.

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

.

API <u>47</u> - <u>059</u> - <u>022</u>	5 County MI	NGO	_ District _M	IAGNOLI	Α.		
Quad <u>MATEWAN</u>	Field/Pool	Field/Pool Name					
Farm name LOGAN COAL 8	TIMBER CORP.		Well Number 2364				
Operator (as registered with the		TURAL GAS, LLC				<u> </u>	
Address P.O. BOX 480						41601	
As Drilled location NAD 83/U Top hole Landing Point of Curve Bottom Hole	Northing Northing	Ea	and deviation asting asting asting				
Elevation (ft) 1266.6	GL Type of We	ell ENew 🗆 Existing					
Permit Type Deviated	🗆 Horizontal 🗆 Hori	zontal 6A 🛔 Vertical	Depth	Туре	🗆 Deep	<b>Shallow</b>	
Type of Operation  Convert	🗆 Deepen 📲 Drill	D Plug Back D Red	rilling o H		Stimulat		
Well Type Disposal	CBM B Gas Oil O	Secondary Recovery	Solution Mini	ing 🗆 Stor	age 🗆 Oti	her	
Drilled with Cable Rota Drilling Media Surface hole Production hole Air Mud Mud Type(s) and Additive(s) N/A	Air □ Mud □Fresh )		hole 🛢 Air	n Mud	□ Fresh W	'ater □ Brine	
Date permit issued09/23/20	14	6/10/201					
		mmenced 6/10/201		drilling cea		/24/2015	
Date completion activities began Verbal plugging (Y/N)N	Date permission gran	Date completion act	ivities ceased Granted	$PE^{0}$	Dil and	<del>Gas</del>	
Please note: Operator is required	to submit a plugging appl	lication within 5 days of	verbal permis	OCT sion to plu	0 6 2013 B	nt Of	
Freshwater depth(s) ft	NONE	Open mine(s) (Y/N) Void(s) encountered	depths	WV D	iential P	rotection	
Salt water depth(s) ft	2180'	Void(s) encountered	(Y/N) depths	114:	N		
Coal depth(s) ft	NONE	Cavern(s) encountere			N		
Is coal being mined in area (Y/N)	<u>N</u>		-		Deniewa		

10/30/2015

### WR-35 Rev. 8/23/13

A DT	477	00055

## LOGAN COAL & TIMBER CORP. Well number 2364

API 47- <u>059</u>	02255	Farm nat	me			we		2004	
CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft		Basket Depth(s)		d cement circulate (Y/ N) Provide details below*
Conductor	17 1/2"	13 3/8"	42'	New	_	LS			
Surface	12 1/4"	9 5/8"	846'	New		LS			Yes, 8 bbls
Coal									
Intermediate 1	8 7/8"	7"	2542'	New		LS	NONE		Yes, 6 bbls
Intermediate 2									
Intermediate 3									
Production	6 3/8"	4 1/2"	4720'	New	l	-65			No - 500' up in 7"
Tubing		•							
Packer type and de	pth set								
Comment Details									
CEMENT DATA	Class/Type of Cement	Number of Sacks			Yield ft <sup>3</sup> /sks)	Volum ( <u>ft</u> <sup>3</sup> _)	e 1	Cement Top (MD)	WOC (hrs)
Conductor	Class A								
Surface	Class A	260	15.	5	1.18	306.8	0	Surface	8
Coal								Quedana	
Intermediate 1	Class A	100, 21	0 15.6,	12.3 1.1	8, 1.84	118, 34	56.4	Surface	8
Intermediate 2									
Intermediate 3								600' up in 7	7" 8
Production	Class A	165	13.	.6	1.90	313.5			
Tubing	L								
Drillers TD (ft	4740			Loggers	TD (ft) <u>47</u>	43			
Deepest formation penetrated HARRELL SHALE Plug back to (ft)									
Plug back procedure									
Kick off denth	(A)								
VICK OIL GEBRI									
Check all wire	line logs run	d caliper	🛚 density 🛋 resistivit		nted/direct		induction temperat		sonic

Well cored 🗆 Yes 🛢 No	Conventional	□ Sidewall	Were cuttings collected		D No
DESCRIBE THE CENTRALIZ 4344.25, 4177.25, 4010.25, 3843.26, 3876.25, 3509.25, 3	ER PLACEMENT U	JSED FOR EACH	A CASING STRING 4 1/2" only - 4678.	25, 4511.25	

WAS WELL COMPLETED AS SHOT HOL	E 🗆 Yes 🛔 No	DETAILS	
WAS WELL COMPLETED OPEN HOLE?	🗆 Yes 🛢 No	DETAILS	
WERE TRACERS USED D Yes No	TYPE OF TRAC	ER(S) USED	4.0/00/0045

