WR-35
Rev (9-11)

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

DATE: 2-26-2015
API #: 47-009-00149

Farm name: Gerald Gourley BRK 3H Operator Well No.: 835867

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 5,460' Feet West of 80 Deg. 32 Min. 30 Sec.

Company: Chesapeake Appalachia, L.L.C.

Address: P.O. Box 18496	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Oklahoma City, OK 73154-0496	20"	138'	138'	247 Cu. Ft.
Agent: Eric Gillespie	13 3/8"	575'	575'	640 Cu. Ft.
Inspector: Bill Hendershot	9 5/8"	1,570'	1,570	696 Cu. Ft.
Date Permit Issued: 8-30-2012	5 1/2"	11,100'	11,100'	1,061 Cu. Ft.
Date Well Work Commenced: 11-3-2012				
Date Well Work Completed: 7-18-2013				
Verbal Plugging:				
Date Permission granted on:				
Rotary ☑ Cable ☐ Rig ☐				
Total Vertical Depth (ft): 5,674'				
Total Measured Depth (ft): 11,110'				
Fresh Water Depth (ft.): 520'				
Salt Water Depth (ft.): 676'				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.): 704'				
Void(s) encountered (N/Y) Depth(s) Y 704'				

Received
Office of Oil & Gas
JUL 30 2015

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)
Producing formation Marcellus Pay zone depth (ft) 5,900-10,855
Gas: Initial open flow ____ MCF/d Oil: Initial open flow ____ Bbl/d
Final open flow 1,199* MCF/d Final open flow 228 Bbl/d
Time of open flow between initial and final tests 72 Hours *Calculated
Static rock Pressure 3,688* 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

RECEIVED
Office of Oil and Gas
FEB 27 2015
WV Department of
Environmental Protection

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

2-26-15
Date

04/08/2016

9-00149

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

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list LWD GR from 5020-11110' MD.

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

Perforated Intervals, Fracturing, or Stimulating:

See attached

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

Formations Encountered: Top Depth / Bottom Depth

Surface:

See attached

9-00149

PERFORATION RECORD ATTACHMENT

Well Name and Number: Gerald Gourley BRK 3H

API No. 47-009-00149

Stage	PERFORATION RECORD				STIMULATION RECORD							
	Date	Interval Perforated		Total Number Of Shots				Fluid		Propping Agent		Average Injection Rate
		From	To		Date	Interval Treated		Type	Amount	Type	Amount	
1	6/15/2013	10665	10855	42	6/15/2013	10665	10855	SLK Wtr	7415	Sand	473900	80
2	6/15/2013	10301	10604	42	6/15/2013	10301	10604	SLK Wtr	7607	Sand	474800	79.1
3	6/15/2013	9935	10238	42	6/15/2013	9935	10238	SLK Wtr	7568	Sand	476960	80.1
4	6/16/2013	9568	9871	42	6/16/2013	9568	9871	SLK Wtr	7647	Sand	474080	80
5	6/16/2013	9201	9504	42	6/16/2013	9201	9504	SLK Wtr	7428	Sand	471940	80
6	6/16/2013	8834	9137	42	6/16/2013	8834	9137	SLK Wtr	7515.4	Sand	476340	80
7	6/16/2013	8468	8761	42	6/16/2013	8468	8761	SLK Wtr	7516	Sand	476120	79.6
8	6/16/2013	8101	8404	42	6/16/2013	8101	8404	SLK Wtr	7305	Sand	472680	80
9	6/16/2013	7734	8037	42	6/16/2013	7734	8037	SLK Wtr	7554	Sand	478660	79.1
10	6/17/2013	7372	7670	42	6/17/2013	7372	7670	SLK Wtr	7350	Sand	475620	79
11	6/17/2013	7000	7303	42	6/17/2013	7000	7303	SLK Wtr	7559	Sand	472260	80
12	6/18/2013	6634	6937	42	6/18/2013	6634	6937	SLK Wtr	7421	Sand	470140	80
13	6/18/2013	6267	6570	42	6/18/2013	6267	6570	SLK Wtr	8798	Sand	474060	80
14	6/18/2013	5900	6207	42	6/18/2013	5900	6207	SLK Wtr	6833	Sand	475960	80

