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

API 47 - 103 - 02997 County Wetzel District Grant
Quad Pine Grove Pad Name WVDNR Pad 6 Field/Pool Name Jacksonburg
Farm name WV Conservation Commission Well Number WVDNR # 1412
Operator (as registered with the OOG) Triad Hunter, LLC
Address 777 Post Oak Blvd. Suite 910 City Houston State Texas Zip 77056

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4372900 Easting 529450
Landing Point of Curve Northing 4372774 Easting 529754
Bottom Hole Northing 4371480 Easting 530670

Elevation (ft) 1460' 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)
Synthetic Base Mud System

Date permit issued 6/9/14 Date drilling commenced 8/4/14 Date drilling ceased 10/4/14
Date completion activities began 11/17/14 Date completion activities ceased 12/21/14
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft Surface - 300' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1400' - 2400' Void(s) encountered (Y/N) depths N
Coal depth(s) ft Unknown Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
JK 6/25/15

API 47- 103 - 02997 Farm name WV Conservation Commission Well number WVDNR # 1412

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	26"	20"	100'	new	A53B 90 lb.	none	yes
Surface	17 1/2"	13 3/8"	1305'	new	J-55 54.5 lb.	none	yes - 60 bbls.cement returns
Coal							
Intermediate 1	12 1/4"	9 5/8"	3416'	new	J-55 36 lb.	none	yes - 51 bbls. cement returns
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	13,354'	new	P-110 20lb.	none	yes - 70 bbls. cement returns
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	Class A	190	15.6	1.18	224	surface	12+
Surface	Class A	1059	15.6	1.19	1260	surface	8 - 12
Coal							
Intermediate 1	Class A	1175	15.6	1.21	1422	surface	8 - 12
Intermediate 2							
Intermediate 3							
Production	Varicem / Fraccem	1455 / 455 / 780	13.6 / 15.2 / 15.2	1.53 / 1.28 / 2.08	4431	surface'	12+
Tubing							

Drillers TD (ft) 13,371' TMD 7625' TVD Loggers TD (ft) No open hole logs run in well

Deepest formation penetrated Marcellus Shale Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) @ 6550'

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

13 3/8" - 1305' 4 centralizers

9 5/8" - 3416' 9 centralizers

5 1/2" - 13,354' 52 turbo centralizers in lateral & curve, and14 bow centralizers in vertical section

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	See Enclosed	Spread Sheet			

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations 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)
	See	Enclosed	Spread Sheet					

Please insert additional pages as applicable.

WR-35
Rev. 8/23/13

API 47- 103 - 02997 Farm name WV Conservation Commission Well number WVDNR # 1412

PRODUCING FORMATION(S)	DEPTHS		
Marcellus Shale	7,625' TVD	13,371' MD	

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 3,000 psi Bottom Hole 6,302 psi DURATION OF TEST 744 hrs

OPEN FLOW Gas 5,750 mcfpd Oil 24 bpd NGL bpd Water 100 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
WVDNR # 1412 H	0		0		** The pilot hole for the WVDNR # 1412 is the Mills Wetzel # 31 H-1,
					permit number 47-103-02339. A copy of the stratigraphic record for the
					pilot hole is enclosed with this filing. Formation identification was based
Big Injun Sand		2698'			on correlation between the bond log from the WVDNR # 1412 H well and
Warren Sand	3287'	3334'			the open hole log the Mills Wetzel # 31 H-1 well.
Geneseo	7385'	7414'	7550'	7595'	
Tully	7414'	7518'	7595'	7818'	
Marcellus	7518'	NL	7818'	NL	WVDNR # 1412 H
					KOP = 6550' VD
			Cased Hole Log	T.D. = 7851' MD	LP = 8200' MD
					BHL = 13,371' TMD

Please insert additional pages as applicable.

Drilling Contractor Nabors Drilling USA, LP
Address 515 West Greens Road, Suite 1000 City Houston State Texas Zip 77067

Logging Company Blue Dot Energy Services (KLX)
Address P.O. Box 784 City Bridgeport State WV Zip 26330

Cementing Company Halliburton Energy Services
Address 4999 East Point Drive City Zanesville State Ohio Zip 43702

Stimulating Company Producer Services Corrp.
Address 109 S. Graham Street City Zanesville State Ohio Zip 43701

Please insert additional pages as applicable.

