

Farm name: Gerald Gourley BRK 8H Operator Well No.: 834435

LOCATION: Elevation: 1,160' Quadrangle: Steubenville East, WV

District: Cross Creek County: Brooke
Latitude: 5,110' Feet South of 40 Deg. 20 Min. 00 Sec.
Longitude 5,490' Feet West of 80 Deg. 32 Min. 30 Sec.

Company: Chesapeake Appalachia, L.L.C.

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
P.O. Box 18496 Oklahoma City, OK 73154-0496	20"	138'	138'	247 Cu. Ft.
Agent: <u>Jessica Greathouse</u>	13 3/8"	584'	584'	628 Cu. Ft.
Inspector: <u>Bill Hendershot</u>	9 5/8"	1,527'	1,527'	690 Cu. Ft.
Date Permit Issued: <u>8-8-2012</u>	5 1/2"	11,054'	11,054'	1,072 Cu. Ft.
Date Well Work Commenced: <u>11-6-2012</u>				
Date Well Work Completed: <u>7-15-2013</u>				
Verbal Plugging:				
Date Permission granted on:				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): <u>6,351'</u>				
Total Measured Depth (ft): <u>11,054'</u>				
Fresh Water Depth (ft.): <u>478'</u>				
Salt Water Depth (ft.): <u>1190'</u>				
Is coal being mined in area (N/Y)? <u>N</u>				
Coal Depths (ft.): <u>704'</u>				
Void(s) encountered (N/Y) Depth(s) <u>Y 704'</u>				

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

Producing formation Marcellus Pay zone depth (ft) 6,045-10,927
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow 1,487* MCF/d Final open flow 258 Bbl/d
Time of open flow between initial and final tests 72 Hours *Calculated
Static rock Pressure 4,128* psig (surface pressure) after 72 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

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

Marlene Williams
Signature

2-26-2015
Date

Were core samples taken? Yes _____ No N Were cuttings caught during drilling? Yes Y No _____

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list GR, neutron, density, and resistivity
Open hole logs run from 0-1064' MD; LWD GR from 5063-11054' MD.

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

Perforated Intervals, Fracturing, or Stimulating:

See attached

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

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

See attached

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Environmental Protection

9.00/40

LATERAL WELLBORE (no vertical pilot hole associated with this well)**Maximum TVD of wellbore: 6351 ft TVD @ 10615 ft MD**

Formation/Lithology	Top Depth, MD (ft)	Top Depth, TVD (ft)	Bottom Depth, MD (ft)	Bottom Depth, TVD (ft)
SS	0	0	704	704
PITTSBURG COAL (VOID)	704	704	708	708
SS	708	708	758	758
COAL	758	758	766	766
SS	766	766	1110	1110
BIG LIME	1110	1110	1220	1220
BIG INJUN (SS)	1220	1220	1343	1343
SHALE	1343	1343	5565	5505
GENESEO (SH)	5565	5505	5593	5522
TULLY (LS)	5593	5522	5686	5574
HAMILTON (SH)	5686	5574	5884	5652
MARCELLUS (SH)	5884	5652		
TD OF LATERAL			11054	5758

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Project: Brooke County, WV
 Site: Gerald Gourley
 Well: Gerald Gourley BRK 8H
 Wellbore: HZ
 Design: FINAL

