

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

API 47-103-03096 County WETZEL District PROCTOR
Quad WILEYVILLE Pad Name RIDGETOP LAND VENTURES-WTZ-PAD1 Field/Pool Name VICTORY
Farm name RIDGETOP CAPITAL, LP Well Number RIDGETOP LAND VENTURES WTZ 1H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY LLC
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,390,722.300 Easting 528,013.500
Landing Point of Curve Northing 4,390,528.403 Easting 527,785.554
Bottom Hole Northing 4,391,370.276 Easting 526,771.048

Elevation (ft) 1436' 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)
SOBM

Date permit issued 09/26/2012 Date drilling commenced 04/20/2015 Date drilling ceased 05/07/2015
Date completion activities began 07/19/2015 Date completion activities ceased 08/17/2015
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 345' (BOTTOM) Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 1100' (TOP) Void(s) encountered (Y/N) depths _____
Coal depth(s) ft 1349.65' TO 2576.50' Cavern(s) encountered (Y/N) depths _____

Is coal being mined in area (Y/N) N

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N

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Reviewed by

APPROVED

NAME: Josephine Shornton
DATE: 6/16/16

AK WS 06/24/2016

API 47-103 - 03096 Farm name RIDGETOP CAPITAL, LP Well number RIDGETOP LAND VENTURES WTZ 1H

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	24"	20"	122'	NEW	F-25/94#		Y
Surface	17.5"	13.375"	792.80'	NEW	J-55/54.5#		Y
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25"	9.625"	2986.51'	NEW	J-55/40#		Y
Intermediate 2							
Intermediate 3							
Production	8.75"/8.50"	5.5"	12370'	NEW	HCP-110/20#		Y
Tubing		2.375"	8030.6'	NEW	L-80		N
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	GROUT	19.3	1.19	119	SURFACE	24
Surface	CLASS A	733	15.6	1.19	872.27	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	1130	15.6	1.19	1344.7	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	1089/1109	15.6	1.24/1.19	1350.36/1319.71	SURFACE	24
Tubing							

Drillers TD (ft) 12370' Loggers TD (ft) 12370'
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6741'

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 _____

SURFACE: 7 CENTRALIZERS - 1 IN THE MIDDLE (WITH STOP COLLAR) AND TOP OF SHOE JOINT, THEN EVERY 3RD JOINT OF CASING
 INTERMEDIATE: 24 CENTRALIZERS - 1 IN THE MIDDLE (WITH STOP COLLAR) AND TOP OF SHOE JOINT, THEN EVERY 3RD JOINT OF CASING TO SURFACE, AND 1 ON THE LAST COLLAR IN THE HOLE
 PRODUCTION: 181 CENTRALIZERS - 1 SOLID BODY CENTRALIZER LOCKED IN AGAINST FLOAT COLLAR, 1 SOLID BODY CENTRALIZER ON EACH JOINT TO 30 DEGREES, 1 BOWSPRING EVERY 3RD JOINT TO SURFACE

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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RIDGETOP LAND VENTURES WTZ 1

EXHIBIT 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG	FORMATION
1	7/19/2015	12,027	12,219	42	MARCELLUS
2	7/19/2015	11,763	11,963	42	MARCELLUS
3	7/20/2015	11,499	11,699	42	MARCELLUS
4	7/20/2015	11,235	11,435	42	MARCELLUS
5	7/20/2015	10,971	11,171	42	MARCELLUS
6	7/20/2015	10,707	10,907	42	MARCELLUS
7	7/21/2015	10,443	10,643	42	MARCELLUS
8	7/21/2015	10,179	10,379	42	MARCELLUS
9	7/21/2015	9,915	10,115	42	MARCELLUS
10	7/21/2015	9,651	9,851	42	MARCELLUS
11	7/21/2015	9,387	9,587	42	MARCELLUS
12	7/22/2015	9,123	9,323	42	MARCELLUS
13	7/22/2015	8,859	9,059	42	MARCELLUS
14	7/23/2015	8,595	8,795	42	MARCELLUS
15	7/23/2015	8,331	8,531	42	MARCELLUS
16	7/23/2015	8,067	8,267	42	MARCELLUS

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RIDGETOP LAND VENTURES WTZ 1

