Page ___ of ___

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

Office of Oil and Gas

JAN 2 4 2019

API 47 - 051 - 01959	County Marshal	l 5:	strict Webster	WV Department of Environmental Protection
API 47 051 01959 Quad Majorsville	Pad Name SHL2	7 Dis		
Farm name Steve and Ed War	Pad Name OTTEE	F10	eld/Pool Name	27 LHS
	LIO Essessi II Asses		ell Number SHI	LZ7 LNO
Operator (as registered with the C			1407	20101
Address 5260 Dupont Road	City Par	kersburg	State WV	Zip 26101
As Drilled location NAD 83/U Top hole	Northing 4423212.5		g 535390.7	
Landing Point of Curve	Northing 4423087.7		535418.5	
Bottom Hole	Northing 4425155.6	Easting	534533.4	
Elevation (ft) 1153.6'	GL Type of Well	■New □ Existing	Type of Report	□Interim ■Final
Permit Type Deviated	☐ Horizontal ■ Horizon	tal 6A D Vertical	Depth Type	□ Deep ■ Shallow
Type of Operation □ Convert	□ Deepen	Plug Back Redrillin	ng □ Rework	■ Stimulate
Well Type □ Brine Disposal □	CBM ■ Gas □ Oil □ Sec	condary Recovery	tion Mining 🗆 St	torage Other
Type of Completion ☐ Single ☐	Multiple Fluids Produ	ced □ Brine □Gas	□ NGL □ Oil	□ Other
Drilled with □ Cable □ Rota	rv			
Drilling Media Surface hole	□ Air □ Mud □Fresh Wa	ter Intermediate hol	e □Air □Muo	d □ Fresh Water □ Brine
Production hole	□ Fresh Water □ Brine	e		
Mud Type(s) and Additive(s) Mud Type - SOBM, Additive	s - Lime, Calcium Chlori	ide, Gilsonite, Asphalt,	Barite, Emulsi	fier, Base Oil
Date permit issued 11/3/1	Date drining conn	menced2/12/18	Date drilling	
Date completion activities began	5/7/18	_ Date completion activit	ies ceased	7/16/18
Verbal plugging (Y/N)	Date permission granted	d	Granted by	
Please note: Operator is required	to submit a plugging applic	ation within 5 days of verb	oal permission to	plug
Freshwater depth(s) ft	500'	Open mine(s) (Y/N) dep	ths	N
	lot Observed	Void(s) encountered (Y/	N) depths	N
Coal depth(s) ft	653'	Cavern(s) encountered (N
Is coal being mined in area (Y/N)	Yes	Pavid	2///20	Reviewed by

Page	of
1 450	OI.

API 47- 051	_ 01959	Farm name_S	Steve and E	Ed Ward	Well nu	mber_SHL27 LI	HS
CASING STRINGS	Hole Size	Casing Size I		New or Grade Used wt/ft	Bas Dep		ement circulate (Y/ N) vide details below*
Conductor							
Surface							
Coal							
Intermediate 1							
Intermediate 2		*See	Attached*				
Intermediate 3							· ···
Production							
Tubing							
Packer type and de	epth set	<u> </u>					
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	NA	NA	NA	NA NA	NA		
Surface	Class A	936	15.6	1.1966	1028	0	8 hours
Coal							
Intermediate 1	Class A	915	15.6	1.1966	1052	0	8 hours
Intermediate 2	Class A	990	16.0	1.22	1207	0	8 hours
Intermediate 3							
Production	Class A	1262/1943	14.5/14.8	1.1859/1.2257	1497/2381	0	8 hours
Tubing							
Deepest forma Plug back pro) 14271' TMD, 6447' TV tion penetrated Maccedure	rrcellus	P	oggers TD (ft) lug back to (ft)	-		
Check all wire	line logs run	•	•	□ deviated/directi □ gamma ray		ction perature □sor	nic
Well cored	Yes 🖪 No	Conventional	Sidewall	l W	ere cuttings co	llected ■ Yes	□ No
DESCRIBE T	HE CENTRALIZI	ER PLACEMENT I			_	ached	
						Office of Oil an	g Gas
						JAN 2 4 2	019
WAS WELL O	COMPLETED AS	SHOT HOLE	Yes 🗆 No	DETAILS		VV Departmental P	ent of rotection
WAS WELL O	COMPLETED OP	EN HOLE? □ Y	es 🖪 No	DETAILS _			
WERE TRAC	ERS USED □ Y	es 🖪 No TY	PE OF TRA	CER(S) USED			