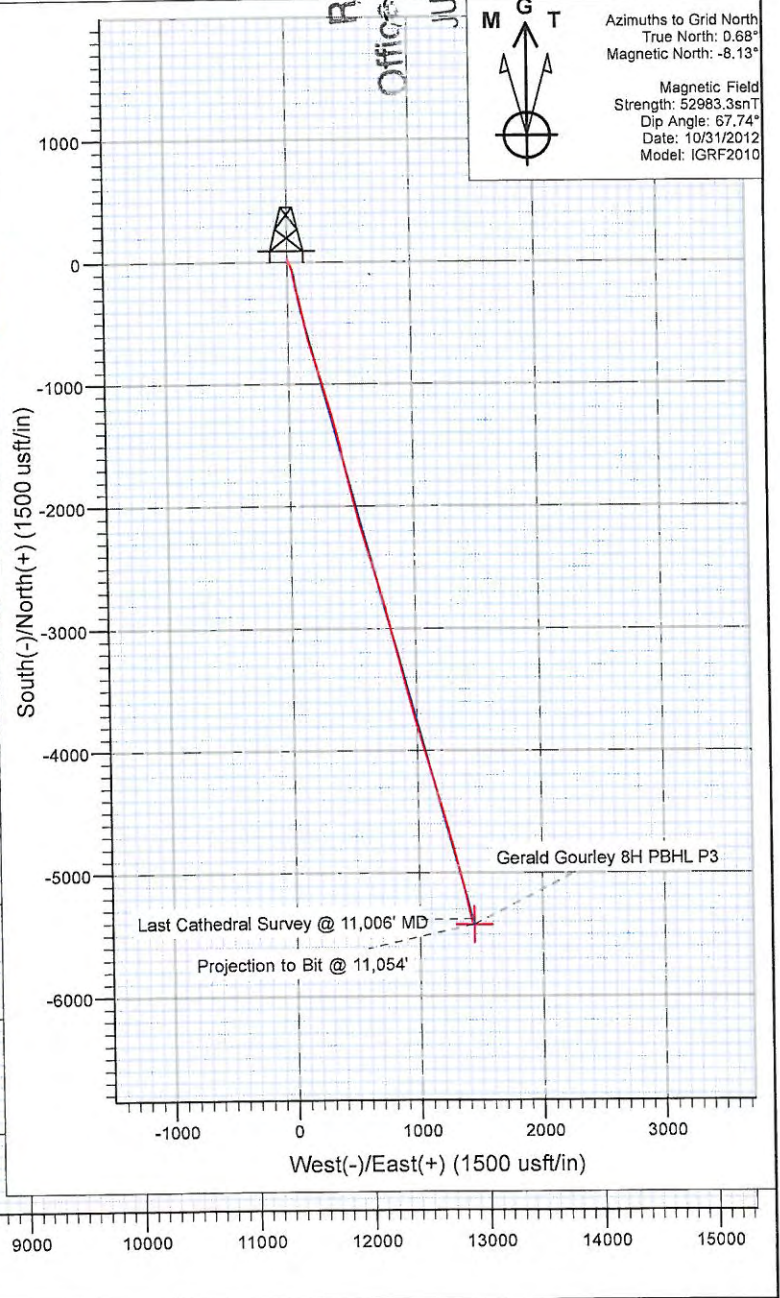
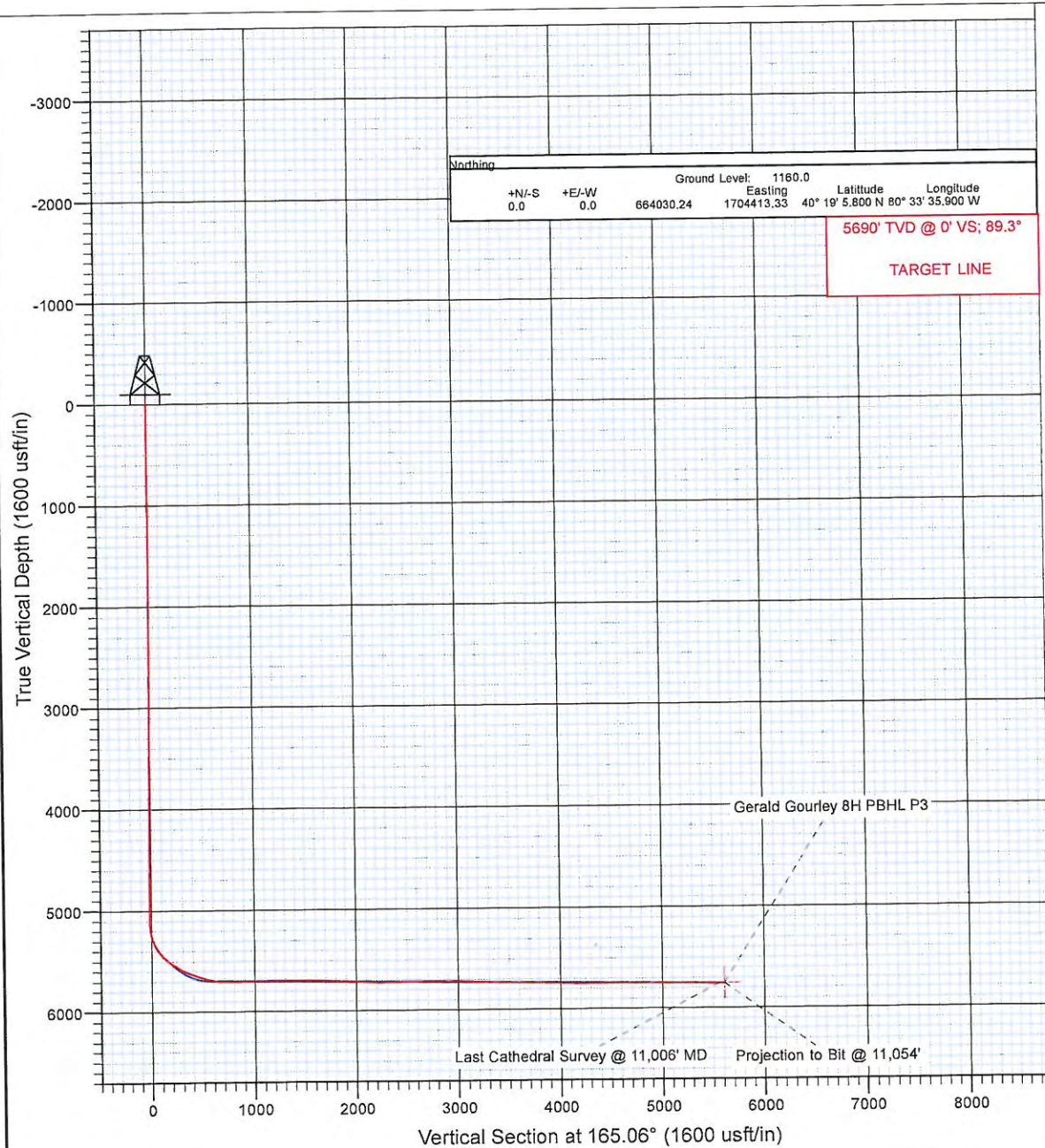
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Northing				
		Ground Level:	1160.0	
+N/-S	+E/-W	664030.24	1704413.33	40° 19' 5.800 N 80° 33' 35.900 W
0.0	0.0			