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

Maximum TVD of wellbore: 5674 ft TVD @ 5998 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	5545	5499
GENESEO (SH)	5545	5499	5565	5514
TULLY (LS)	5565	5514	5637	5564
HAMILTON (SH)	5637	5564	5785	5636
MARCELLUS (SH)	5785	5636		
TD OF LATERAL			11110	5614

9-00149

Chesapeake
Natural Gas.
Natural Advantages.

Project: Brooke County, WV
Site: Gerald Gourley
Well: Gerald Gourley BRK 3H
Wellbore: HZ
Design: HZ

CATHEDRAL

Azimuths to Grid North
True North: 0.68°
Magnetic North: -8.14°

Magnetic Field
Strength: 52978.7snT
Dip Angle: 67.73°
Date: 11/14/2012
Model: IGRF2010

Northing	+N/-S	+E/-W	Ground Level: 1160.0 Easting	Latitude	Longitude
	0.0	0.0	664059.06 1704417.07	40° 19' 6.085 N	80° 33' 35.856 W

TARGET LINE
5688' TVD @ 0' VS; 90.8°

Last Gyro Survey @ 5020' MD
Last Cathedral Survey @ 11060' MD
Projection to Bit @ 11110' MD
Gerald Gourley BRK 3H PBHL P5

True Vertical Depth (1600 usft/in)
Vertical Section at 343.40° (1600 usft/in)

Gerald Gourley BRK 3H PBHL P5
Projection to Bit @ 11110' MD
Last Cathedral Survey @ 11060' MD
Gerald Gourley BRK 3H
Gerald Gourley BRK 8H

South(-)/North(+) (1500 usft/in)
West(-)/East(+) (1500 usft/in)

9.00149

Cathedral Energy Services

Survey Report

Company:	Chesapeake Energy Corp	**Local Co-ordinate Reference:**	Well Gerald Gourley BRK 3H
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 3H	**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)		
Map Zone:	West Virginia North 4701		Using geodetic scale factor

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 3H

Well Position	**+N/-S**	0.0 usft	**Northing:**	664,059.06 usft	**Latitude:**	40° 19' 6.085 N
	+E/-W	0.0 usft	**Easting:**	1,704,417.07 usft	**Longitude:**	80° 33' 35.856 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	11/14/2012	-8.81	67.73	52,979

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	343.40

Survey Program **Date** 12/4/2012

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	5,020.0	Gyro 2 (HZ)	Gyro	Gyro
5,114.0	11,110.0	Survey #4 (HZ)	MWD	Geolink MWD

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	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	0.76	196.93	100.0	-0.6	-0.2	-0.6	0.76	0.76	
200.0	0.73	190.41	200.0	-1.9	-0.5	-1.7	0.09	-0.03	
300.0	0.48	189.14	300.0	-2.9	-0.7	-2.6	0.25	-0.25	
400.0	0.13	190.29	400.0	-3.5	-0.8	-3.1	0.35	-0.35	
500.0	0.52	122.07	500.0	-3.8	-0.4	-3.5	0.49	0.39	
600.0	0.48	138.39	600.0	-4.4	0.3	-4.3	0.15	-0.04	
700.0	1.08	261.30	700.0	-4.8	-0.4	-4.5	1.40	0.60	
800.0	3.26	269.20	799.9	-5.0	-4.2	-3.6	2.20	2.18	
900.0	6.38	278.38	899.5	-4.2	-12.5	-0.5	3.20	3.12	
1,000.0	8.80	276.21	998.6	-2.6	-25.6	4.8	2.44	2.42	
1,100.0	10.13	262.42	1,097.3	-2.9	-41.9	9.2	2.62	1.33	