EXHIBIT 2

STAGE NUM	Stim 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
1	7/19/2015	101	8,138	8,708	4,684	485,518	7,490	
2	7/19/2015	100	8,181	9,183	4,929	502,697	7,336	
3	7/20/2015	100	8,058	8,400	4,880	502,435	7,176	
4	7/20/2015	101	8,099	8,707	5,184	503,999	7,205	
5	7/20/2015	102	7,983	8,383	5,024	502,615	7,228	
6	7/20/2015	100	7,759	8,513	4,734	501,666	7,709	
7	7/21/2015	102	7,798	8,502	4,482	504,079	7,178	
8	7/21/2015	102	7,725	8,167	5,201	501,433	7,030	
9	7/21/2015	101	7,730	8,137	5,197	500,723	7,071	
10	7/21/2015	101	7,790	8,709	5,026	472,913	6,773	
11	7/21/2015	101	7,527	7,948	4,994	503,504	7,519	
12	7/22/2015	102	7,510	8,208	4,742	501,452	6,963	
13	7/22/2015	101	7,561	8,450	4,760	491,214	6,811	
14	7/23/2015	102	7,193	7,881	5,041	506,427	7,191	
15	7/23/2015	100	7,429	9,343	5,386	500,550	7,165	
16	7/23/2015	100	7,511	7,888	5,505	504,240	7,129	
Grand Total		101	7,750	9,343	4,986	7,985,465	114,974	

**RIDGETOP LAND VENTURES WTZ 1H
EXHIBIT 3**

LITHOLOGY/FORMATION	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, TVD (FT)	TOP DEPTH, MD (FT)	BOTTOM DEPTH, MD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	N.A.	345.00	N.A.	345.00	
Top of Salt Water	1100.00	N.A.	1100.00	N.A.	
Pittsburgh Coal	1349.60	2576.31	1349.65	2576.50	?
Big Injun (ss)	2576.31	3135.76	2576.50	3136.00	?
Berea (siltstone)	3135.76	6738.72	3136.00	6900.10	?
Rhinestreet (shale)	6738.72	7054.54	6900.10	7238.27	?
Cashaqua (shale)	7054.54	7173.07	7238.27	7388.55	?
Middlesex (shale)	7173.07	7259.60	7388.55	7522.82	?
Burket (shale)	7259.60	7284.35	7522.82	7565.58	?
Tully (ls)	7284.35	7306.07	7565.58	7605.68	?
Mahantango (shale)	7306.07	7389.42	7605.68	7833.50	?
Marcellus (shale)	7389.42	N.A.	7833.50	N.A.	?

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/30/2015
Job End Date:	7/23/2015
State:	West Virginia
County:	Wetzel
API Number:	47-103-03096-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	RIDGETOP LAND VENTURES WTZ 1H
Longitude:	-80.68736000
Latitude:	39.67124000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,299
Total Base Water Volume (gal):	4,189,332
Total Base Non Water Volume:	0



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
Water	Operator	Carrier	Water	7732-18-5	100.00000	82.60053	
Sand, White, 40/70	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		9.58565	
Sand, White, 100 mesh	Baker Hughes	Proppant	MSDS and Non-MSDS Ingredients Listed Below	N/A		6.41162	
HCl 10.1 - 15%	Baker Hughes	Acidizing	MSDS and Non-MSDS Ingredients Listed Below	N/A		1.22154	SmartCare Product
MaxPerm-20A, 265 gallon tote	Baker Hughes	Friction Reducer	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.09202	SmartCare Product
Alpha 1427	Baker Hughes	Biocide	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00966	SmartCare Product
Scaletrol 720	Baker Hughes	Scale Inhibitor	MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00912	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control	MSDS and Non-MSDS Ingredients Listed Below	N/A			