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Completed by Ben Smeltzer Telephone (740) 760-0570
Signature Ben Smeltzer Title Geologist Date June 12, 2015

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

MILLS WETZEL # 31 H-1 (Pilot Hole for WVDNR # 1410, # 1411, # 1412, & # 1413)
Permit # 47-103-02339

Lithology / Formation	Depth	Shows / Comments
Gordon Sandstone	2952' - N/A	**No open hole logs above 3062'**
9 5/8" Casing Point	3062'	
shale & siltstone	3062' - 3586'	
First Warren Sand	3586' -3628'	
shale	3628' - 3643'	
Second Warren Sand	3643' - 3654'	
shale & siltstone	3654' - 4799'	
Riley	4799' - 4818'	
shale & siltstone	4818' - 5207'	
Benson Sandstone	5207' - 5240'	
shale	5240' - 5574'	Base Huron Shale @ 5293'
Alexander Siltstone	5574' - 5616'	
shale	5616' - 6275'	
Rhinestreet Shale	6275' - 6790'	Slight Show Gas
Mahantango Formation	6790' - 7048'	
Geneseo Formation	7048' - 7086'	
Tully Limestone	7086' - 7152'	
Marcellus Shale	7152' - 7208'	Show Gas
Onondaga Limestone	7208' -7238'	
		Driller's T.D = N/A
		Logger's T.D. = 7238'
		Note: Revised from original WR-35 filing.

WVDNR 1412H

API	Total Depth (ft) (PBTD)	Landing Point MD (ft)	Landing Point Angle (Degrees)	Effective Lateral Length (ft)	TVD (ft)	Tubing Depth (ft)	Tubing Size (OD)	Tubing Angle (Degrees)		Casing Depth (ft)	Casing Size (OD)
47-103-02997	13,371			6,504	7,625						

Stages	Perforation Intervals		Stage Intervals		Total Volume (bbl)	Max Rate (bpm)	Formation Break (PSI)	Average Pressure (PSI)	80/100 Mesh Pumped (Lb)	30/50 Mesh Pumped (Lb)	20/40 Mesh /CRC Pumped (Lb)	Total Sand Pumped (Lb)	ISIP (PSI)	Completed per design	Notes on Frac
	Actual Length	Footage	Actual Length	Footage											
Stage 1	13,069'-13,232'	163	13,247' -13,038'	209	5,399	55	6,200	8,079	9,200	10,000	0	19,200	5,130		
Stage 2	12,866'-13,028'	162	13,038' -12,850'	188	9,498	75	6,298	7,439	49,000	320,000	57,000	426,000	6,646		
Stage 3	12,661'-12,823'	162	12,850' -12,647'	203	11,736	69	6,747	6,938	13,300	320,000	57,400	390,700	5,013		
Stage 4	12,457'-12,620'	163	12,647' -12,444'	203	8,327	70	6,325	6,882	49,000	240,000	0	289,000	4,566		
Stage 5	12,254'-12,417'	163	12,444' -12,240'	204	10,476	70	6,230	7,018	49,100	320,400	0	369,500	4,000		
Stage 6	12,051'-12,213'	162	12,240' -12,037'	203	9,987	70	5,898	6,541	49,000	320,400	54,600 W / 36,300 CRC	460,300	5,715		
Stage 7	11,849'-12,010'	161	12,037' -11,834'	203	7,983	71	6,150	6,672	49,100	170,000	0	219,100	N/A		
Stage 8	11,644'-11,807'	163	11,834' -11,632'	202	9,737	70	5,560	6,521	49,000	320,400	90,900	460,300	5,234		
Stage 9	11,441'-11,603'	162	11,632' -11,427'	205	10,028	70	NA	6,841	49,000	320,400	75,400	444,800	5,845		
Stage 10	11,235'-11,400'	165	11,427' -11,224'	203	11,224	70	6,907	6,910	49,000	320,400	90,900	460,300	5,523		
Stage 11	11,034'-11,197'	163	11,224' -11,020'	204	12,239	69	6,663	6,963	49,100	320,200	61,100	430,400	na		
Stage 12	10,831'-10,993'	162	11,020' -10,817'	203	9,890	70	6,313	6,939	49,000	320,400	90,300	459,700	5,372		
Stage 13	10,627'-10,790'	163	10,817' -10,614'	203	9,846	74	6,288	7,054	49,200	321,200	90,800	461,200	5,390		
Stage 14	10,424'-10,587'	163	10,614' -10,410'	204	10,690	72	6,354	7,161	49,300	320,700	40,700	410,700	6,124		
Stage 15	10,221'-10,383'	162	10,410' -10,207'	203	9,945	73	6,318	6,931	49,000	320,400	90,900	460,300	5,534		
Stage 16	10,017'-10,180'	163	10,207' -10,004'	203	10,370	73	5,932	6,787	48,900	320,400	63,000	432,300	N/A		
Stage 17	9,814' -9,979'	165	10,004' -9,800'	204	11,328	72	6,617	7,038	48,900	320,500	91,000	460,400	4,558		
Stage 18	9,611' -9,773'	162	9,800' -9,593'	207	8,930	77	6,368	7,753	49,600	231,600	13,700	294,900	4,644		
Stage 19	9,407'-9,570'	163	9,593' -9,394'	199	8,987	73	6,095	6,826	49,500	312,100	21,000	382,600	5,752		
Stage 20	9,204'-9,367'	163	9,394' -9,190'	204	9,508	74	6,351	7,760	49,000	276,600	84,200	409,800	6,624		
Stage 21	9,001' -9,163'	162	9,190' -8,987'	203	9,396	80	7,224	7,404	49,400	320,200	64,000	433,600	6,135		
Stage 22	8,797' -8,960'	163	8987' -8,784'	203	8,829	83	5,915	7,213	49,100	320,200	73,300	442,600	5,403		
Stage 23	8,594' -8,757'	163	8,784' -		2,287	63	6,219	7,295	7,700	0	0	7,700	N/A		
Total		-	3,743	-	4,463	216,640				1,012,400	6,366,500	1,246,500	8,625,400	-	
Average		-	163	-	203	9,419	71	6,317	7,085	44,017	289,386	67,976	375,017	5,432	