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Site:	Gerald Gourley	**MD Reference:**	WELL @ 1178.0usft (Original Well Elev)
Well:	Gerald Gourley BRK 3H	**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 (°/100usft	Build Rate (°/100u	Formations / Comments
1,200.0	8.72	258.81	1,195.9	-5.6	-58.1	11.3	1.53	-1.41	
1,300.0	6.65	261.90	1,295.0	-7.8	-71.3	12.8	2.11	-2.07	
1,400.0	5.50	278.48	1,394.5	-8.0	-81.7	15.7	2.09	-1.15	
1,500.0	3.96	291.34	1,494.1	-6.0	-89.7	19.9	1.86	-1.54	
1,600.0	3.58	294.13	1,593.9	-3.5	-95.8	24.0	0.42	-0.38	
1,700.0	2.61	289.00	1,693.8	-1.4	-100.8	27.4	1.01	-0.97	
1,800.0	1.96	292.37	1,793.7	-0.1	-104.5	29.8	0.66	-0.65	
1,900.0	1.09	297.49	1,893.7	1.0	-106.9	31.5	0.88	-0.87	
2,000.0	1.01	299.55	1,993.6	1.9	-108.5	32.8	0.09	-0.08	
2,100.0	0.77	311.07	2,093.6	2.8	-109.8	34.0	0.30	-0.24	
2,200.0	0.54	315.94	2,193.6	3.6	-110.6	35.0	0.24	-0.23	
2,300.0	0.75	328.34	2,293.6	4.5	-111.3	36.1	0.25	0.21	
2,400.0	0.76	329.91	2,393.6	5.6	-112.0	37.4	0.02	0.01	
2,500.0	0.74	334.11	2,493.6	6.7	-112.6	38.6	0.06	-0.02	
2,600.0	0.82	337.24	2,593.6	8.0	-113.2	40.0	0.09	0.08	
2,700.0	0.52	339.56	2,693.6	9.1	-113.6	41.2	0.30	-0.30	
2,800.0	0.33	347.18	2,793.6	9.8	-113.8	41.9	0.20	-0.19	
2,900.0	0.33	351.14	2,893.6	10.3	-113.9	42.5	0.02	0.00	
3,000.0	0.63	357.66	2,993.6	11.2	-114.0	43.3	0.30	0.30	
3,100.0	0.70	352.29	3,093.6	12.3	-114.1	44.4	0.09	0.07	
3,200.0	0.39	354.63	3,193.6	13.3	-114.2	45.4	0.31	-0.31	
3,300.0	0.60	344.71	3,293.6	14.1	-114.4	46.2	0.23	0.21	
3,400.0	0.74	346.78	3,393.6	15.3	-114.7	47.4	0.14	0.14	
3,500.0	0.56	356.95	3,493.5	16.4	-114.8	48.5	0.21	-0.18	
3,600.0	0.51	7.17	3,593.5	17.3	-114.8	49.4	0.11	-0.05	
3,700.0	0.44	5.24	3,693.5	18.1	-114.7	50.1	0.07	-0.07	
3,800.0	0.37	12.73	3,793.5	18.8	-114.6	50.8	0.09	-0.07	
3,900.0	0.39	8.48	3,893.5	19.5	-114.5	51.4	0.03	0.02	
4,000.0	0.53	355.06	3,993.5	20.3	-114.5	52.1	0.18	0.14	
4,100.0	0.56	344.07	4,093.5	21.2	-114.7	53.1	0.11	0.03	
4,200.0	0.47	343.04	4,193.5	22.1	-114.9	54.0	0.09	-0.09	
4,300.0	0.50	336.07	4,293.5	22.9	-115.2	54.8	0.07	0.03	
4,400.0	0.49	334.98	4,393.5	23.6	-115.6	55.7	0.01	-0.01	
4,500.0	0.30	330.56	4,493.5	24.3	-115.9	56.4	0.19	-0.19	
4,600.0	0.69	313.39	4,593.5	24.9	-116.4	57.1	0.41	0.39	
4,700.0	0.69	297.68	4,693.5	25.6	-117.4	58.1	0.19	0.00	
4,800.0	0.51	323.67	4,793.5	26.2	-118.2	58.9	0.32	-0.18	
4,900.0	0.58	332.30	4,893.5	27.0	-118.7	59.8	0.11	0.07	
5,000.0	0.48	338.97	4,993.5	27.9	-119.1	60.7	0.12	-0.10	
5,020.0	0.38	337.07	5,013.5	28.0	-119.1	60.9	0.50	-0.50	Last Gyro Survey @ 5020' MD
5,114.0	2.60	18.90	5,107.4	30.3	-118.6	62.9	2.48	2.36	
5,145.0	6.50	18.90	5,138.3	32.6	-117.8	64.9	12.58	12.58	
5,177.0	10.20	24.10	5,170.0	36.9	-116.0	68.6	11.79	11.56	
5,209.0	13.80	29.80	5,201.3	42.8	-113.0	73.3	11.83	11.25	
5,241.0	17.00	27.50	5,232.1	50.3	-108.9	79.3	10.18	10.00	
5,273.0	20.30	23.30	5,262.5	59.6	-104.6	87.0	11.13	10.31	
5,304.0	23.10	17.50	5,291.3	70.3	-100.6	96.1	11.37	9.03	
5,335.0	25.20	9.60	5,319.6	82.6	-97.7	107.1	12.42	6.77	
5,367.0	27.30	1.80	5,348.3	96.7	-96.3	120.2	12.61	6.56	
5,398.0	28.90	354.20	5,375.6	111.2	-96.8	134.3	12.64	5.16	
5,430.0	29.70	345.50	5,403.5	126.6	-99.6	149.8	13.53	2.50	
5,462.0	31.50	337.90	5,431.1	142.0	-104.7	166.0	13.32	5.63	
5,494.0	34.50	337.20	5,457.9	158.1	-111.4	183.4	9.45	9.38	

