

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

API 47-051-01711 County Marshall District Clay  
Quad Glen Easton Pad Name Francis Field/Pool Name \_\_\_\_\_  
Farm name Francis Well Number 3H  
Operator (as registered with the OOG) Chevron Appalachia, LLC  
Address 800 Mountain View Drive City Smithfield State PA Zip 15478

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4413742.352 Easting 526324.246  
Landing Point of Curve Northing 4413935.6 Easting 527160.4  
Bottom Hole Northing 4413143.7 Easting 527809.7

Elevation (ft) 1283 GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine  
Mud Type(s) and Additive(s)  
None Aqueous Fluid containing weighting agent, fluid loss additive, emulsifier, Viscosity and Rheological Control agent, Oil-Wetting Agent, fluid rheology conditioner

Date permit issued 3/20/2014 Date drilling commenced 5/24/2014 Date drilling ceased 10/25/2014  
Date completion activities began 2/22/2015 Date completion activities ceased 7/24/2015  
Verbal plugging (Y/N) N Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 619 - 648 Open mine(s) (Y/N) depths \_\_\_\_\_  
Salt water depth(s) ft 1890' Void(s) encountered (Y/N) depths \_\_\_\_\_  
Coal depth(s) ft 105-145', 490-520', 700-840', 1080-1190', 1475-1585', 1640-1660' Cavern(s) encountered (Y/N) depths \_\_\_\_\_  
Is coal being mined in area (Y/N) No but not sealed

Received  
Office of Oil & Gas  
JUL 30 2015  
No

Reviewed by:  
JK 8/21/15  
10/30/2015

API 47-051 - 01711 Farm name Francis Well number 3H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	36	30	45	New	X-56; 118.6		
Surface	17-1/2	13-3/8	652	New	J-55; 54.50		
Coal							
Intermediate 1	12-1/4	9-5/8	2663	New	L-80; 40		
Intermediate 2							
Intermediate 3							
Production	8-1/2	5-1/2	11608	New	P-110; 20		
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Bulk Cement	Bulk Cement	Bulk Cement	Bulk Cement	Bulk Cement	Surface	8.0
Surface	Class A	681	15.6	1.21	764	Surface	8.0
Coal							
Intermediate 1	Class A	950	15.6	1.18	1121	Surface	8.0
Intermediate 2							
Intermediate 3							
Production	Class A	2277	15.2	1.25	2847	Surface	Well TD'd
Tubing							

Drillers TD (ft) 11655 Loggers TD (ft) 11655  
 Deepest formation penetrated Marcellus Shale Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 4545

Check all wireline logs run  caliper  density  deviated/directional  induction  
 neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No  Conventional  Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_  
One bow spring centralizer every two ft/s on the Surface string and intermediate. Two centralizer every ft in the lateral and curve, then one every two ft/s from KOP to surface

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS See attached Perforation / Stimulation

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

**Received**  
**Office of Oil & Gas**  
 JUL 30 2015





API: 47-051-01711	Well Name: Francis	Well Number: 3H
-------------------	--------------------	-----------------

PERFORATION RECORD					
Stage No.	Perforation Date	Perforated From TMD Ft.	Perforated To TMD Ft.	Number of Perforations	Formation(s)
1	4/4/2015	11576	11414	50	Marcellus
2	4/4/2015	11376	11374	50	Marcellus
3	4/5/2015	11176	11014	50	Marcellus
4	4/5/2015	10976	10814	50	Marcellus
5	4/6/2015	10770	10614	50	Marcellus
6	4/6/2015	10576	10414	50	Marcellus
7	4/6/2015	10376	10211	50	Marcellus
8	4/7/2015	10171	10014	50	Marcellus
9	4/7/2015	9976	9814	50	Marcellus
10	4/7/2015	9776	9614	50	Marcellus
11	4/7/2015	9576	9414	50	Marcellus
12	4/8/2015	9376	9214	50	Marcellus
13	4/8/2015	9176	9010	50	Marcellus
14	4/9/2015	8974	8816	50	Marcellus
15	4/9/2015	8616	8774	50	Marcellus
16	4/9/2015	8576	8414	50	Marcellus
17	4/10/2015	8376	8205	50	Marcellus
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					

Please insert additional copies of this page if additional rows/stages are needed.