	Well Name	Permit Number	District / County
WVDNR	1412 H	47-103-02997	Grant / Wetzel

CHEMICAL SUMMARY

STAGE #	SURFACTANT (gals.)	BIOCIDE (gals.)	SCALE INHIBITOR (gals.)	FRICTION REDUCER (gal.)	LINEAR GEL (gal.)	SP BREAKER (gal.)	28% HCL ACID (gals.)	15% HCL ACID (gals.)
1	150	50	30	210	0	0.1	0	6000
2	245	105	20	365	585	2.75	0	3000
3	387	112	42	450	1,190	4.5	0	6000
4	237	80	42	410	455	2	0	3000
5	281	90	46	580	972	3.2	0	3000
6	280	90	45	360	526	2.5	0	3000
7	210	90	25	285	70	0.2	0	3000
8	310	113	44	468	455	2.4	0	3000
9	300	110	50	450	560	2.5	0	3000
10	410	135	88	450	809	4.3	0	3000
11	385	128	44	495	876	3.8	0	3000
12	298	138	45	448	738	3.5	0	3000
13	290	88	45	365	288	1.2	0	1500
14	330	92	62	395	385	1.6	0	1500
15	300	150	60	500	616	2.6	0	1500
16	155	115	40	470	726	2.9	0	1500
17	160	130	30	462	486	3.1	0	1500
18	200	100	35	475	140	0.6	0	1500
19	270	125	25	475	246	1.3	0	1500
20	200	100	50	495	490	2.2	0	1500
21	262	110	40	480	665	1.8	0	1500
22	145	90	30	345	241	1.6	0	1500
23	62	26	6	87	35	0.1	0	2500
TOTALS:								
23	5,867	2,367	944	9,520	11,554	51	0	59,500
Stages	*Gals*	*Gals*	*Gals*	*Gals*	*Gals*	*Gals*	*Gals*	*Gals*

****CELLS WITH BLUE BACKGROUND ARE THE ONLY CELLS TO BE EDITED****

Fracture Start Date/Time:	11/17/14 8:15
Fracture End Date/Time:	12/21/2014 15:39
State:	WV
County:	Wetzel
API Number:	47-103-02997-0000
Operator Number:	494494833
Well Name:	WV DNR 1412
Federal Well:	No
Longitude:	-80.65763
Latitude:	39.50514
Long/Lat Projection:	NAD27
True Vertical Depth (TVD):	7,625'
Total Clean Fluid Volume* (gal):	9,533,160