Cathedral Energy Services

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Formations / Comments
5,526.0	37.00	338.30	5,483.9	175.4	-118.5	202.0	8.07	7.81	
5,556.0	39.60	338.60	5,507.4	192.7	-125.3	220.5	8.69	8.66	
5,588.0	43.90	337.20	5,531.3	212.5	-133.3	241.7	13.75	13.44	
5,620.0	47.90	336.10	5,553.6	233.6	-142.4	264.5	12.74	12.50	
5,651.0	52.70	335.00	5,573.4	255.3	-152.3	288.2	15.72	15.48	
5,684.0	56.70	335.00	5,592.4	279.7	-163.7	314.8	12.12	12.12	
5,716.0	61.70	335.80	5,608.8	304.7	-175.1	342.0	15.77	15.62	
5,747.0	66.40	336.10	5,622.4	330.1	-186.5	369.6	15.19	15.16	
5,779.0	70.10	336.70	5,634.2	357.3	-198.4	399.1	11.69	11.56	
5,811.0	73.20	337.70	5,644.3	385.3	-210.2	429.3	10.13	9.69	
5,843.0	75.40	338.00	5,653.0	413.9	-221.8	460.0	6.93	6.87	
5,873.0	77.20	338.20	5,660.1	440.9	-232.6	489.0	6.03	6.00	
5,904.0	80.30	339.10	5,666.1	469.2	-243.7	519.3	10.40	10.00	
5,936.0	83.50	339.20	5,670.6	498.8	-255.0	550.9	10.00	10.00	
5,967.0	86.90	339.30	5,673.2	527.7	-265.9	581.7	10.97	10.97	
5,998.0	90.10	338.70	5,674.0	556.6	-277.0	612.6	10.50	10.32	
6,061.0	91.30	338.30	5,673.3	615.3	-300.1	675.3	2.01	1.90	
6,124.0	91.50	338.40	5,671.7	673.8	-323.4	738.1	0.35	0.32	
6,187.0	91.50	338.00	5,670.1	732.3	-346.7	800.8	0.63	0.00	
6,251.0	90.50	337.50	5,669.0	791.5	-371.0	864.5	1.75	-1.56	
6,314.0	90.40	338.70	5,668.5	849.9	-394.5	927.2	1.91	-0.16	
6,377.0	88.60	339.70	5,669.0	908.8	-416.8	990.0	3.27	-2.86	
6,440.0	89.20	340.60	5,670.2	968.1	-438.2	1,052.9	1.72	0.95	
6,504.0	89.20	340.50	5,671.1	1,028.4	-459.5	1,116.8	0.16	0.00	
6,566.0	89.40	340.50	5,671.9	1,086.9	-480.2	1,178.8	0.32	0.32	
6,629.0	89.90	341.10	5,672.3	1,146.3	-500.9	1,241.7	1.24	0.79	