5690' TVD @ 0° VS; 89.3°

TARGET LINE



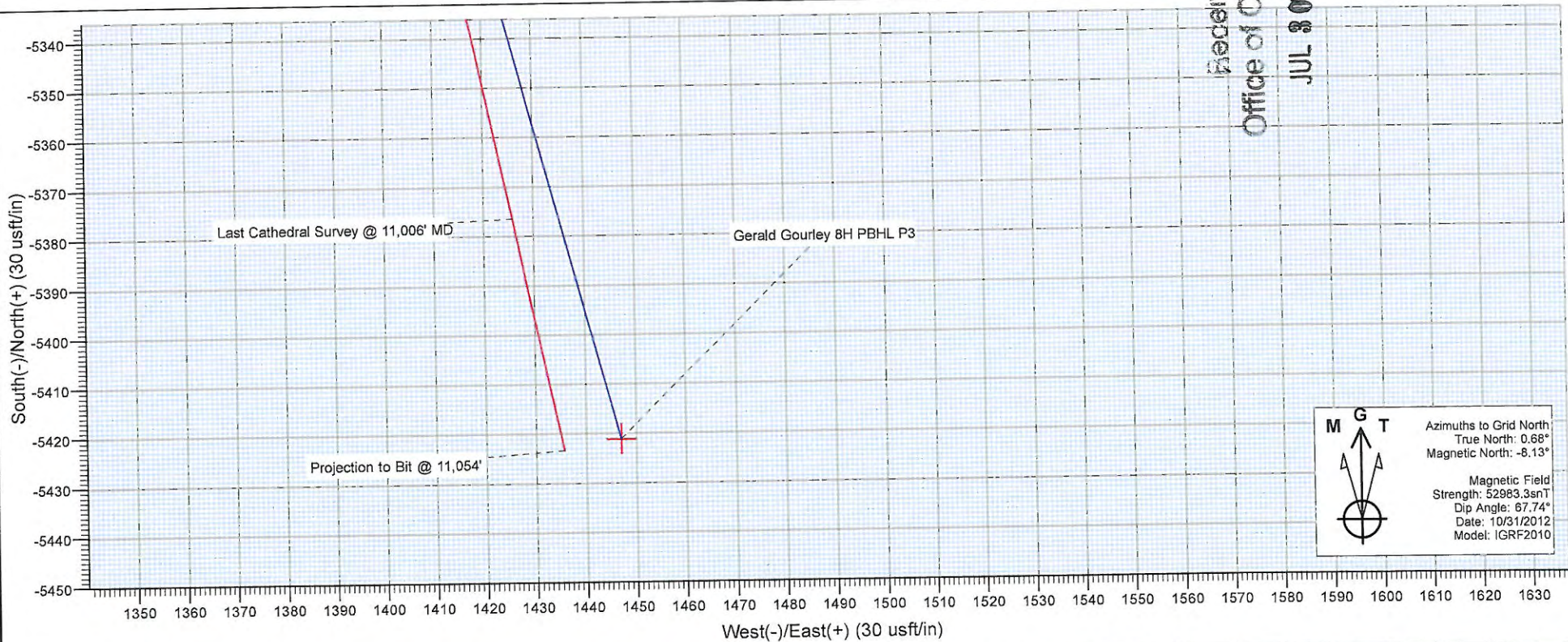
Azimuths to Grid North
 True North: 0.68°
 Magnetic North: -8.13°

Magnetic Field
 Strength: 52983.3snT
 Dip Angle: 67.74°
 Date: 10/31/2012
 Model: IGRF2010