Received  
Office of Oil & Gas  
JUL 30 2015

10/30/2015

API: 47-051-01711	Well Name: Francis	Well Number: 3H
-------------------	--------------------	-----------------

STIMULATION INFORMATION / STAGE								
Complete a separate record for each stimulation stage. (Please insert additional lines for additional stages or additional pages as applicable).								
Stg No.	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	4/4/2015	97.6	8281	6439	4196	263080	8294	
2	4/4/2015	95.4	7871	6299	4727	299060	7364	
3	4/5/2015	98.8	8044	7977	4750	263040	7000	
4	4/5/2015	100.4	7788	6290	4679	264540	8341	
5	4/6/2015	96.4	8028	6405	4918	304300	9445	
6	4/6/2015	100	7600	6026	5050	299380	8473	
7	4/6/2015	99.9	8236	6526	4781	305540	7668	
8	4/7/2015	97.5	7609	5927	5238	300480	8076	
9	4/7/2015	99.9	7792	5853	5300	301120	7291	
10	4/7/2015	100.1	7676	5583	4886	312000	7493	
11	4/7/2015	97.7	7330	5906	5280	303700	7299	
12	4/8/2015	100	7159	5822	5230	301540	7349	
13	4/8/2015	100	7484	5759	5272	301380	6973	
14	4/9/2015	99.7	7248	6263	5040	304940	7237	
15	4/9/2015	99.9	7164	6491	5007	299420	7457	
16	4/9/2015	99.9	7467	5912	4699	303160	7193	
17	4/10/2015	99.9	7601	6475	4632	316020	7415	
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Received  
Office of Oil & Gas  
JUL 30 2015



API 47-051-01711 Farm name Francis Well number 3H

PRODUCING FORMATION(S)	DEPTHS	
	TVD	MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump  
 SHUT-IN PRESSURE Surface \_\_\_\_\_ psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs  
 OPEN FLOW Gas \_\_\_\_\_ mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd GAS MEASURED BY  
 Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
Monongahela Group Sand	596	635	596	635	Fresh Water 619'-648'MD 2" stream
Pittsburgh Coal	816	820	816	820	Coal
Big Lime	1860	1940	1860	1940	Limestone: crm-wh, hd, crpxln (Brine @ 1890' 25bbbls/hr)
Burgoon (Big Injun)	1940	2130	1938	2128	SS: offwh, wh, cons, clr, trans, lcemt, fg-mg
Weir Sand	2290	2310	2288	2308	SLTST: ltgy-mgy, occ mgy, hrd, vf-fg, tcmt, bio, arg, sl calc
Berea Sand	2525	2550	2522	2547	SS: wh, dr, trans, ltgy-gy, chs, lomt, mg-fg, sbkng-arg, arg, msph, non calc, tr flor, exd fast cut, frt odr, lse pyr
Burket Shale	6387	6407	7602	7640	SH: drkgy, v drkgy, frm, slty, grty, sbbiky-sbfiss, modcalc, embd calc, lse calct
Tully Limestone	6407	6441	7640	7707	LS: ltgy, gy, mgy, frm-hrd, dns, cln, mic-fxln, v, arg
Hamilton Shale	6441	6521	7707	8101	SH: drkgy, v drkgy, frm, slty, grty, sbbiky-sbfiss, carb, modv, calc, lse calct, w/LS
Marcellus Shale	6521		8101		SH: drkgy, v drkgy, frm, slty, grty, sbbiky-sbfiss, non calc, lse calct, lse pyr, w/LS gy, ltgy, hrd, molt, mic, fxln, v, arg

Please insert additional pages as applicable.

Drilling Contractor See Attached  
 Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Logging Company Stratagraph NE Inc.  
 Address 116 Ellsworth Avenue City Marietta State OH Zip 45750

Cementing Company Baker Hughes  
 Address 5373 West Alabama, Suite 300 City Houston State TX Zip 77056

Stimulating Company Schlumberger Technology Corp  
 Address Two Robinson Plaza, Suite 200 City Pittsburgh State PA Zip 15205

Please insert additional pages as applicable.

Completed by Jackie M. Scholar Telephone 724-564-3721  
 Signature *Jackie M. Scholar* Title Regulatory Compliance Team Lead Date 7/27/2015

Received  
Office of Oil & Gas  
JUL 30 2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

10/30/2015

API: 47-51-01711	Well Name: Francis	Well Number: 3H
------------------	--------------------	-----------------

DRILLING CONTRACTORS			
Driller	Driller	Driller	Driller
Name <b>Rocky Mountain Drilling</b>	Name <b>Highlands Drilling LLC</b>	Name <b>Nabors Drilling USA</b>	Name
Address 185 North Vernal Ave, Suite 200	Address 900 Virginia Street East	Address 10100 NW 10th Street	Address
City - State - Zip Vernal, UT 84078	City - State - Zip Charleston, WV 25301	City - State - Zip Oklahoma City, OK 73127	City - State - Zip
Phone 435.789.3320	Phone 304.380.0114	Phone 405.324.8081	Phone