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			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00838	SmartCare Product
CI-39	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00252	
GBW-5	Baker Hughes	Breaker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00142	SmartCare Product
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.							
Ingredients in Additive (s) (MSDS and non- MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	15.98614	
			Water	7732-18-5	85.00000	1.10750	
			Hydrochloric Acid	7647-01-0	15.00000	0.18310	
			1-Propanesulfonic acid, 2- methyl-2-[[1-(1-oxo-2-propen-1-yl) amino]-, polymer with 2- propenamide, sodium salt	83446-68-8	60.00000	0.05517	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.02759	
			Citric Acid	77-92-9	60.00000	0.00502	
			Sodium Chloride	7647-14-5	5.00000	0.00469	
			Oxyalkylated alcohol	78330-21-9	5.00000	0.00460	
			Sorbitan, mono-(9Z)-9- octadecenoate	1338-43-8	5.00000	0.00460	
			Polyoxyethylene sorbitan monooleate	9005-65-6	5.00000	0.00460	
			Ethylene Glycol	107-21-1	45.00000	0.00410	
			Glutaraldehyde	111-30-8	30.00000	0.00290	
			2-Propenoic, Polymer with Sodium Phosphinate, Sodium Salt	71050-62-9	20.00000	0.00182	
			Ammonium Persulphate	7727-54-0	100.00000	0.00142	
			Oxyalkylated Fatty Acid	61791-002	40.00000	0.00101	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	10.00000	0.00097	
			Formic Acid	64-18-6	30.00000	0.00076	
			Aldehyde	104-55-2	30.00000	0.00076	
			Tar Bases, Quinoline Derivs., Benzyl Chloride-Quaternized	72480-70-7	30.00000	0.00076	
			Quaternary Ammonium Compound	68424-85-1	5.00000	0.00061	
			Ethanol	64-17-5	5.00000	0.00048	
			Calcium Chloride	10043-52-4	5.00000	0.00046	
			Isopropanol	67-63-0	5.00000	0.00013	
			Sulfurized polyolefin	68037-13-8	5.00000	0.00013	
			Potassium Chloride	7447-40-7	1.00000	0.00009	
			Potassium Iodide	7681-11-0	2.00000	0.00005	
			Polyaklylene	7756-94-7	1.00000	0.00003	
			Potassium Acetate	127-08-2	0.50000	0.00001	

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* 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)

5D Survey Report

SOUTHWESTERN ENERGY

Field Name: *SOUTHWESTERN_WETZEL CO, WV UTM NAD 83 (17N)*
Site Name: *RIDGETOP LAND VENTURES WTZ*
Well Name: *1H*
Survey: *Definitive Survey*

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Survey report for 1H

Field Name	Map Units : US ft	Company Name : SOUTHWESTERN ENERGY	
SOUTHWESTERN_WETZ EL CO, WV UTM NAD 83 (17N)	Vertical Reference Datum (VRD) : Mean Sea Level		
	Projected Coordinate System : NAD83 / UTM zone 17N		
	Comment :		
Site Name	Units : US ft	North Reference : Grid	Convergence Angle : 0.21
	Position	Northing : 14405241.08 US ft	Latitude : 39.665889
		Easting : 1732383.46 US ft	Longitude : -80.673194
RIDGETOP LAND VENTURES WTZ	Elevation above Mean Sea Level: 1436.00 US ft		
Comment :			
Slot Name	Position (Offsets relative to Site Centre)		
	+N / -S : -13.00 US ft	Northing : 14405228.08 US ft	Latitude : 39.665854
	+E / -W : -59.17 US ft	Easting : 1732324.29 US ft	Longitude : -80.673405
1H	Slot TVD Reference : Ground Elevation		
Elevation above Mean Sea Level : 1436.00 US ft			
Comment :			
Well Name	Type : Main well	UWI :	
	Rig Height <i>Drill Floor</i> : 22.00 US ft	Comment :	
	Relative to Mean Sea Level: 1458.00 US ft	Closure Azimuth : 297.543°	
1H	Closure Distance : 4597.32 US ft	Vertical Section (Position of Origin Relative to Slot)	
+N / -S : 0.00 US ft		+E / -W : 0.00 US ft	Az : 297.60°

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5D Survey Report

Target Set

Name : RIDGETOP 1H TARGETS **Number of Targets :** 2

Comment :

TargetName:	Position (Relative to Slot centre)		
1H LP	+N / -S : -667.06US ft	Northing : 14404561.02 US ft	Latitude : 39°39'50.503880"
Shape:	+E / -W : -706.26 US ft	Easting : 1731618.03US ft	Longitude : -80°40'33.323189"
Cuboid	TVD (Drill Floor) : 7416.00 US ft		
Orientation	Azimuth : 0.00°	Inclination : 0.00°	
Dimensions	Length : 20.00 US ft	Breadth : 20.00 US ft	Height : 20.00 US ft
TargetName:	Position (Relative to Slot centre)		
1H PBHL	+N / -S : 2128.47US ft	Northing : 14407356.55 US ft	Latitude : 39°40'18.260400"
Shape:	+E / -W : -4070.79 US ft	Easting : 1728253.50US ft	Longitude : -80°41'16.238400"
Cuboid	TVD (Drill Floor) : 7416.00 US ft		
Orientation	Azimuth : 0.00°	Inclination : 0.00°	
Dimensions	Length : 20.00 US ft	Breadth : 20.00 US ft	Height : 20.00 US ft