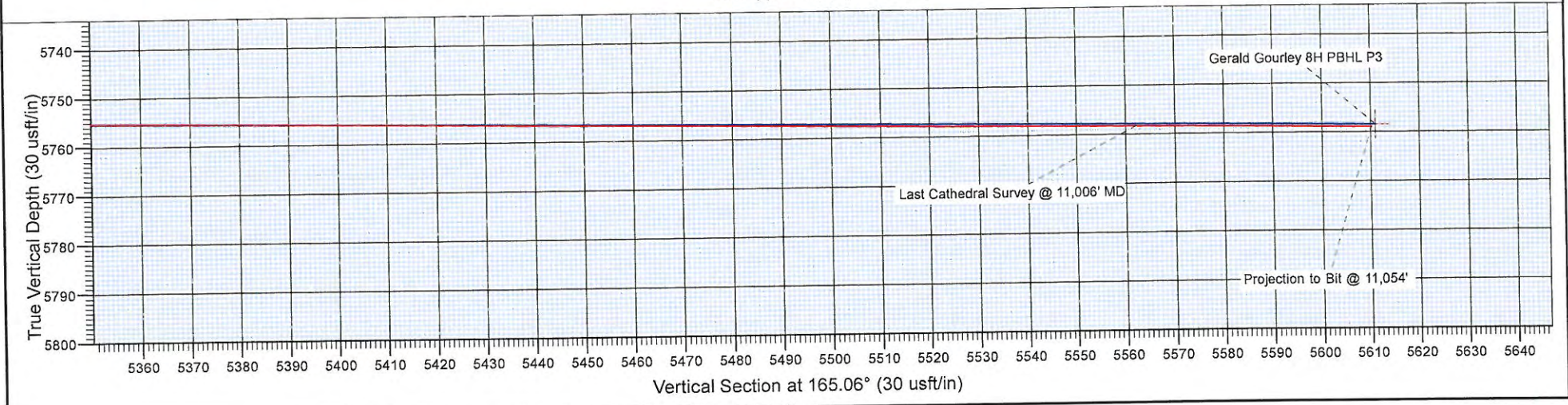


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Cathedral Energy Services

9-00140

Survey Report

Company: Chesapeake Energy Corp	Local Co-ordinate Reference: Well Gerald Gourley BRK 8H
Project: Brooke County, WV	TVD Reference: WELL @ 1178.0usft (Original Well Elev)
Site: Gerald Gourley	MD Reference: WELL @ 1178.0usft (Original Well Elev)
Well: Gerald Gourley BRK 8H	North Reference: Grid
Wellbore: HZ	Survey Calculation Method: Minimum Curvature
Design: HZ	Database: USA EDM 5000 Multi Users DB

Project Brooke County, WV			
Map System: US State Plane 1927 (Exact solution)	System Datum: Mean Sea Level		
Geo Datum: NAD 1927 (NADCON CONUS)	Using geodetic scale factor		
Map Zone: West Virginia North 4701			

Site Gerald Gourley			
Site Position:	Northing: 664,030.25 usft	Latitude: 40° 19' 5.800 N	
From: Lat/Long	Easting: 1,704,413.33 usft	Longitude: 80° 33' 35.900 W	
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16"	Grid Convergence: -0.68 °	

Well Gerald Gourley BRK 8H			
Well Position	+N/-S 0.0 usft	Northing: 664,030.24 usft	Latitude: 40° 19' 5.800 N
	+E/-W 0.0 usft	Easting: 1,704,413.33 usft	Longitude: 80° 33' 35.900 W
Position Uncertainty	0.0 usft	Wellhead Elevation: usft	Ground Level: 1,160.0 usft

Wellbore HZ					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/31/2012	-8.81	67.74	52,983

Design HZ					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0			
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	165.06	

Survey Program Date 11/18/2012					
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	5,060.0	Gyro (HZ)	MWD	Geolink MWD	
5,120.0	11,054.0	Survey #2 (HZ)	MWD	Geolink MWD	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.16	22.03	100.0	0.1	0.1	-0.1	0.16	0.16	
200.0	0.18	52.02	200.0	0.4	0.2	-0.3	0.09	0.02	
300.0	0.16	285.96	300.0	0.5	0.2	-0.4	0.30	-0.02	
400.0	0.11	204.75	400.0	0.4	0.0	-0.4	0.18	-0.05	
500.0	0.16	124.64	500.0	0.3	0.1	-0.2	0.18	0.05	
600.0	0.27	130.58	600.0	0.0	0.4	0.1	0.11	0.11	
700.0	0.28	135.20	700.0	-0.3	0.8	0.5	0.02	0.01	
800.0	0.35	130.30	800.0	-0.7	1.2	0.9	0.07	0.07	
900.0	0.31	108.92	900.0	-0.9	1.7	1.3	0.13	-0.04	
1,000.0	0.13	90.32	1,000.0	-1.0	2.0	1.5	0.19	-0.18	
1,100.0	0.28	156.82	1,100.0	-1.3	2.2	1.8	0.26	0.15	

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Cathedral Energy Services
Survey Report

