

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

API 47 - 051 - 01715 County Marshall District Clay
Quad Glen Easton Pad Name Francis Field/Pool Name _____
Farm name Francis Well Number 8H
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 4413733.076 Easting 526312.448
Landing Point of Curve Northing 4413781.1 Easting 526134.4
Bottom Hole Northing 4415264.0 Easting 524946.6

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 4/20/2014 Date drilling ceased 9/7/2014
Date completion activities began 2/25/2015 Date completion activities ceased 6/28/2015
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 Received
Salt water depth(s) ft 1890' Void(s) encountered (Y/N) depths Office of Oil & Gas
Coal depth(s) ft 105-145', 490-520', 700-840', 1080-1150', 1475-1585', 1640-1660' Cavern(s) encountered (Y/N) depths JUL 16 2015
Is coal being mined in area (Y/N) No but not sealed

Reviewed by:
JK Skelton
10/23/2015

API 47-051 - 01715 Farm name Francis Well number 8H

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	653'	New	J-55; 54.50		
Coal							
Intermediate 1	12 1/4	9 5/8	2537'	New	N-80; 40		
Intermediate 2							
Intermediate 3							
Production	8 1/2	5 1/2	13612'	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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Bulk Cement	Bulk Cement	Bulk Cement	Bulk Cement	Bulk Cement	Surface	8.0
Surface	Class A	635	15.6	1.21	768	Surface	8.0
Coal							
Intermediate 1	Class A	892	15.6	1.20	1066	Surface	8.0
Intermediate 2							
Intermediate 3							
Production	Class A	1825	15.2	1.25	2283	2475'	Well TD'd
Tubing							

Drillers TD (ft) ¹³⁶⁷⁹ 6447 Loggers TD (ft) ¹³⁶⁷⁹ _____
 Deepest formation penetrated Marcellus Shale Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) ⁴⁷⁴⁰ _____

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 jts on the Surface string and Intermediate. Two centralizer every ft in the lateral and curve, then one every two jts from KOP to surface

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

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED Water based chemical used

Received
Office of Oil & Gas
JUL 16 2015

API 47- 051 - 01715 Farm name Francis Well number 8H

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 ₂ 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' 25bbis/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, clr, trans, ltgy-gy, cns, lcmt, mg-fg, sbang-ang, arg, msph, non calc, tr flwr, end fast out, lnt odr, lse pyr
Burket Shale	6398	6418	6600	6630	SH: drkgy, v. drkgy, frm, slty, grty, sbbiky-sbfiss, modcalc, embd calc, lse calct
Tully Limestone	6418	6452	6630	6684	LS: ltgy, gy, mgy, frm-hrd, dns, cln, mic-fxln, v. arg
Hamilton Shale	6452	6529	6684	6910	SH: drkgy, v. drkgy, frm, slty, grty, sbbiky-sbfiss, carb, modv. calc, lse calct, w/LS
Marcellus Shale	6529		6910		SH: drkgy, v. drkgy, frm, slty, grty, sbbiky-sbfiss, non calc, lse calct, lse pyr, w/LS gy, ltgy, hrd, mott, mic, fdn, v. arg

Please insert additional pages as applicable.

Drilling Contractor SEE ATTACHED
Address _____ City _____ State _____ Zip _____

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company SEE ATTACHED
Address _____ City _____ State _____ Zip _____

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 [Signature] Title Regulatory Compliance Team Lead Date 7/1/2015

Received
Office of Oil & Gas
JUL 16 2015

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

API: 47-051-01715	Well Name: Francis	Well Number: 8H
-------------------	--------------------	-----------------

CEMENTING CONTRACTORS			
Name	Name	Name	Name
Schlumberger Technology, Corp.	Baker Hughes		
Address Two Robinson Plaza, Suite 200	Address 5373 West Alabama, Suite 300	Address	Address
City - State - Zip Pittsburgh, PA 15205	City - State - Zip Houston, TX 77056	City - State - Zip	City - State - Zip

Received
Office of Oil & Gas
JUL 16 2015

10/23/2015

API: 47-051-01715	Well Name: Francis	Well Number: 8H
-------------------	--------------------	-----------------

DRILLING CONTRACTORS			
Driller	Driller	Driller	Driller
Name Rocky Mountain Drilling	Name Highlands Drilling LLC	Name Nabors Drilling USA	Name
Address 185 North Vernal Avenue, Suite 2	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

Received
Office of Oil & Gas
JUL 16 2015

API: 47-051-01715	Well Name: Francis	Well Number: 8H
-------------------	--------------------	-----------------