Survey Name :Definitive Survey

Date : 16/Mar/2015 **Survey Tool :** **Comment :** **Company :**

Magnetic Model

Model Name: Default **Date:** 19/Feb/2015 **Field Strength:** 50000.0 nT **Declination:** 0.00° **Dip:** 0.00°

Survey Tool Ranges

Name	Start MD (us ft)	End MD (us ft)	Source Survey
EMS	0.00	776.00	MSS
MWD	776.00	12370.00	WFT MWD

Well path created using minimum curvature

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	14405228 .08	1732324. 29	0.00	0.00	0.00	0.00	0.00	0.00	
152.82	0.60	268.16	152.82	-0.03	-0.80	0.70	14405228 .05	1732323. 49	0.39	0.39	268.16	152.82	-0.00	0.00	
275.70	0.50	268.16	275.69	-0.06	-1.98	1.72	14405228 .02	1732322. 31	0.08	-0.08	180.00	122.88	-0.00	0.00	
398.00	0.60	264.46	397.99	-0.14	-3.15	2.72	14405227 .94	1732321. 14	0.09	0.08	338.59	122.30	-0.00	0.00	
493.00	0.60	11.76	492.98	0.30	-3.54	3.28	14405228 .38	1732320. 75	1.02	0.00	143.65	95.00	-0.00	0.00	
586.00	0.60	111.26	585.98	0.60	-2.99	2.93	14405228 .68	1732321. 30	0.98	0.00	139.75	93.00	-0.00	0.00	
681.00	0.70	125.76	680.97	0.08	-2.06	1.86	14405228 .16	1732322. 24	0.20	0.11	66.09	95.00	-0.00	0.00	
776.00	0.80	27.56	775.97	0.33	-1.28	1.28	14405228 .41	1732323. 01	1.20	0.11	224.21	95.00	-0.00	0.00	
818.00	0.17	341.78	817.97	0.65	-1.16	1.33	14405228 .72	1732323. 13	1.65	-1.50	190.14	42.00	-0.00	0.00	
881.00	0.39	352.06	880.97	0.95	-1.22	1.52	14405229 .03	1732323. 07	0.36	0.35	18.04	63.00	-0.00	0.00	
976.00	0.43	355.13	975.96	1.62	-1.30	1.90	14405229 .70	1732323. 00	0.05	0.04	30.32	95.00	-0.00	0.00	
1071.00	0.51	6.74	1070.96	2.40	-1.28	2.24	14405230 .48	1732323. 02	0.13	0.08	55.87	95.00	-0.00	0.00	
1166.00	0.46	27.28	1165.96	3.16	-1.05	2.39	14405231 .23	1732323. 24	0.19	-0.05	116.15	95.00	-0.00	0.00	
1261.00	0.64	341.87	1260.95	4.00	-1.04	2.78	14405232 .08	1732323. 25	0.48	0.19	268.66	95.00	-0.00	0.00	
1356.00	0.55	359.97	1355.95	4.96	-1.21	3.37	14405233 .04	1732323. 08	0.22	-0.09	124.45	95.00	-0.00	0.00	
1451.00	0.64	0.08	1450.94	5.95	-1.21	3.82	14405234 .02	1732323. 08	0.09	0.09	0.78	95.00	-0.00	0.00	
1546.00	0.80	4.50	1545.94	7.14	-1.15	4.33	14405235 .22	1732323. 14	0.18	0.17	21.36	95.00	-0.00	0.00	
1640.00	0.00	2.95	1639.92	8.61	-1.06	4.93	14405236 .69	1732323. 23	0.21	0.21	352.28	94.00	-0.00	0.00	
1735.00	0.96	5.56	1734.91	10.23	-0.94	5.57	14405238 .31	1732323. 35	0.06	-0.04	133.16	95.00	-0.00	0.00	