9-00140

Company:	Chesapeake Energy Corp	Local Co-ordinate Reference:	Well Gerald Gourley BRK 8H
Project:	Brooke County, WV	TVD Reference:	WELL @ 1178.0usft (Original Well Elev)
Site:	Gerald Gourley	MD Reference:	WELL @ 1178.0usft (Original Well Elev)
Well:	Gerald Gourley BRK 8H	North Reference:	Grid
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	HZ	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,200.0	0.15	98.91	1,200.0	-1.5	2.5	2.1	0.24	-0.13	
1,300.0	0.11	116.41	1,300.0	-1.6	2.7	2.2	0.06	-0.04	
1,400.0	0.31	141.32	1,400.0	-1.8	2.9	2.5	0.22	0.20	
1,500.0	0.29	123.09	1,500.0	-2.2	3.3	2.9	0.10	-0.02	
1,600.0	0.02	6.55	1,600.0	-2.3	3.5	3.1	0.30	-0.27	
1,700.0	0.14	76.52	1,700.0	-2.2	3.6	3.1	0.13	0.12	
1,800.0	0.21	37.93	1,800.0	-2.1	3.9	3.0	0.13	0.07	
1,900.0	0.20	337.07	1,900.0	-1.8	3.9	2.7	0.21	-0.01	
2,000.0	0.31	41.98	2,000.0	-1.4	4.0	2.4	0.29	0.11	
2,100.0	0.32	357.82	2,100.0	-0.9	4.2	2.0	0.24	0.01	
2,200.0	0.43	19.76	2,200.0	-0.3	4.3	1.4	0.18	0.11	
2,300.0	0.29	346.90	2,300.0	0.3	4.4	0.8	0.24	-0.14	
2,400.0	0.47	5.79	2,400.0	1.0	4.4	0.2	0.22	0.18	
2,500.0	0.31	349.60	2,500.0	1.6	4.4	-0.5	0.19	-0.16	
2,600.0	0.38	341.02	2,600.0	2.2	4.2	-1.1	0.09	0.07	
2,700.0	0.19	27.17	2,700.0	2.7	4.2	-1.5	0.28	-0.19	
2,800.0	0.43	359.75	2,800.0	3.2	4.3	-2.0	0.28	0.24	
2,900.0	0.21	5.13	2,900.0	3.8	4.3	-2.5	0.22	-0.22	
3,000.0	0.49	359.74	3,000.0	4.4	4.3	-3.1	0.28	0.28	
3,100.0	0.34	359.39	3,100.0	5.1	4.3	-3.8	0.15	-0.15	
3,200.0	0.67	0.19	3,200.0	6.0	4.3	-4.7	0.33	0.33	
3,300.0	0.47	6.20	3,300.0	7.0	4.3	-5.6	0.21	-0.20	
3,400.0	0.64	9.57	3,399.9	7.9	4.5	-6.5	0.17	0.17	
3,500.0	0.62	14.24	3,499.9	9.0	4.7	-7.5	0.06	-0.02	
3,600.0	0.51	20.57	3,599.9	9.9	5.0	-8.3	0.13	-0.11	
3,700.0	0.46	21.22	3,699.9	10.7	5.3	-9.0	0.05	-0.05	
3,800.0	0.49	20.40	3,799.9	11.5	5.6	-9.7	0.03	0.03	
3,900.0	0.28	11.50	3,899.9	12.2	5.8	-10.3	0.22	-0.21	
4,000.0	0.36	2.50	3,999.9	12.7	5.8	-10.8	0.09	0.08	
4,100.0	0.45	353.38	4,099.9	13.4	5.8	-11.5	0.11	0.09	
4,200.0	0.54	345.59	4,199.9	14.3	5.6	-12.3	0.11	0.09	
4,300.0	0.30	340.60	4,299.9	15.0	5.4	-13.1	0.24	-0.24	
4,400.0	0.34	344.33	4,399.9	15.5	5.3	-13.6	0.05	0.04	
4,500.0	0.35	341.70	4,499.9	16.1	5.1	-14.2	0.02	0.01	
4,600.0	0.26	305.41	4,599.9	16.5	4.8	-14.7	0.21	-0.09	
4,700.0	0.34	336.10	4,699.9	16.9	4.5	-15.2	0.18	0.08	
4,800.0	0.55	343.84	4,799.9	17.6	4.3	-15.9	0.22	0.21	
4,900.0	0.21	340.17	4,899.9	18.3	4.1	-16.6	0.34	-0.34	
5,000.0	0.29	342.94	4,999.9	18.7	3.9	-17.0	0.08	0.08	
5,060.0	0.43	346.20	5,059.9	19.0	3.8	-17.4	0.24	0.23	Last Gyro Survey @ 5060' MD
5,120.0	1.20	149.50	5,119.9	18.7	4.1	-17.0	2.69	1.28	
5,151.0	4.20	151.60	5,150.9	17.4	4.8	-15.6	9.68	9.68	
5,182.0	7.10	155.40	5,181.7	14.7	6.1	-12.6	9.43	9.35	
5,214.0	9.80	156.80	5,213.4	10.4	8.0	-8.0	8.46	8.44	
5,244.0	12.60	155.40	5,242.8	5.1	10.4	-2.2	9.38	9.33	
5,276.0	16.50	153.50	5,273.7	-2.2	13.9	5.7	12.28	12.19	
5,307.0	20.50	153.70	5,303.1	-11.0	18.2	15.3	12.90	12.90	
5,339.0	25.10	155.70	5,332.6	-22.2	23.5	27.5	14.58	14.38	
5,370.0	29.00	158.20	5,360.2	-35.2	29.0	41.5	13.10	12.58	
5,402.0	33.30	160.70	5,387.6	-50.7	34.8	57.9	14.03	13.44	
5,434.0	37.30	165.20	5,413.7	-68.4	40.2	76.4	14.90	12.50	
5,465.0	42.00	169.20	5,437.6	-87.6	44.5	96.2	17.25	15.16	
5,497.0	46.20	170.30	5,460.6	-109.5	48.5	118.3	13.34	13.13	