PERFORATION RECORD					
Stage No.	Perforation Date	Perforated From TMD Ft.	Perforated To TMD Ft.	Number of Perforations	Formation(s)
1	5/6/2015	13584	13430	50	Marcellus
2	5/7/2015	13396	13242	15	Marcellus
3	5/7/2015	13208	13054	15	Marcellus
4	5/7/2015	13020	12868	15	Marcellus
5	5/8/2015	12832	12678	15	Marcellus
6	5/8/2015	12641	12485	15	Marcellus
7	5/9/2015	12456	12302	15	Marcellus
8	5/24/2015	12268	12112	15	Marcellus
9	5/25/2015	12073	11926	15	Marcellus
10	5/25/2015	11884	11738	15	Marcellus
11	5/25/2015	11700	11552	15	Marcellus
12	5/26/2015	11516	11362	15	Marcellus
13	5/27/2015	11328	11174	15	Marcellus
14	5/27/2015	11140	10986	15	Marcellus
15	5/27/2015	10952	10798	15	Marcellus
16	5/28/2015	10764	10610	15	Marcellus
17	5/28/2015	10576	10426	15	Marcellus
18	5/29/2015	10388	10234	15	Marcellus
19	5/29/2015	10200	10042	15	Marcellus
20	5/29/2015	10014	9858	15	Marcellus
21	5/30/2015	9824	9670	15	Marcellus
22	5/30/2015	9631	9482	15	Marcellus
23	5/31/2015	9448	9297	15	Marcellus
24	5/31/2015	9268	9122	15	Marcellus
25	5/31/2015	9088	8939	15	Marcellus
26	6/1/2015	8900	8746	15	Marcellus
27	6/1/2015	8712	8555	15	Marcellus
28	6/1/2015	8527	8370	15	Marcellus
29	6/1/2015	8332	8182	15	Marcellus
30	6/2/2015	8142	7994	15	Marcellus
31	6/2/2015	7960	7806	15	Marcellus
32	6/2/2015	7772	7618	15	Marcellus
33	6/3/2015	7584	7430	15	Marcellus
34	6/3/2015	7396	7242	15	Marcellus
35	6/3/2015	7208	7054	15	Marcellus
36					
37					
38					
39					
40					

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

Received
Office of Oil & Gas
JUL 16 2015

10/23/2015

API: 47-051-01715	Well Name: Francis	Well Number: 8H
-------------------	--------------------	-----------------

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	5/6/2015	96.4	8579	6678	4852	398240	9206	N/A
2	5/7/2015	94.4	8665	6069	4711	400590	10012	N/A
3	5/7/2015	93.3	8673	5292	4852	404660	9730	N/A
4	5/7/2015	95.9	9088	5644	4711	403600	9767	N/A
5	5/8/2015	98.1	8562	5659	5007	403220	10195	N/A
6	5/8/2015	94.8	8629	5097	4898	405100	9685	N/A
7	5/9/2015	83.5	8342	-	4619	341320	10268	N/A
8	5/24/2015	95	8726	5322	4809	315880	11922	N/A
9	5/25/2015	96.6	8394	5547	4816	401880	12317	N/A
10	5/25/2015	94.8	8688	5335	4848	368680	11170	N/A
11	5/25/2015	96.8	8545	5222	4609	400240	13897	N/A
12	5/26/2015	97.3	8085	5345	4852	398220	12179	N/A
13	5/27/2015	95	7861	5300	4941	403840	10845	N/A
14	5/27/2015	97	8496	5563	4785	401700	10204	N/A
15	5/27/2015	91.9	8150	5187	5160	402120	10193	N/A
16	5/28/2015	95.3	8410	5693	4908	404240	9454	N/A
17	5/28/2015	99	8141	5951	4741	401960	9899	N/A
18	5/29/2015	99.2	7981	5489	5017	402600	9629	N/A
19	5/29/2015	97.4	8154	5156	5011	400140	9761	N/A
20	5/29/2015	54.6	9255	6425	5000	2000	4218	N/A
21	5/30/2015	99.8	7790	NA	4918	403060	10018	N/A
22	5/30/2015	43.8	8908	5243	7371	560	2395	N/A
23	5/31/2015	96.6	8116	NA	4989	383900	10377	N/A
24	5/31/2015	96.4	7887	5500	4955	400980	9972	N/A
25	5/31/2015	99.7	7773	5500	5082	404180	9644	N/A
26	6/1/2015	87.1	8825	6072	4890	225280	8864	N/A
27	6/1/2015	99.4	7865	5756	5121	404080	9481	N/A
28	6/1/2015	99.8	7750	5315	5000	405160	9813	N/A
29	6/1/2015	99.5	7758	6413	5230	400620	9353	N/A
30	6/2/2015	97.7	7733	6885	5335	402360	10927	N/A
31	6/2/2015	100	7613	6144	5308	401700	9549	N/A
32	6/2/2015	94.8	7469	5833	4690	398180	9351	N/A
33	6/3/2015	97.8	7917	5803	5300	397140	10286	N/A
34	6/3/2015	100.1	7502	6353	5023	403560	9946	N/A
35	6/3/2015	93.9	8580	5923	5093	270220	10839	N/A
36								
37								
38								
39								
40								