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5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
1829.00	1.03	6.96	1828.90	11.85	-0.76	6.17	14405239 .93	1732323. 53	0.08	0.07	19.85	94.00	-0.00	0.00	
1924.00	0.98	9.77	1923.88	13.50	-0.52	6.72	14405241 .58	1732323. 77	0.07	-0.05	136.81	95.00	-0.00	0.00	
2018.00	0.91	18.73	2017.87	15.00	-0.14	7.08	14405243 .08	1732324. 15	0.17	-0.07	119.78	94.00	-0.00	0.00	
2113.00	0.88	13.85	2112.86	16.42	0.27	7.37	14405244 .50	1732324. 56	0.09	-0.03	246.09	95.00	-0.00	0.00	
2207.00	0.98	4.36	2206.84	17.93	0.51	7.86	14405246 .00	1732324. 80	0.20	0.11	298.19	94.00	-0.00	0.00	
2302.00	0.84	5.36	2301.83	19.43	0.63	8.44	14405247 .51	1732324. 92	0.15	-0.15	174.03	95.00	-0.00	0.00	
2397.00	0.80	349.52	2396.82	20.77	0.58	9.11	14405248 .85	1732324. 87	0.24	-0.04	252.14	95.00	-0.00	0.00	
2492.00	0.78	345.91	2491.81	22.05	0.30	9.95	14405250 .13	1732324. 59	0.06	-0.02	246.31	95.00	-0.00	0.00	
2587.00	0.80	353.05	2586.80	23.34	0.06	10.76	14405251 .42	1732324. 35	0.11	0.02	82.10	95.00	-0.00	0.00	
2683.00	0.67	347.85	2682.80	24.55	-0.14	11.50	14405252 .63	1732324. 15	0.15	-0.14	204.58	96.00	-0.00	0.00	
2779.00	0.70	358.56	2778.79	25.69	-0.27	12.14	14405253 .77	1732324. 02	0.14	0.03	82.21	96.00	-0.00	0.00	
2862.00	0.74	351.29	2861.78	26.72	-0.36	12.70	14405254 .80	1732323. 93	0.12	0.05	289.98	83.00	-0.00	0.00	
3094.00	0.14	288.80	3093.78	28.30	-0.86	13.87	14405256 .38	1732323. 43	0.30	-0.26	190.42	232.00	-0.00	0.00	
3189.00	3.14	186.11	3188.73	25.75	-1.25	13.03	14405253 .83	1732323. 05	3.34	3.16	254.85	95.00	-0.00	0.00	
3283.00	6.51	182.53	3282.38	17.86	-1.76	9.83	14405245 .94	1732322. 54	3.60	3.59	353.11	94.00	-0.00	0.00	
3378.00	9.66	180.98	3376.43	4.51	-2.13	3.98	14405232 .59	1732322. 16	3.32	3.32	355.27	95.00	-0.00	0.00	
3472.00	9.09	186.80	3468.73	-13.16	-3.43	-3.05	14405214 .92	1732320. 86	2.83	2.59	27.20	94.00	-0.00	0.00	
3567.00	5.09	190.89	3561.07	-35.18	-6.95	-10.15	14405192 .90	1732317. 35	3.31	3.16	19.76	95.00	-0.00	0.00	
3662.00	6.96	184.75	3652.38	-61.14	-10.43	-19.08	14405166 .94	1732313. 86	2.65	1.97	314.83	95.00	-0.00	0.00	