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5,528.0	49.00	169.80	5,481.5	-132.1	52.5	141.1	9.11	9.03	
5,560.0	50.80	168.70	5,502.1	-156.1	57.0	165.6	6.21	5.63	
5,591.0	52.80	167.90	5,521.3	-180.0	62.0	189.9	6.76	6.45	
5,622.0	54.30	167.00	5,539.7	-204.3	67.4	214.8	5.37	4.84	
5,654.0	56.30	166.70	5,557.9	-229.9	73.4	241.1	6.30	6.25	
5,686.0	59.30	166.30	5,574.9	-256.3	79.7	268.2	9.43	9.38	
5,717.0	61.80	166.30	5,590.2	-282.5	86.1	295.1	8.06	8.06	
5,748.0	64.50	167.00	5,604.2	-309.4	92.5	322.8	8.94	8.71	
5,779.0	67.20	167.90	5,616.9	-337.0	98.6	351.0	9.10	8.71	
5,811.0	69.40	168.20	5,628.7	-366.1	104.8	380.7	6.93	6.88	
5,843.0	71.20	168.40	5,639.5	-395.6	110.9	410.8	5.66	5.63	
5,874.0	72.00	168.80	5,649.3	-424.4	116.7	440.2	2.86	2.58	
5,904.0	72.20	168.60	5,658.5	-452.4	122.3	468.7	0.92	0.67	
5,936.0	71.50	167.80	5,668.5	-482.2	128.5	499.0	3.23	-2.19	
5,968.0	73.30	167.10	5,678.1	-512.0	135.1	529.5	6.00	5.63	
6,000.0	75.90	167.00	5,686.6	-542.0	142.0	560.3	8.13	8.13	
6,031.0	78.80	167.20	5,693.4	-571.5	148.8	590.5	9.38	9.35	
6,062.0	83.00	166.60	5,698.3	-601.3	155.7	621.1	13.68	13.55	
6,094.0	88.00	165.60	5,700.8	-632.3	163.4	653.0	15.93	15.63	
6,189.0	88.40	163.60	5,703.8	-723.8	188.6	748.0	2.15	0.42	
6,312.0	91.20	163.30	5,704.2	-841.7	223.6	870.9	2.29	2.28	
6,438.0	91.20	163.50	5,701.6	-962.4	259.6	996.8	0.16	0.00	
6,564.0	90.60	163.60	5,699.6	-1,083.2	295.3	1,122.8	0.48	-0.48	
6,689.0	91.00	163.50	5,697.9	-1,203.1	330.7	1,247.7	0.33	0.32	
6,815.0	90.90	165.50	5,695.8	-1,324.5	364.4	1,373.7	1.59	-0.08	
6,942.0	87.40	166.90	5,697.7	-1,447.8	394.6	1,500.6	2.97	-2.76	
7,068.0	88.50	167.00	5,702.2	-1,570.5	423.1	1,626.5	0.88	0.87	
7,192.0	89.30	167.20	5,704.6	-1,691.3	450.8	1,750.4	0.67	0.65	
7,319.0	87.70	167.20	5,707.9	-1,815.1	478.9	1,877.2	1.26	-1.26	
7,443.0	87.10	165.90	5,713.5	-1,935.6	507.7	2,001.1	1.15	-0.48	
7,571.0	87.40	166.20	5,719.6	-2,059.7	538.5	2,128.9	0.33	0.23	
7,695.0	88.40	163.90	5,724.2	-2,179.4	570.5	2,252.8	2.02	0.81	
7,820.0	91.70	163.40	5,724.1	-2,299.3	605.7	2,377.7	2.67	2.64	
7,948.0	92.20	164.10	5,719.7	-2,422.1	641.5	2,505.6	0.67	0.39	
8,073.0	90.80	163.70	5,716.5	-2,542.2	676.1	2,630.6	1.16	-1.12	
8,197.0	89.60	163.70	5,716.0	-2,661.2	710.9	2,754.5	0.97	-0.97	
8,324.0	90.30	164.20	5,716.1	-2,783.2	746.0	2,881.5	0.68	0.55	
8,451.0	87.00	166.40	5,719.1	-2,906.0	778.2	3,008.4	3.12	-2.60	
8,578.0	88.20	166.60	5,724.4	-3,029.4	807.9	3,135.3	0.96	0.94	
8,703.0	88.70	166.40	5,727.8	-3,150.9	837.0	3,260.2	0.43	0.40	
8,829.0	87.90	165.40	5,731.6	-3,273.1	867.7	3,386.1	1.02	-0.63	
8,954.0	88.60	165.60	5,735.4	-3,394.0	899.0	3,511.1	0.58	0.56	
9,081.0	89.30	165.80	5,737.7	-3,517.1	930.4	3,638.0	0.57	0.55	
9,208.0	90.00	166.10	5,738.5	-3,640.3	961.2	3,765.0	0.60	0.55	
9,333.0	87.60	163.80	5,741.1	-3,760.9	993.6	3,890.0	2.66	-1.92	
9,459.0	88.60	164.20	5,745.3	-3,882.0	1,028.3	4,015.9	0.85	0.79	
9,586.0	89.00	163.90	5,747.9	-4,004.1	1,063.2	4,142.8	0.39	0.31	
9,711.0	89.40	163.60	5,749.7	-4,124.1	1,098.2	4,267.8	0.40	0.32	
9,837.0	89.90	164.00	5,750.5	-4,245.0	1,133.4	4,393.7	0.51	0.40	
9,962.0	90.70	163.60	5,749.8	-4,365.1	1,168.2	4,518.7	0.72	0.64	
10,089.0	91.50	163.80	5,747.4	-4,487.0	1,203.9	4,645.6	0.65	0.63	
10,214.0	88.20	165.60	5,747.7	-4,607.5	1,236.9	4,770.6	3.01	-2.64	
10,340.0	88.60	165.30	5,751.2	-4,729.4	1,268.5	4,896.6	0.40	0.32	