	*	HG ENERGY	II APPALACHIA, LLC WELL INFORMATIO	DAILY DRILLING F	REPORT		
Conductor			FORMATION 157.5ppf LS (3 jts we		SHOWS	6 (Fresh Wate	r, Oil, Gas)
Conductor	Surface	Intermediate 1	Intermediate 2	Production	Depth	Formation	Show
No. Jts. Run	22	27	73	323	60'	Sand	Damp
Hole Depth	481	1067.24	3080	14271	500	Sand	Damp
Csg Size	20"	13-3/8	9 5/8"	5 1/2"	4,548	Silt	220 units
Wt.	94	54.5	40	23	5,978	Silt	240 units
Grade	J-55	J-55	J-55	P-110	11,384	Shale	2252 units
Type Thrd	BTC	BTC	BTC	CDC HTQ			
New/Used	New	New	New	New			
Casing Depth Set	453	1063	3050	14233			
Plug	429	1021	3005	62.72			
Shoe	453	1063	3050	14233			1
Basket	N/A	N/A	N/A	N/A			
Centralizers	7	9	39	142			
Cmt Return	48.5	26	23	72			
Sks. Lead	936	915	990	1262			
Type Cmt Lead.	Class A	Class A	Class A	Class A			
Sks. Tail	N/A	N/A	N/A	1943			
Type Cmt. Tail	N/A	N/A	N/A	Class A			
Top Cmt.	Surface	Surface	Surface	Surface			

Office of Oil and Gas

JAN 2 4 2019

WV Department of Environmental Protection

Page	of
------	----

API 47- 051 - 01959	Farm name Steve and Ed Ward	Well number SHL27 LHS

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
				_	
			See Attached		
				_	
-			-		
			-		
			-		
-					
					-
-	<u> </u>				
L					

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 Attached					
								ECEIVED COS
							Office	eceived of Oil and Gas
					_		11	2 4 2019
							JA	
							_ w	Department of mental Proteotion
							Enviro	Illician

Please insert additional pages as applicable.

HG Energy II Appalachia, LLC SHL27 LHS - 47-051-01959 Perforation Record

Stage Number	Perforation	Perforated	Perforated	Number of	
Number	Date	from MD ft.	to MD ft.	Perforations	Formations
1		N/A	N/A	N/A	
2	5/20/2018	14,034	13,772	70	
3	5/21/2018	13,742	13,472	70	
4	5/21/2018	13,442	13,172	70	
5	5/21/2018	13,142	12,872	70	
6	5/22/2018	12,842	12,572	70	
7	5/22/2018	12,542	12,272	70	
8	5/23/2018	12,242	11,972	70	
9	5/23/2018	11,942	11,672	70	
10	5/24/2018	11,642	11,372	70	
11	5/24/2018	11,342	11,072	70	
12	5/25/2018	11,042	10,772	70	
13	5/25/2018	10,742	10,472	70	
14	5/26/2018	10,442	10,172	70	
15	5/26/2018	10,142	9,872	70	
16	5/26/2018	9,842	9,572	70	
17	5/27/2018	9,542	9,272	70	
18	5/28/2018	9,242	8,972	70	
19	5/28/2018	8,942	8,672	70	
20	5/29/2018	8,642	8,372	70	
21	5/30/2018	8,342	8,072	70	
22	5/31/2018	8,042	7,772	70	
23	6/2/2018	7,742	7,472	70	
24	6/2/2018	7,442	7,172	70	
25	6/3/2018	7,142	6,872	70	