Received  
Office of Oil & Gas  
JUL 30 2015



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/4/2015
Job End Date:	4/10/2015
State:	West Virginia
County:	Marshall
API Number:	47-051-01711-00-00
Operator Name:	Chevron USA Inc.
Well Name and Number:	Francis 3H
Longitude:	-80.692220200
Latitude:	39.87318300
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,572
Total Base Water Volume (gal):	5,475,461
Total Base Non Water Volume:	

## 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
Base Fluid	Chevron	Carrier/Base Fluid	Water (Including Mix Water Supplied by Client)	7732-18-5	100.00000	89.63961	
Proppant	Schlumberger	Proppant	Crystalline Silica	14808-60-7	100.00000	10.13173	
U580	Schlumberger	Gelling Agent, Water	Carbohydrate Polymer	Proprietary	100.00000	0.05978	
B466	Schlumberger	Friction Reducer	Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.00444	
			Ammonium Acetate	631-61-8	6.00000	0.00089	
			Alcohol Ethoxylates	Proprietary	5.00000	0.00074	
U734	Schlumberger	Gel Breaker	Hemicellulase enzyme	9012-54-8	100.00000	0.00274	
U042	Schlumberger	Iron Chelating Agent	Tetrasodium ethylenediaminetetraacetate	34-02-8	60.00000	0.00167	
			Sodium nitrotriacetate (im purity)	5064-31-3	10.00000	0.00028	
			Sodium hydroxide	1310-73-2	5.00000	0.00014	
EG6116A	Naico	Biocide					



51-01711

Amended 4/8/15



			Polyethylene Glycol	25322-68-3	60.00000	0.00113	
			2,2-Dibromo-3-nitropropanamide	10222-01-2	30.00000	0.00058	
			Dibromoacetonitrile	3292-43-5	5.00000	0.00010	
7.5% Acid	Schlumberger	Perf Cleanup	Hydrochloric Acid	7647-01-0	8.00000	0.00137	
L058	Schlumberger	Iron Stabilizer	Sodium erythorbate	6381-77-7	100.00000	0.00068	
M300	BASF Corporation	Biocide	Glutaral	111-30-8	25.00000	0.00038	
			Water	7732-18-5	75.00000	0.00013	
B317	Schlumberger	Scale Inhibitor	Trisodium ortho phosphate	7601-54-9	5.00000	0.00011	
			Ethane-1,2-diol	107-21-1	5.00000	0.00011	
A264	Schlumberger	Corrosion Inhibitor	Methanol	67-56-1	40.00000	0.00005	
			Aliphatic alcohols, ethoxylated #1	Proprietary	30.00000	0.00004	
			Aliphatic acids	Proprietary	30.00000	0.00004	
			Prop-2-yn-1-ol	107-19-7	10.00000	0.00001	

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

\* 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%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.  
 Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