6,691.0	89.60	340.40	5,672.5	1,204.9	-521.4	1,303.6	1.23	-0.48	
6,754.0	89.60	340.30	5,673.0	1,264.2	-542.6	1,366.5	0.16	0.00	
6,816.0	89.90	340.50	5,673.2	1,322.6	-563.4	1,428.4	0.58	0.48	
6,879.0	90.00	340.20	5,673.3	1,381.9	-584.6	1,491.4	0.50	0.16	
6,942.0	90.00	340.40	5,673.3	1,441.2	-605.8	1,554.2	0.32	0.00	
7,005.0	89.80	340.40	5,673.4	1,500.6	-626.9	1,617.2	0.32	-0.32	
7,068.0	90.80	342.00	5,673.1	1,560.2	-647.2	1,680.1	2.99	1.59	
7,131.0	90.80	342.40	5,672.2	1,620.2	-666.5	1,743.1	0.63	0.00	
7,194.0	90.80	342.60	5,671.3	1,680.3	-685.4	1,806.1	0.32	0.00	
7,255.0	90.70	342.90	5,670.5	1,738.5	-703.5	1,867.1	0.52	-0.16	
7,318.0	90.80	344.00	5,669.7	1,798.9	-721.5	1,930.1	1.75	0.16	
7,443.0	91.20	341.40	5,667.5	1,918.2	-758.6	2,055.0	2.10	0.32	
7,505.0	91.40	342.30	5,666.1	1,977.1	-777.9	2,117.0	1.49	0.32	
7,569.0	91.50	342.60	5,664.5	2,038.1	-797.2	2,181.0	0.49	0.16	
7,694.0	91.80	342.40	5,660.9	2,157.3	-834.8	2,305.9	0.29	0.24	
7,817.0	90.90	341.70	5,658.0	2,274.3	-872.7	2,428.8	0.93	-0.73	
7,944.0	89.70	340.70	5,657.3	2,394.5	-913.6	2,555.7	1.23	-0.94	
8,070.0	90.00	340.50	5,657.6	2,513.3	-955.5	2,681.6	0.29	0.24	
8,196.0	89.80	340.60	5,657.9	2,632.2	-997.4	2,807.4	0.18	-0.16	
8,323.0	91.80	344.40	5,656.1	2,753.2	-1,035.6	2,934.3	3.38	1.57	
8,450.0	90.90	345.00	5,653.1	2,875.7	-1,069.1	3,061.3	0.85	-0.71	
8,574.0	90.90	345.50	5,651.2	2,995.6	-1,100.7	3,185.2	0.40	0.00	
8,701.0	90.00	342.60	5,650.2	3,117.7	-1,135.6	3,312.2	2.39	-0.71	
8,827.0	88.30	340.40	5,652.0	3,237.2	-1,175.5	3,438.1	2.21	-1.35	
8,954.0	87.20	339.50	5,657.0	3,356.4	-1,219.0	3,564.7	1.12	-0.87	
9,080.0	92.30	340.30	5,657.6	3,474.6	-1,262.3	3,690.5	4.10	4.05	
9,204.0	92.20	342.40	5,652.7	3,592.0	-1,301.9	3,814.3	1.69	-0.08	