Received
Office of Oil & Gas
JUL 16 2015

51-01715

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/6/2015
Job End Date:	6/3/2015
State:	West Virginia
County:	Marshall
API Number:	47-051-01715-00-00
Operator Name:	Chevron USA Inc.
Well Name and Number:	Francis 8H
Longitude:	-80.69233999
Latitude:	39.87310000
Datum:	NAD83
Federal/Tribal Well:	NC
True Vertical Depth:	6,447
Total Base Water Volume (gal):	14,505,352
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	90.03150	
Proppant	Schlumberger	Proppant	Crystalline Silica	14808-60-7	100.00000	9.72780	
J580	Schlumberger	Gelling Agent, Water	Carbohydrate Polymer	Proprietary	100.00000	0.07885	
10% Acid	Schlumberger	Perf Cleanup	Hydrochloric Acid	7647-01-0	10.00000	0.00708	
7.5% Acid	Schlumberger	Perf Cleanup	Hydrochloric Acid	7647-01-0	8.00000	0.00533	
J609W	Schlumberger	Friction Reducer	Ammonium Sulfate	7783-20-2	30.00000	0.00387	
J134	Schlumberger	Gel Breaker	Urea	57-13-6	5.00000	0.00065	
M300	BASF Corporation	Biocide	Hemicellulase enzyme	9012-54-8	100.00000	0.00367	
J042	Schlumberger	Iron Chelating Agent	Water	7732-18-5	75.00000	0.00161	
			Glutaral	111-30-8	25.00000	0.00054	

Amended 6/14/15

51-01715

			Tetrasodium ethylenediaminetetraacetate	64-02-8	60.00000	0.00165
			Trisodium nitrilotriacetate (im purity)	5064-31-3	10.00000	0.00028
			Sodium hydroxide	1310-73-2	5.00000	0.00014
L058	Schlumberger	Iron Stabilizer	Sodium erythorbate	6381-77-7	100.00000	0.00078
B317	Schlumberger	Scale Inhibitor	Trisodium ortho phosphate	7601-54-9	5.00000	0.00010
			Ethane-1,2-diol	107-21-1	5.00000	0.00010
A264	Schlumberger	Corrosion Inhibitor	Methanol	67-56-1	40.00000	0.00006
			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)

Well is located on topo map 643 feet south of Latitude: 39° 52' 30"

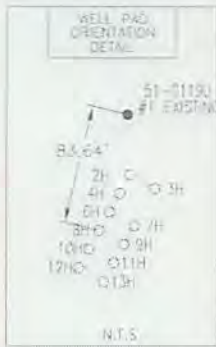
Well is located on topo map 7.198 feet west of Longitude: 80° 40' 00"

AS DRILLED APPROX. LANDING POINT
 UTM 17-NAD83
 N:4413781.1
 E:526134.4
 NAD83, WV NORTH
 N:502565.47
 E:1633285.71

PERMITTED APPROX. LANDING POINT
 UTM 17-NAD83
 N:4413863.41
 E:526224.93
 NAD83, WV NORTH
 N:502174.20
 E:1633576.19

AS DRILLED PLAT

AS DRILLED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4415264.0
 E:524946.6
 NAD83, WV NORTH
 N:507496.61
 E:1629469.20



LEGEND	
	- TOPO MAP POINT
	- WELL
	- ALL Wc POINTS UNLESS OTHERWISE NOTED
	- LEASE LETTER
	- MINERAL TRACT BOUNDARY
	- PARCEL LINES
	- WELL REFERENCE
	- PROPOSED HORIZONTAL WELL
	- ROAD
	- STREAM CENTER LINE
	- AS DRILLED
EXISTING WELLS	
	- EXISTING WELLS
	- PLUGGED WELLS

LINE	BEARING	DISTANCE
R1	S 73°23'52" W	121.13
R2	S 71°24'01" E	130.75
R3	S 61°06'01" E	130.95
R4	N 2°01'43" W	2644.98
R5	N 09°16'48" W	2001.43
R6	N 68°53'24" E	2442.18

PERMITTED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4415261.13
 E:524943.41
 NAD83, WV NORTH
 N:507487.42
 E:1629458.50

AS DRILLED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4413733.076
 E:526312.448
 NAD83, WV NORTH
 N:502398.022
 E:1633867.193

PERMITTED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4413733.076
 E:526312.448
 NAD83, WV NORTH
 N:502398.022
 E:1633867.193

NOTES:

- There are no water wells or developed springs within 250' of proposed well.
- There are no existing buildings within 625' of proposed well.
- Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
- There are no native trout streams within 300' of proposed well.
- Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
- It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.

PARCEL	LESSOR
A	BARBARA P. FRANCIS
B	BARBARA P. FRANCIS
C	BARBARA P. FRANCIS
D	TIMOTHY S. & SHIRLEY M. DULANEY

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

FILE #: FRANCIS 8H-AS DRILLED
 DRAWING #: FRANCIS 8H-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:

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 8H-AS DRILLED
 API WELL #: 47 51 01715
 STATE COUNTY PERMIT

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

WATERSHED: MIDDLE GRAVE CREEK ELEVATION: 1260.91'

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: 371.245±

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: 13,834'±

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

10/23/2015