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5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
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3757.00	17.88	180.29	3743.02	-89.53	-11.65	-31.15	14405138 .55	1732312. 64	1.71	0.97	302.43	95.00	-0.00	0.00	
3852.00	17.61	179.98	3833.50	-118.49	-11.72	-44.51	14405109 .59	1732312. 57	0.30	-0.28	199.14	95.00	-0.00	0.00	
3946.00	16.80	180.26	3923.30	-146.29	-11.78	-57.34	14405081 .79	1732312. 51	0.87	-0.86	174.30	94.00	-0.00	0.00	
4041.00	17.43	178.76	4014.09	-174.24	-11.53	-70.51	14405053 .83	1732312. 76	0.81	0.66	324.26	95.00	-0.00	0.00	
4136.00	17.33	177.67	4104.75	-202.61	-10.65	-84.43	14405025 .47	1732313. 64	0.36	-0.11	252.41	95.00	-0.00	0.00	
4231.00	18.36	179.55	4195.18	-231.71	-9.95	-98.53	14404996 .37	1732314. 34	1.24	1.08	30.12	95.00	-0.00	0.00	
4325.00	18.00	179.98	4284.49	-261.03	-9.83	-112.22	14404967 .04	1732314. 46	0.41	-0.38	159.77	94.00	-0.00	0.00	
4327.00	18.00	179.98	4286.39	-261.65	-9.83	-112.51	14404966 .43	1732314. 46	0.00	0.00	0.00	2.00	-0.00	0.00	
4420.00	17.29	181.17	4375.02	-289.84	-10.11	-125.32	14404938 .24	1732314. 18	0.86	-0.76	153.63	93.00	-0.00	0.00	
4515.00	15.95	182.45	4466.04	-317.00	-10.96	-137.15	14404911 .08	1732313. 33	1.46	-1.41	165.33	95.00	-0.00	0.00	
4610.00	16.77	187.46	4557.20	-343.63	-13.29	-147.42	14404884 .45	1732311. 00	1.72	0.86	62.26	95.00	-0.00	0.00	
4704.00	16.73	184.96	4647.22	-370.55	-16.22	-157.30	14404857 .53	1732308. 07	0.77	-0.04	265.63	94.00	-0.00	0.00	
4799.00	15.29	187.85	4738.53	-396.59	-19.12	-166.79	14404831 .49	1732305. 17	1.73	-1.52	152.42	95.00	-0.00	0.00	
4894.00	16.59	186.19	4829.88	-422.48	-22.29	-175.98	14404805 .60	1732302. 00	1.45	1.37	339.88	95.00	-0.00	0.00	
4988.00	18.67	185.29	4919.46	-450.81	-25.13	-186.59	14404777 .27	1732299. 17	2.23	2.21	352.10	94.00	-0.00	0.00	
5083.00	19.90	183.63	5009.12	-482.08	-27.55	-198.93	14404746 .00	1732296. 74	1.42	1.29	335.19	95.00	-0.00	0.00	
5178.00	18.50	186.92	5098.84	-513.18	-30.39	-210.82	14404714 .90	1732293. 90	1.86	-1.47	143.85	95.00	-0.00	0.00	
5273.00	18.36	182.71	5188.97	-543.09	-32.91	-222.44	14404684 .99	1732291. 38	1.41	-0.15	262.00	95.00	-0.00	0.00	
5368.00	18.69	176.07	5279.06	-573.23	-32.58	-236.70	14404654 .85	1732291. 71	2.25	0.35	275.73	95.00	-0.00	0.00	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
5463.00	18.42	179.93	5369.12	-603.42	-31.52	-251.63	14404624 .66	1732292. 77	1.32	-0.28	104.22	95.00	-0.00	0.00	
5558.00	16.95	186.01	5459.64	-632.21	-32.95	-263.70	14404595 .87	1732291. 34	2.48	-1.55	131.39	95.00	-0.00	0.00	
5653.00	17.97	181.77	5550.27	-660.63	-34.85	-275.18	14404567 .45	1732289. 44	1.72	1.07	306.69	95.00	-0.00	0.00	
5747.00	18.76	175.81	5639.49	-690.20	-34.20	-289.46	14404537 .88	1732290. 10	2.17	0.84	289.97	94.00	-0.00	0.00	
5842.00	19.32	176.72	5729.29	-721.13	-32.18	-305.58	14404506 .95	1732292. 11	0.67	0.59	28.36	95.00	-0.00	0.00	
5937.00	19.00	178.60	5819.03	-752.27	-30.90	-321.14	14404475 .80	1732293. 39	0.73	-0.34	118.30	95.00	-0.00	0.00	
6032.00	18.59	180.15	5908.96	-782.88	-30.56	-335.62	14404445 .20	1732293. 73	0.68	-0.43	130.12	95.00	-0.00	0.00	
6127.00	18.74	179.25	5998.96	-813.28	-30.40	-349.84	14404414 .80	1732293. 89	0.34	0.16	297.08	95.00	-0.00	0.00	
6223.00	16.81	182.14	6090.38	-842.57	-30.72	-363.14	14404385 .50	1732293. 57	2.21	-2.01	156.80	96.00	-0.00	0.00	
