonnie Griggs
CHESAPEAKE APPALACHIA, LLC
By: Bonnie Griggs, Regulatory Compliance Specialist
Date: 4-14-2011

WV Department of Environmental Protection