9-00149

Cathedral Energy Services

Survey Report

Company:	Chesapeake Energy Corp	**Local Co-ordinate Reference:**	Well Gerald Gourley BRK 3H
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 3H	**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 (°/100usft	Build Rate (°/100u	Formations / Comments
9,331.0	90.00	343.00	5,650.3	3,713.3	-1,339.7	3,941.2	1.80	-1.73	
9,458.0	91.30	344.10	5,648.8	3,835.1	-1,375.7	4,068.2	1.34	1.02	
9,584.0	93.40	343.60	5,643.6	3,956.0	-1,410.7	4,194.1	1.71	1.67	
9,709.0	95.20	345.70	5,634.3	4,076.2	-1,443.7	4,318.7	2.21	1.44	
9,835.0	93.10	346.60	5,625.2	4,198.2	-1,473.7	4,444.2	1.81	-1.67	
9,961.0	91.60	345.80	5,620.0	4,320.4	-1,503.8	4,570.0	1.35	-1.19	
10,086.0	91.70	345.40	5,616.4	4,441.4	-1,534.8	4,694.8	0.33	0.08	
10,212.0	90.80	344.60	5,613.6	4,563.1	-1,567.5	4,820.7	0.96	-0.71	
10,337.0	89.80	342.90	5,613.0	4,683.1	-1,602.4	4,945.7	1.58	-0.80	
10,464.0	90.60	342.90	5,612.5	4,804.5	-1,639.8	5,072.7	0.63	0.63	
10,590.0	88.80	343.00	5,613.2	4,925.0	-1,676.7	5,198.7	1.43	-1.43	
10,717.0	89.00	342.60	5,615.6	5,046.3	-1,714.3	5,325.7	0.35	0.16	
10,842.0	89.40	342.80	5,617.4	5,165.6	-1,751.4	5,450.7	0.36	0.32	
10,966.0	90.40	342.50	5,617.6	5,283.9	-1,788.4	5,574.6	0.84	0.81	
11,060.0	91.40	342.80	5,616.1	5,373.7	-1,816.4	5,668.7	1.11	1.06	Last Cathedral Survey @ 11060' MD
11,110.0	91.40	342.80	5,614.9	5,421.4	-1,831.2	5,718.6	0.00	0.00	Projection to Bit @ 11110' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Gerald Gourley BRK 3H	0.00	360.00	5,620.1	5,421.7	-1,832.6	669,480.88	1,702,584.46	40° 19' 59.444 N	80° 34' 0.343 W
- actual wellpath misses target center by 5.4usft at 11110.0usft MD (5614.9 TVD, 5421.4 N, -1831.2 E)									
- Point									
Gerald Gourley BRK 3H	0.00	360.00	5,590.1	5,421.7	-1,832.6	669,480.88	1,702,584.46	40° 19' 59.444 N	80° 34' 0.343 W
- actual wellpath misses target center by 24.9usft at 11110.0usft MD (5614.9 TVD, 5421.4 N, -1831.2 E)									
- Point									
Gerald Gourley BRK 3H	0.00	360.00	5,608.1	5,421.7	-1,832.6	669,480.88	1,702,584.46	40° 19' 59.444 N	80° 34' 0.343 W
- actual wellpath misses target center by 7.0usft at 11110.0usft MD (5614.9 TVD, 5421.4 N, -1831.2 E)									
- Point									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,020.0	5,013.5	28.0	-119.1	Last Gyro Survey @ 5020' MD
11,060.0	5,616.1	5,373.7	-1,816.4	Last Cathedral Survey @ 11060' MD
11,110.0	5,614.9	5,421.4	-1,831.2	Projection to Bit @ 11110' MD

Checked By: _____ Approved By: _____ Date: _____

Received
Office of Oil & Gas
JUL 30 2015

04/08/2016

Hydraulic Fracturing Fluid Product Component Information Disclosure

9-00149

Fracture Date:	6/15/2013
State:	WEST VIRGINIA
County:	BROOKE
API Number:	4700900149
Operator Name:	CHESAPEAKE APPALACHIA LLC
Well Name and Number:	GERALD GOURLEY BRK 3H
Longitude:	-80.55996
Latitude:	40.318357
Long/Lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	5,674
Total Water Volume (gal)*:	4,724,160