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Cathedral Energy Services
Survey Report

Company: Chesapeake Energy Corp	Local Co-ordinate Reference: Well Gerald Gourley BRK 8H
Project: Brooke County, WV	TVD Reference: WELL @ 1178 0usft (Original Well Elev)
Site: Gerald Gourley	MD Reference: WELL @ 1178 0usft (Original Well Elev)
Well: Gerald Gourley BRK 8H	North Reference: Grid
Wellbore: HZ	Survey Calculation Method: Minimum Curvature
Design: HZ	Database: USA EDM 5000 Multi Users DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
10,466.0	89.20	165.70	5,753.6	-4,851.4	1,300.0	5,022.5	0.57	0.48	
10,592.0	89.80	165.60	5,754.7	-4,973.4	1,331.3	5,148.5	0.48	0.48	
10,717.0	90.10	165.80	5,754.8	-5,094.6	1,362.1	5,273.5	0.29	0.24	
10,844.0	88.90	167.50	5,755.9	-5,218.1	1,391.5	5,400.5	1.64	-0.94	
10,968.0	89.30	167.90	5,757.9	-5,339.3	1,417.9	5,524.3	0.46	0.32	
11,006.0	89.30	168.20	5,758.4	-5,376.5	1,425.7	5,562.3	0.79	0.00	Last Cathedral Survey @ 11,006' MD
11,054.0	89.30	168.20	5,758.9	-5,423.4	1,435.6	5,610.2	0.00	0.00	Projection to Bit @ 11,054'

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Gerald Gourley 8H PBH - hit/miss target - Shape	0.00	0.00	5,758.5	-5,421.2	1,447.0	658,609.00	1,705,860.33	40° 18' 12.400 N	80° 33' 16.400 W
- actual wellpath misses target center by 11.7usft at 11054.0usft MD (5758.9 TVD, -5423.4 N, 1435.6 E)									
- Point									
Gerald Gourley 8H PBH - actual wellpath misses target center by 32.6usft at 11053.7usft MD (5758.9 TVD, -5423.2 N, 1435.5 E)	0.00	0.00	5,728.5	-5,421.2	1,447.0	658,609.00	1,705,860.33	40° 18' 12.400 N	80° 33' 16.400 W
- Point									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,060.0	5,059.9	19.0	3.8	Last Gyro Survey @ 5060' MD
11,006.0	5,758.4	-5,376.5	1,425.7	Last Cathedral Survey @ 11,006' MD
11,054.0	5,758.9	-5,423.4	1,435.6	Projection to Bit @ 11,054'