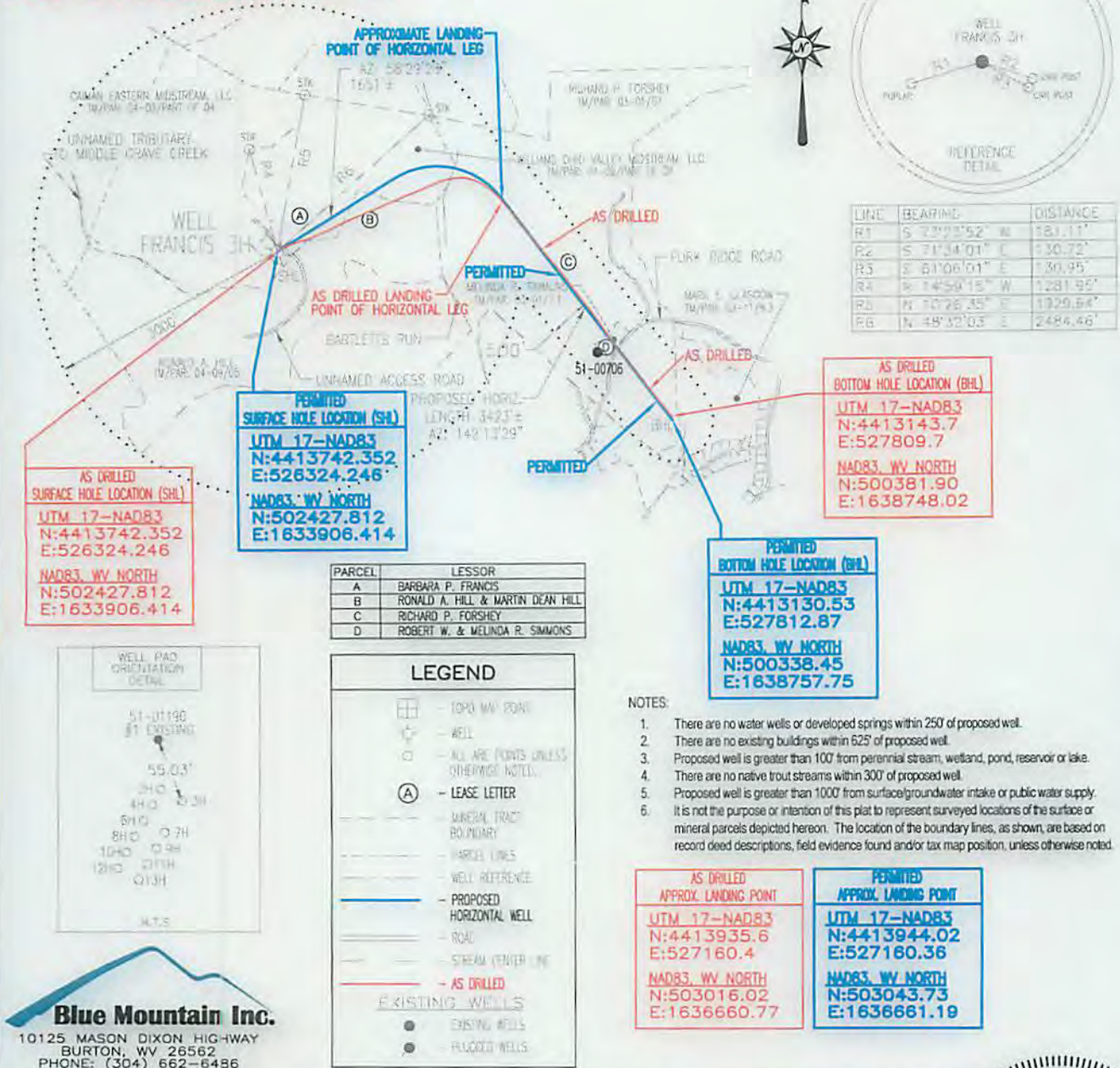
Received  
 Office of Oil & Gas  
 JUL 30 2015



Well is located on topo map 612 feet south of Latitude: 39° 52' 30"

# AS DRILLED PLAT

Well is located on topo map 7,160 feet west of Longitude: 80° 40' 00"

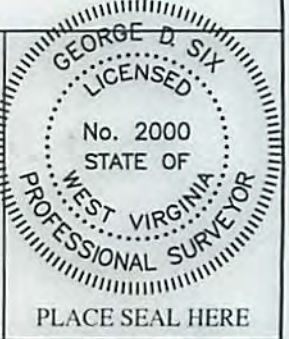


**Blue Mountain Inc.**  
 10125 MASON DIXON HIGHWAY  
 BURTON, WV 26562  
 PHONE: (304) 662-6486

FILE #: FRANCIS 3H-AS DRILLED  
 DRAWING #: FRANCIS 3H-AS DRILLED  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: *[Signature]*  
 R.P.E.: \_\_\_\_\_ L.L.S.: P.S. No. 2000



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP

OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

DATE: JUNE 23, 2015  
 OPERATOR'S WELL #: FRANCIS 3H-AS DRILLED  
 API WELL #: 47 51 01711  
 STATE COUNTY PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: MIDDLE GRAVE CREEK ELEVATION: 1260.14'  
 COUNTY/DISTRICT: MARSHALL / CLAY QUADRANGLE: GLEN EASTON, WV 7.5'  
 SURFACE OWNER: WILLIAMS OHIO VALLEY MIDSTREAM, LLC ACREAGE: 70.41±  
 OIL & GAS ROYALTY OWNER: BARBARA P. FRANCIS ACREAGE: 424.680± **10/30/2015**

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY): \_\_\_\_\_

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,512'± TMD: 11,168'±  
 WELL OPERATOR CHEVRON APPALACHIA, LLC DESIGNATED AGENT KENNETH E. TAWNEY  
 Address 800 MOUNTAIN VIEW DRIVE Address 500 LEE STREET, EAST SUITE 1600  
 City SMITHFIELD State PA Zip Code 15478 City CHARLESTON State WV Zip Code 25301-3202