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%	80.19879%	
Recycled Produced Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	4.83198%	
EC6110A	NALCO	Anti-Bacterial Agent	Ethanol	000064-17-5	5.00%	0.00136%	
			Glutaraldehyde (Pentanediol)	000111-30-8	60.00%	0.01631%	
			Quaternary Ammonium Compounds	NA	10.00%	0.00272%	
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	98.47696%	14.78121%	
			Hydrogen chloride	7647-01-0	0.99475%	0.14931%	
			Acrylamide sodium acrylate copolymer	25085-02-3	0.21353%	0.03205%	
			Distillates (petroleum), hydrotreated light	64742-47-8	0.19566%	0.02937%	
			Guar gum	9000-30-0	0.03984%	0.00598%	
			Alkylalcohol, ethoxylate >C10	68002-97-1	0.01155%	0.00173%	
			Sorbitan monooleate	1338-43-8	0.01005%	0.00151%	

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			Acrylamide/ammonium acrylate copolymer	26100-47-0	0.00773%	0.00116%	
			Thiocyanic acid, ammonium salt	1762-95-4	0.00560%	0.00084%	
			Acrylamide, 2-acrylamido-2-methylpropanesulfonic acid, sodium salt polymer	38193-60-1	0.00535%	0.00080%	
			Poly(oxyethylene) sorbitol monostearate	9005-67-8	0.00530%	0.00080%	
			Ammonium sulfate	7783-20-2	0.00506%	0.00076%	
			Ammonium chloride	12125-02-9	0.00483%	0.00072%	
			Sodium erythorbate	6381-77-7	0.00393%	0.00059%	
			Methanol	67-56-1	0.00372%	0.00056%	
			Fatty acids, tall-oil	61790-12-3	0.00273%	0.00041%	
			Diammonium peroxidisulphate	7727-54-0	0.00228%	0.00034%	
			Thiourea, polymer with formaldehyde and 1-phenylethanone	68527-49-1	0.00225%	0.00034%	
			Sodium sulfate	7757-82-6	0.00219%	0.00033%	
			Alcohols, C14-15, ethoxylated (7EO)	68951-67-7	0.00105%	0.00016%	
			Ethoxylated oleic acid	9004-96-0	0.00097%	0.00014%	
			Prop-2-yn-1-ol	107-19-7	0.00070%	0.00010%	
			Polymer of 2-acrylamido-2-methylpropanesulfonic acid sodium salt and methyl acrylate	136793-29-8	0.00057%	0.00009%	
			Alkenes, C>10 a-	64743-02-8	0.00046%	0.00007%	
			Urea	57-13-6	0.00035%	0.00005%	
			Sorbitol Tetraoleate	61723-83-9	0.00029%	0.00004%	
			Sodium sulfocyanate	540-72-7	0.00025%	0.00004%	
			2-Propenoic acid, ammonium salt	10604-69-0	0.00024%	0.00004%	
			Non-crystalline silica	7631-86-9	0.00016%	0.00002%	
			Alcohols, C12-C14, ethoxylated	68439-50-9	0.00014%	0.00002%	
			Alcohols, C12-C16, ethoxylated	68551-12-2	0.00014%	0.00002%	
			C14 alpha olefin ethoxylate	84133-50-6	0.00014%	0.00002%	
			Tetrasodium ethylenediaminetetraacetate	64-02-8	0.00008%	0.00001%	
			2-propenamid	79-06-1	0.00004%	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%	

Additional Ingredients Not Listed on MSDS							
EC6110A, EC6629A	NALCO	Anti-Bacterial Agent, Scale Inhibitor	Methanol (Methyl Alcohol)	000067-56-1		0.00607%	
			Proprietary Acrylate Polymer	TRADE SECRET		0.00607%	
			Proprietary Quaternary Ammonium Salt	TRADE SECRET		0.00607%	
			Water	007732-18-5		0.02636%	

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* 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%

"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.