Office of Oil and Gas

JAN 2 4 7373

WV Dank and Protection
Environmental Protection

HG Energy II Appalachia, LLC SHL27 LHS - 47-051-01959 Stimulation Information Per Stage

Stage Number	Stimulation Date	Avg Pump	Avg Pressure, (psi)	Breakdown (Psi)	ISIP (psi)	Amount of Proppant (Klbs)	Amount of Water (bbls)	Amount of Acid (gallons)
MEHIDEL	- Date	(1111)	(1651)	(1-21)	1511 (psi)	(1993)	772527 (2202)	(Bellate)
1		N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	5/20/2018	90.1	9,451	10,450	3,400	4,428.0	9,716	1,990
3	5/21/2018	84.3	9,831	10,231	3,775	5,851.8	14,363	1,050
4	5/21/2018	88.7	8,681	5,674	4,250	8,378.4	21,030	989
5	5/21/2018	69.0	10,745	5,429	4,450	2,653.8	8,714	988
6	5/22/2018	90.0	8,892	5,141	4,090	8,138.8	18,176	998
7	5/22/2018	93.3	9,634	5,504	5,700	5,912.2	15,122	1,028
8	5/23/2018	88.1	8,557	5,212	4,673	6,061.8	15,901	1,053
9	5/23/2018	95.4	9,713	5,303	4,668	5,968.4	14,933	1,018
10	5/24/2018	85.7	8,163	5,020	4,431	8,015.6	17,827	1,037
11	5/24/2018	95.3	9,637	5,810	4,264	8,000.0	17,452	1,044
12	5/25/2018	84.0	8,511	6,172	3,940	7,995.0	18,143	2,041
13	5/25/2018	100.3	8,556	5,745	4,502	8,984.0	18,485	1,032
14	5/26/2018	90.9	7,784	5,533	4,320	8,746.4	18,532	1,057
15	5/26/2018	98.8	8,349	5,155	4,505	9,252.0	18,751	992
16	5/26/2018	94.3	7,844	4,964	4,225	9,509.6	19,606	1,028
17	5/27/2018	98.9	8,070	5,276	4,395	9,495.0	19,190	1,034
18	5/28/2018	91.5	7,721	5,461	4,531	9,629.2	19,088	1,006
19	5/28/2018	100.5	8,290	6,084	4,939	9,509.0	20,926	1,049
20	5/29/2018	89.7	8,587	5,452	4,925	8,391.0	20,584	1,032
21	5/30/2018	92.5	7,573	5,326	4,550	9,506.8	20,957	998
22	5/31/2018	89.2	7,789	4,966	4,682	7,072.0	19,879	990
23	6/2/2018		7,175	5,018	4,060	7,583.0	18,740	988
24	6/2/2018		7,234	5,431	4,225	9,593.0	21,131	994
25	6/3/2018		7,374	5,230	4,094	9,556.0	21,069	1,006
26								
27								RECEIVE Office of Oil a