Checked By: _____ Approved By: _____ Date: _____

04/08/2016

Hydraulic Fracturing Fluid Product Component Information Disclosure

Received
 Office of Oil & Gas
 JUL 30 2015

Fracture Date:	6/12/2013
State:	WEST VIRGINIA
County:	BROOKE
API Number:	4700900140
Operator Name:	CHESAPEAKE APPALACHIA LLC
Well Name and Number:	GERALD GOURLEY BRK 8H
Longitude:	-80.55998
Latitude:	40.318264
Long/Lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	5,759
Total Water Volume (gal)*:	5,020,554

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by Mass)**	Maximum Ingredient Concentration in HF Fluid (% by Mass)**	Comments
Fresh Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	80.32034%	
Recycled Produced Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	5.50784%	
EC6110A	NALCO	Anti-Bacterial Agent	Ethanol	000064-17-5	5.00%	0.00138%	
			Glutaraldehyde (Pentanediol)	000111-30-8	60.00%	0.01659%	
			Quaternary Ammonium Compounds	NA	10.00%	0.00277%	
EC6629A	NALCO	Scale Inhibitor	No Hazardous Components	NONE		0.00000%	
Northern White Sand, 100 Mesh Sand, Acid Hydrochloric, J580, J609, B315, L058, A264, J218	SCHLUMBERGER	Proppant - Natural, Acid, Gelling Agent, Friction Reducer, Iron Control Agent, Corrosion Inhibitor, Breaker	Crystalline silica	14808-60-7	98.55200%	13.90721%	
			Hydrogen chloride	7647-01-0	0.99654%	0.14063%	
			Acrylamide sodium acrylate copolymer	25085-02-3	0.18477%	0.02607%	
			Distillates (petroleum), hydrotreated light	64742-47-8	0.16052%	0.02265%	
			Guar gum	9000-30-0	0.03210%	0.00453%	

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Acrylamide, 2-acrylamido-2-methylpropanesulfonic acid, sodium salt polymer	38193-60-1	0.01202%	0.00170%
Ammonium sulfate	7783-20-2	0.01136%	0.00160%
Alkylalcohol, ethoxylate >C10	68002-97-1	0.00983%	0.00139%
Sorbitan monooleate	1338-43-8	0.00786%	0.00119%
Sodium sulfate	7757-82-6	0.00491%	0.00069%
Thiocyanic acid, ammonium salt	1762-95-4	0.00485%	0.00068%
Poly(oxyethylene) sorbitol monostearate	9005-67-8	0.00459%	0.00065%
Sodium erythorbate	6381-77-7	0.00405%	0.00057%
Methanol	67-56-1	0.00312%	0.00044%
Fatty acids, tall-oil	61790-12-3	0.00229%	0.00032%
Diammonium peroxidisulphate	7727-54-0	0.00211%	0.00030%
Thiourea, polymer with formaldehyde and 1-phenylethanone	68527-49-1	0.00189%	0.00027%
Polymer of 2-acrylamido-2-methylpropanesulfonic acid sodium salt and methyl acrylate	136793-29-8	0.00129%	0.00018%
Alcohols, C14-15, ethoxylated (7EO)	68951-67-7	0.00088%	0.00012%
Urea	57-13-6	0.00079%	0.00011%
Prop-2-yn-1-ol	107-19-7	0.00058%	0.00008%
Alkenes, C>10 a-	64743-02-8	0.00039%	0.00006%
Non-crystalline silica	7631-86-9	0.00020%	0.00003%
Tetrasodium ethylenediaminetetraacetate	64-02-8	0.00008%	0.00001%
Dimethyl siloxanes and silicones	63148-62-9	0.00001%	< 0.00001%
Siloxanes and Silicones, di-Me, reaction products with silica	67762-90-7	< 0.00001%	< 0.00001%
Octamethylcyclotetrasiloxane	556-67-2	< 0.00001%	< 0.00001%
Sodium hydroxide	1310-73-2	< 0.00001%	< 0.00001%
Decamethyl cyclopentasiloxane	541-02-6	< 0.00001%	< 0.00001%
Dodecamethylcyclohexasiloxane	540-97-6	< 0.00001%	< 0.00001%

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Additional Ingredients Not Listed on MSDS					
EC6110A, EC6629A	NALCO	Anti-Bacterial Agent, Scale Inhibitor	Methanol (Methyl Alcohol)	000067-56-1	0.00617%
			Proprietary Acrylate Polymer	TRADE SECRET	0.00617%
			Proprietary Quaternary Ammonium Salt	TRADE SECRET	0.00617%
			Water	007732-18-5	0.02664%

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
 ** Information is based on the maximum potential for concentration and thus the total may be over 100%

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

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