6317.00	16.42	184.54	6180.46	-869.40	-32.28	-374.18	14404358 .68	1732292. 01	0.84	-0.41	120.76	94.00	-0.00	0.00	
6412.00	16.60	185.00	6271.54	-896.31	-34.53	-384.66	14404331 .77	1732289. 77	0.23	0.19	36.21	95.00	-0.00	0.00	
6506.00	17.75	182.89	6361.35	-923.99	-36.42	-395.81	14404304 .09	1732287. 87	1.39	1.22	330.54	94.00	-0.00	0.00	
6601.00	17.71	186.39	6451.84	-952.82	-38.76	-407.09	14404275 .26	1732285. 53	1.12	-0.04	93.82	95.00	-0.00	0.00	
6630.00	18.17	188.98	6479.43	-961.67	-39.95	-410.13	14404266 .41	1732284. 34	3.18	1.59	61.27	29.00	-0.00	0.00	
6678.00	18.70	191.89	6524.96	-976.59	-42.71	-414.60	14404251 .49	1732281. 58	2.21	1.10	61.45	48.00	-0.26	-0.38	
6712.00	18.43	191.68	6557.20	-987.19	-44.92	-417.55	14404240 .89	1732279. 37	0.82	-0.79	193.81	34.00	-0.56	-0.89	
6744.00	17.12	193.49	6587.67	-996.72	-47.04	-420.09	14404231 .36	1732277. 25	4.44	-4.09	157.99	32.00	-0.49	-1.49	
6776.00	15.09	199.85	6618.41	-1005.22	-49.55	-421.80	14404222 .86	1732274. 74	8.40	-6.34	142.03	32.00	-0.27	-2.11	
6807.00	4.14	211.94	6648.42	-1012.23	-52.93	-422.06	14404215 .85	1732271. 36	10.29	-3.06	113.09	31.00	-0.55	-2.95	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
6839.00	13.72	224.43	6679.48	-1018.26	-57.65	-420.66	14404209 .82	1732266. 64	9.47	-1.31	103.98	32.00	-1.59	-4.10	
6871.00	14.13	234.87	6710.55	-1023.22	-63.51	-417.77	14404204 .86	1732260. 78	7.94	1.28	85.82	32.00	-3.39	-5.08	
6902.00	14.84	243.53	6740.56	-1027.16	-70.16	-413.71	14404200 .92	1732254. 14	7.35	2.29	76.08	31.00	-5.77	-5.45	
6934.00	15.74	251.51	6771.43	-1030.37	-77.94	-408.29	14404197 .71	1732246. 35	7.15	2.81	70.73	32.00	-8.36	-5.17	
6966.00	16.65	259.82	6802.17	-1032.55	-86.57	-401.66	14404195 .52	1732237. 72	7.77	2.84	72.59	32.00	-10.74	-4.28	
6997.00	17.17	268.60	6831.83	-1033.45	-95.52	-394.15	14404194 .63	1732228. 77	8.40	1.68	82.71	31.00	-12.54	-3.04	
7029.00	17.11	279.16	6862.42	-1032.82	-104.89	-385.55	14404195 .26	1732219. 40	9.71	-0.19	96.15	32.00	-13.44	-1.74	
7061.00	17.40	288.08	6892.98	-1030.58	-114.09	-376.36	14404197 .50	1732210. 20	8.31	0.91	88.02	32.00	-13.24	-1.61	
7092.00	19.39	290.97	6922.40	-1027.30	-123.30	-366.68	14404200 .78	1732200. 99	7.06	6.42	26.00	31.00	-12.53	-3.26	
7124.00	22.13	291.75	6952.32	-1023.17	-133.86	-355.40	14404204 .91	1732190. 43	8.61	8.56	6.13	32.00	-11.80	-5.27	
7156.00	24.38	290.26	6981.72	-1018.65	-145.66	-342.85	14404209 .43	1732178. 64	7.27	7.03	344.66	32.00	-10.92	-7.09	
7187.00	26.63	290.42	7009.70	-1014.01	-158.17	-329.61	14404214 .07	1732166. 12	7.26	7.26	1.83	31.00	-10.17	-7.90	
7219.00	29.27	290.34	7037.96	-1008.78	-172.23	-314.73	14404219 .30	1732152. 06	8.25	8.25	359.15	32.00	-9.43	-8.25	
7250.00	32.08	291.11	7064.62	-1003.18	-187.02	-299.03	14404224 .90	1732137. 27	9.15	9.06	8.29	31.00	-9.03	-8.05	
7282.00	34.75	290.61	7091.33	-996.91	-203.48	-281.54	14404231 .17	1732120. 81	8.39	8.34	353.90	32.00	-8.70	-7.51	
7313.00	37.99	292.34	7116.29	-990.17	-220.58	-263.26	14404237 .91	1732103. 71	10.96	10.45	18.27	31.00	-8.93	-6.43	
7345.00	39.52	293.69	7141.06	-982.25	-239.22	-243.08	14404245 .83	1732085. 08	8.34	7.91	19.18	32.00	-9.37	-5.38	
7377.00	43.34	294.08	7164.87	-973.59	-258.76	-221.74	14404254 .49	1732065. 53	8.85	8.81	5.43	32.00	-9.87	-4.28	
7408.00	46.18	294.92	7186.88	-964.54	-278.62	-199.95	14404263 .54	1732045. 67	9.36	9.16	12.06	31.00	-10.60	-2.94	