JAN 2 4 2019 WV December Procession

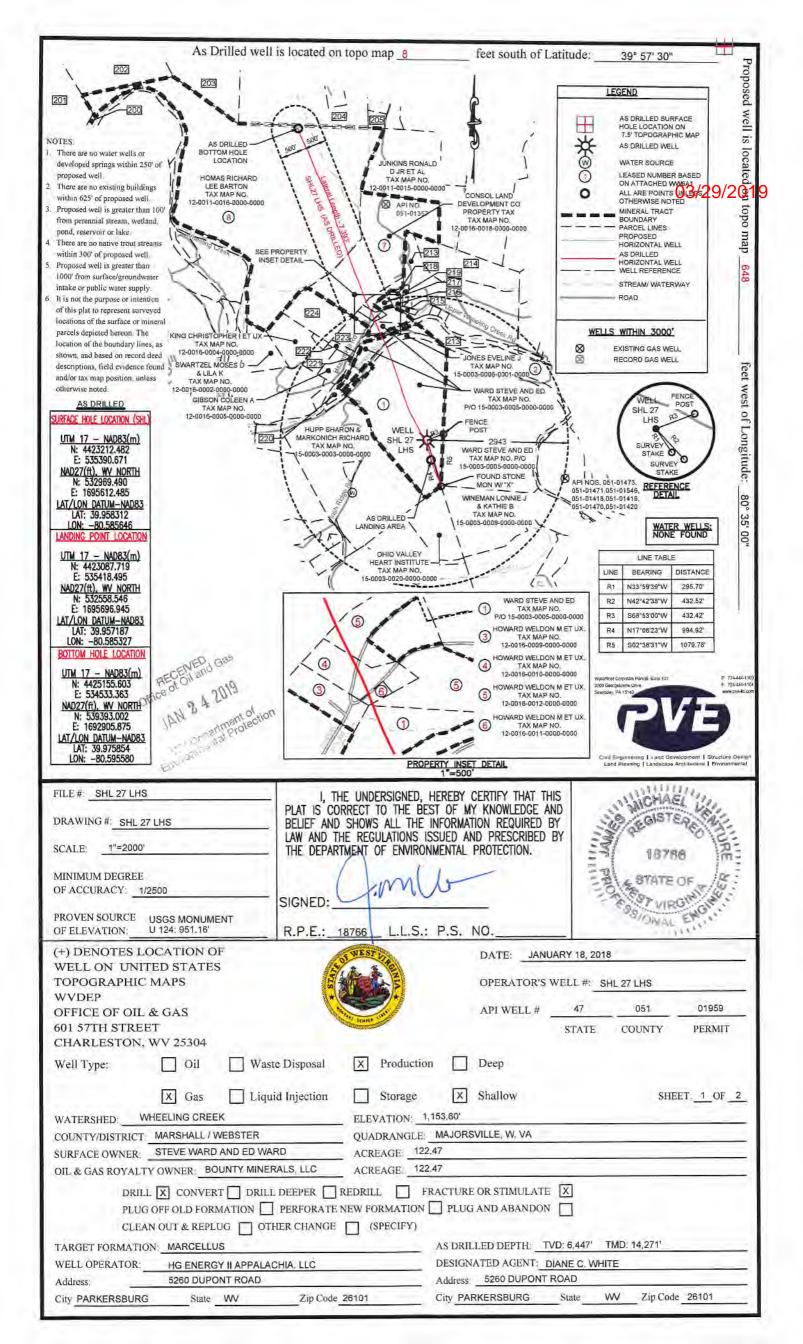
d (37)

WR-35 Page ___ of ___ Rev. 8/23/13 API 47- 051 _ 01959 Farm name Steve and Ed Ward _____Well number SHL27 LHS **PRODUCING FORMATION(S) DEPTHS** Marcellus 6455 6840 TVD MD Please insert additional pages as applicable. ■ Open Flow **GAS TEST** □ Build up □ Drawdown OIL TEST | Flow | Pump Surface 3028 DURATION OF TEST 646 SHUT-IN PRESSURE psi Bottom Hole psi hrs **OPEN FLOW** Gas Oil NGL Water GAS MEASURED BY 360 6231 mcfpd 264 bpd bpd bpd □ Estimated ■ Orifice □ Pilot **BOTTOM** TOP **BOTTOM** LITHOLOGY/ TOP DEPTH IN FT DEPTH IN FT DEPTH IN FT DESCRIBE ROCK TYPE AND RECORD QUANTITYAND **FORMATION** DEPTH IN FT TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H₂S, ETC) MD MD NAME TVD TVD 0 0 See Attached Please insert additional pages as applicable. Drilling Contractor Patterson Drilling Zip 15456 PA Lemont Furnace Address 2198 University Drive State City Logging Company Schlumberger Address 100 Gillingham Lane State TX Sugar Land Zip 77478 City Cementing Company C&J Energy Services Address 3990 Rogerdale Houston State TX City Stimulating Company Zip 73724 2 4 2019 State OK Oklahoma City Address 14201 Caliber Drive City W Department of Please insert additional pages as applicable. Environmental Protection Telephone 304-420-1119 Completed by Diane White Date 1/4/2018 Signature Diane White Title