# API 47- 059 - 02255 Farm name LOGAN COAL & TIMBER CORP. Well number 2364

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(-)
1	8/13/2015	4367	4619	65	Formation(s) SHALE
2	8/17/2015	3443	3463	24	BEREA
				<u>_</u>	BENEA
					· · · · · · · · · · · · · · · · · · ·
			<u></u>		
				<u> </u>	
				<u>                                      </u>	
				· · · · · ·	
				·	
		· · · · · · · · · · · · · · · · · · ·			

PERFORATION RECORD

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)
1	8/17/15	96	3143	3283	1320	NONE	NONE	800mscf/12bbl 15% HCI
2	8/17/15	98	2845	2873	1144	NONE	NONE	800mscf/12bbl 15% HCl
			-		_			
			· · · · · · · · · · · · · · · · · · ·					
			-				RECEIVE	D
			•			Office	of Oil at	nd Gas
							DCT 062	כוט
						W\	1 Departr	nent of
						Four	nmental	nent of Protection
				L				
			· · · · · ·					

Please insert additional pages as applicable.

.

WR-35 Rev. 8/23/13

.

API 47- 059	_ 02255	Farm r	name LOGAN CO	DAL & TIMBER	CORP.	Well num	per <u>2364</u>	
			DEDTIE					
PRODUCING I	FORMATION(S		<u>DEPTHS</u>					
SHALE		:	3490-4623'	_TVD		_MD		
BEREA			3420-3490'			-		
						_		
						_		
Please insert ad	ditional pages as	s applicable.						
GAS TEST	o Build up 🛛 🗆	Drawdown	Open Flow	OII	. TEST 🗆 Flo	w o Pu	mp	
SHUT-IN PRE	SSURE Surfa	ace 705	psi Botton	m Hole	psi D	URATIO	N OF TEST	120 hrs
OPEN FLOW	Gas 805mcfj	Oil pd1	NGL		ater ( bpd c			e 🛛 Pilot
LITHOLOGY/	TOP	BOTTOM	тор	BOTTOM				
FORMATION	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT				UANTITYAND OIL, GAS, H2S, ETC)
	NAME TVD	TVD		MD		DITRESIT	ATLA, DIGIL	
SEE ATTACHED	0							
·					· · ·			
· · · · · · · · · · · · · · · · · · ·								
							<u> </u>	
	iditional pages a							
Drilling Contra	otor MOUNTAIN			BARBOURVIL		State K	/Zip4	0906
Address 72 OLD	D 25 E		City	DARBOURVIL	LC	State <u></u>	Zıp	<u> </u>
Logging Comp	any WEATHERI	FORD						
Address			City	LONDON		State K	′Zip <u>4</u>	0741
	mpany C & J EN	FRGY SERVIC	CES					
Address 580 H/	AWTHORN DR		City	NORTON		State V	4Zip <u>2</u> 4	4273
Stimulating Co	mpany <u>C&amp;JE</u>	NERGY SERV		NORTON		State V	AZip_ <u>2</u>	4273
Address 580 HA	ditional pages a	e annlicable	City				<sup>2.</sup> r	
riease insert ac	annonai bages a	approauc.						F40 4045
Completed_by	Darrell Fluharty	, 			Telephone <u>6</u>	506-874-80	41 Cell 606	2015
Signature	Taj		Title	ield Supervisor		Da	te <u>9-29-</u>	2013
Submittal of H	ydraulic Fractur	ing Chemical	Disclosure Info	rmation A	ttach copy of l	FRACFO	CUS Registry	10/30/2015

WELL #2364					
	ТОР	воттом	ТОР	воттом	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID
	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT	(FRESHWATER, BRINE, OIL, GAS, H2S,
LITHOLOGY/ FORMATION	NAME TVD	TVD	MD	MD	ETC)
FILL	0	10			
SAND	10	90			
SAND/SHALE	90	120			
SAND	120	210			
SAND/SHALE	210	300			
SAND	300	360			
SAND/SHALE	360	630			
SAND	630	690			
SAND/SHALE	690	990			
SAND	990	1055			
SAND/SHALE	1055	1352			
SAND	1352	1525			
SAND/SHALE	1525	1545			
SAND	1545	1710			
SAND/SHALE	1710	1770			
SAND	1770	1938			
SAND/SHALE	1938	1985			
SAND/SHALE/RED ROCK	1985	2190			
SAND/SHALE	2190	2265			
SAND	2265	2315			
SAND/SHALE	2315	2385			
SAND/SHALE/RR/L.LIME	2385	2430			
SHALE/SLATE	2430	2462			
	2462	2510			
BIG LIME	2510	2789			RECEIVED
INJUN	2789	2852			Ciffice of Oil and Gas
WEIR	2852	3395			OCT 0 6 2015
COFFEE SHALE	3395	3445			WV Department of
BEREA	3445	3500			recompondal Protection
BROWN SHALE	3500	4630			
HARRELL SHALE	4630	4743			l

;

•-----