FracFocus Chemical Disclosure Registry

(e.g. XX-XXX-XXXXX-0000)

anga America's Natural Gas Alliance

Additive	Specific Gravity	Additive Quantity	Mass (lbs)	
Water	1.00	9,533,160	79,554,228	gal
Sand (Proppant)	2.65	9,058,000	9,058,000	lb
Hydrochloric Acid (7.5%)	1.04	63,000	546,764	gal
PROHIB II	0.97	107	866	gal
PRO FR 2000	1.00	9,860	82,282	gal
PRO GEL 4.0L	1.04	12,069	104,744	gal
PRO BREAKER 4	1.26	13	137	gal
MB 7530	1.24	2,375	24,576	gal
PRO SCALE STOP 2000	1.06	944	8,350	gal
PRO SURF 2000	1.05	6,187	54,212	gal
				gal
				gal
				gal
				gal
				gal
				gal
				gal
				gal
		Total Slurry Mass (Lbs)	89,434,152	

Ingredients Section:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Mass per Component (LBS)	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Company 1	Carrier/Base Fluid	Water	7732-18-5	100.00%	79,554,220	88.95284%	
Sand (Proppant)	PSC	Proppant	Silica Substrate		100.00%	9,058,000	10.12812%	
Hydrochloric Acid (7.5%)	Producers Service Corp	Acidizing	Hydrochloric Acid	7647-01-0	7.50%	41,007	0.04585%	
PROHIB II	Producers Service Corp	Inhibitor	Ethoxylated Nonylphenol	68412-54-4	10.00%	87	0.00010%	
			Dimethylcocoamine, bis(chloroethyl)ether, diquaterna	68607-28-3	60.00%	520	0.00058%	
			Ethylene Glycol	107-21-1	40.00%	346	0.00039%	
			Glycol Ethers	111-76-2	40.00%	346	0.00039%	
			Methanol	67-56-1	30.00%	260	0.00029%	
			Propargyl Alcohol	107-19-7	30.00%	260	0.00029%	
PRO FR 2000	Producers Service Corp	Friction Reducer	Petroleum Distillate	064742-47-8	24.00%	19,748	0.02208%	
PRO GEL 4.0L	Producers Service Corp	Gelling Agent	Distillates (Petroleum), hydrotreated light	64742-47-8	65.00%	68,084	0.07613%	
			Nonylphenol, Ethoxylate	9016-45-9	5.00%	5,237	0.00586%	
			Guar Gum	9000-30-0	50.00%	52,372	0.05856%	
			Nonionic Surfactant	60828-78-6	5.00%	5,237	0.00586%	
			Nonionic Surfactant	60828-78-6	5.00%	5,237	0.00586%	
PRO BREAKER 4	Producers Service Corp	Breaker	Ethylene Glycol	107-21-1	40.00%	55	0.00006%	
			Sucrose	57-50-1	40.00%	55	0.00006%	
			Polyether Polyol	9003-11-6	1.00%	1	0.00000%	
			Sodium Bicarbonate	144-55-8	1.00%	1	0.00000%	
			Hexamethylenetetramine	100-97-0	1.00%	1	0.00000%	
			Proprietary Ingredient	Proprietary	1.00%	1	0.00000%	
			Proprietary Ingredient	Proprietary	1.00%	1	0.00000%	
			Proprietary Ingredient	Proprietary	1.00%	1	0.00000%	
			Water	7732-18-5	Proprietary	0	0.00000%	
MB 7530	Producers Service Corp	Biocide	Tetrahydro-3, 5-dimethyl-2H-1,3,5-thiadiazine-2-thior	533-74-4	24.00%	5,898	0.00660%	
			Sodium Hydroxide	1310-73-2	4.00%	983	0.00110%	
PRO SCALE STOP 2000	Producers Service Corp	Scale Inhibitor	Organic Phosphate	71050-62-9	25.00%	2,088	0.00233%	
PRO SURF 2000	Producers Service Corp	Surfactant	Stannous Chloride	7772-99-8	10.00%	5,421	0.00606%	
			Ethoxylated Alcohol	68439-46-3	15.00%	8,132	0.00909%	
			Sulfamic Acid	5329-14-6	5.00%	2,711	0.00303%	
			Monoethanolamine	141-43-5	6.00%	3,253	0.00364%	