HG Energy II Appalachia, LLC SHL27 -LHS Actual tops Lithology/Formation

	MD		TVD	
T - Pittsburgh Coal (~5' thick)	653	1257	653	1257
T - Gas/Salt Sands (~250')	1257	1562	1257	1562
T - Greenbrier Big Lime (~19' thick)	1562	1590	1562	1590
T - Loyalhanna Big Injun (~39¹ thick)	1590	1712	1590	1712
T - Pocono Big Injun (~153' thick)	1712	2114	1712	2114
T- Berea (~18' thick)	2114	2276	2114	2276
T - Gantz/Upper 30-Foot sand	2276	2590	2276	2590
T - Gordon Stray sand (~10' thick)	2590	2643	2590	2643
T - Gordon sand (~17' thick)	2643	2755	2643	2755
T - 5th sand (~5' thick)	2755	5870	2755	5707
T - Rhinestreet (454' thick)	5870	6318	5707	6137
T - Cashaqua (100' Thick)	6318	6405	6137	6213
T - Middlesex (32' thick)	6405	6442	6213	6265
T - West River (71' thick)	6442	6515	6265	6299
T- Burket (~10' thick)	6515	6539	6299	6316
T - Tully (~26' thick)	6539	6577	6316	6341
T-Hamilton (~115' thick)	6577	6840	6341	6455
T - Marcellus shale (~53' thick)	6840		6455	





	Bottom hole is located	on topo map	feet south of Latitude:	40° 00′ 00" B
				40° 00' 00" 03/29/2 03/2 03/2 03/2 03/2 03/2 03/2 03/2 03
AS DRILLED SURFACE HOLE LOCATION (SHL)				is:
UTM 17 - NAD83(m) N: 4423212.482				locat
E: 535390.671 NAD27(ft), WV NORTH				ed on
N: 532969.490 E: 1695612.485 LAT/LON DATUM—NADB3				03/29/2@1
LAT: 39.958312 LON: -80.585646				map
UTM 17 — NAD83(m)				1
N: 4423087.719 E: 535418.495				3,432
NAD27(ft), WV NORTH N: 532558.546 E: 1695696.945				
LAT/LON DATUM-NAD83 LAT: 39.957187				1.39
LON: -80.585327 BOTTOM HOLE LOCATION				feet
UTM 17 - NAD83(m) N: 4425155.603				feet west of Longitude:
E: 534533,363 NAD27(ft), WV NORTH				ofL
N: 539393.002 E: 1692905.875 LAT/LON DATUM—NAD83	LEGEND			ongit
LAT: 39.975854 LON: -80.595580	BOTTOM HOLE LOCATION		⊗	ude:
NOTES: 1. There are no water wells or develop	ped springs within		0	
250' of proposed well. There are no existing buildings with	200	HICKEY GLENN M	TAX MAP NO. 15-0001-0006-0001-000	80° 35' 00° 00° 00° 00° 00° 00° 00° 00° 00° 00
proposed well. Proposed well is greater than 100' fi stream, wetland, pond, reservoir or		HICKEY GLENN M TOLAND DOROTHY J WINNER SAN MILLER DOROTHY T ET AL	TAX MAP NO. 12-0010-0008-0000-000 DRA J TAX MAP NO. 12-0011-0003-0000-000 TAX MAP NO. 12-0011-0004-0000-00	
 There are no native trout streams with proposed well. 		GRAY DONALD G & DAVID G HILLBERRY PAUL E JR	TAX MAP NO. 12-0011-0008-0000-000 TAX MAP NO. 12-0011-0009-0003-00	00
 Proposed well is greater than 1000' surface/groundwater intake or public 	ic water supply. 208	TERRY JOHN G II HOWARD WELDON M ET UX WARD STEVE AND ED	TAX MAP NO. 12-0016-0007-0000-00 TAX MAP NO. 12-0016-0008-0000-00 TAX MAP NO. 15-0003-0005-0000-00	00
 It is not the purpose or intention of represent surveyed locations of the mineral parcels depicted hereon. Th 	surface or 211	HOWARD WELDON M ET UX HOWARD WELDON M ET UX HOWARD WELDON M ET UX	TAX MAP NO. 12-0016-0009-0000-00 TAX MAP NO. 12-0016-0010-0000-00 TAX MAP NO. 12-0016-0012-0000-00	00
boundary lines, as shown, and based descriptions, field evidence found a	d on record deed 213	WHEELING CREEK WATERSHED C WHEELING CREEK WATERSHED C	OMM TAX MAP NO. 12-0016-0020-0000-00 OMM TAX MAP NO. 12-0016-0022-0000-00	00
position, unless otherwise noted.	215 216 217	HOWARD JACK ET UX NEWBERRY PHILLIP E PACZEWSKI DEBRA J	TAX MAP NO. 12-0016-0019-0000-00 TAX MAP NO. 12-0016-0015-0000-00 TAX MAP NO. 12-0016-0012-0001-00	00
Waterfreet Octoonste Park III, Suite 101 2000 Georgetowne Onne Sewickley, PA 15143	P: 724-444-1103 F: 724-444-1104 Www.gva-4c.com 220	DAVIS MORGAN NORTH BONNIE J & GEORGE K GR KELLER ROBERT LEE & MARY KAY		00
PATE	221 222 223	ZACCHEUS PROPERTIES LLC TERRY JOHN G II HOWARD WELDON M ET UX	TAX MAP NO. 12-0016-0006-0000-00 TAX MAP NO. 12-0016-0007-0000-00 TAX MAP NO. 12-0016-0008-0000-00	00
	224	KUPFER PHILLIP A	TAX MAP NO. 12-0016-0002-0003-00	
Civil Engineering Land Development Stru Land Planning Landscape Architecture En	acture Design sylronmental			
FILE#: SHL 27 LHS	PLAT IS (THE UNDERSIGNED, HEREB CORRECT TO THE BEST OF	Y CERTIFY THAT THIS MY KNOWLEDGE AND	NICHAEL
DRAWING #: SHL 27 LHS	BELIEF AN	ND SHOWS ALL THE INFORM THE REGULATIONS ISSUED	MATION REQUIRED BY	S GISTER N
SCALE: 1"=2000'	THE DEPA	ARTMENT OF ENVIRONMENTA	L PROTECTION.	18786 m
MINIMUM DEGREE OF ACCURACY: 1/2500		(Limb	- 7	STATE OF S
	SIGNED:	10	_	SON VIRGINGIA.
OF ELEVATION: U 124:	951.16' R.P.E.:_	18766 L.L.S.: P.S.	. NO	ONAL CONTRACTOR
(+) DENOTES LOCAT WELL ON UNITED S	The state of the s	OF WEST VIAG	DATE: JANUARY 18, 2018	
TOPOGRAPHIC MAP	S		OPERATOR'S WELL#: SHI	. 27 LHS
OFFICE OF OIL & GA	S	Many searce with	API WELL #47	051 01959
601 57TH STREET CHARLESTON, WV 2	5304	The state of the s	STATE	COUNTY PERMIT
Well Type:	Oil Waste Disposal	X Production	Deep	
×	Gas Liquid Injection	Storage 2	Shallow	SHEET: 2 OF 2
minibilities.	NG CREEK	ELEVATION: 1,153.60		
COUNTY/DISTRICT: MARS SURFACE OWNER: STEV		QUADRANGLE: MAJO ACREAGE: 122,47	RSVILLE, W. VA	
	VER: BOUNTY MINERALS, LLC	ACREAGE: 122,47		
	CONVERT DRILL DEEPER		TRE OR STIMULATE X	
	LD FORMATION PERFORAT & REPLUG OTHER CHANG		OG AND ABANDON	
TARGET FORMATION: MA	_	AS D	RILLED DEPTH: TVD: 6,447' TM	
	G ENERGY II APPALACHIA, LLC 60 DUPONT ROAD		GNATED AGENT: DIANE C. WHITE 5260 DUPONT ROAD	
City PARKERSBURG			PARKERSBURG State W	Zip Code 26101