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5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
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7440.00	48.84	295.44	7208.49	-954.50	-299.97	-176.38	14404273 .58	1732024. 32	8.40	8.31	8.38	32.00	-11.52	-1.41	
7472.00	51.48	296.51	7228.99	-943.73	-322.06	-151.82	14404284 .35	1732002. 23	8.64	8.25	17.63	32.00	-12.52	0.30	
7503.00	53.35	297.60	7247.90	-932.56	-343.93	-127.25	14404295 .52	1731980. 36	6.64	6.03	25.13	31.00	-13.38	1.93	
7535.00	54.27	299.44	7266.79	-920.22	-366.62	-101.43	14404307 .85	1731957. 67	5.46	2.88	58.77	32.00	-13.63	3.45	
7567.00	55.64	300.69	7285.17	-907.10	-389.29	-75.26	14404320 .98	1731935. 00	5.34	4.28	37.12	32.00	-13.12	4.54	
7598.00	57.92	302.63	7302.15	-893.48	-411.36	-49.40	14404334 .60	1731912. 93	9.03	7.35	35.98	31.00	-12.24	5.27	
7630.00	60.77	303.77	7318.47	-878.41	-434.39	-22.00	14404349 .67	1731889. 90	9.42	8.91	19.28	32.00	-11.44	5.47	
7662.00	63.06	304.86	7333.53	-862.49	-457.71	6.03	14404365 .59	1731866. 59	7.76	7.16	23.04	32.00	-10.68	5.42	
7693.00	66.29	305.48	7346.79	-846.35	-480.61	33.80	14404381 .73	1731843. 68	10.57	10.42	9.98	31.00	-10.14	5.18	
7725.00	69.27	305.57	7358.89	-829.14	-504.71	63.14	14404398 .94	1731819. 58	9.32	9.31	1.62	32.00	-9.97	5.01	
7756.00	71.95	306.20	7369.18	-812.00	-528.40	92.07	14404416 .08	1731795. 89	8.86	8.65	12.61	31.00	-9.99	4.97	
7788.00	74.41	306.03	7378.44	-793.95	-553.15	122.37	14404434 .13	1731771. 15	7.70	7.69	356.19	32.00	-10.09	5.05	
7820.00	76.56	306.83	7386.46	-775.55	-578.07	152.98	14404452 .53	1731746. 22	7.14	6.72	19.91	32.00	-10.06	5.30	
7851.00	78.15	307.20	7393.25	-757.34	-602.22	182.81	14404470 .74	1731722. 07	5.26	5.13	12.83	31.00	-9.72	5.47	
7883.00	79.71	309.28	7399.39	-737.91	-626.88	213.68	14404490 .17	1731697. 41	8.03	4.87	52.82	32.00	-8.85	5.29	
7915.00	81.34	309.20	7404.66	-717.94	-651.33	244.59	14404510 .14	1731672. 96	5.10	5.09	357.22	32.00	-7.52	4.78	
7946.00	83.20	309.79	7408.83	-698.40	-675.03	274.65	14404529 .68	1731649. 26	6.29	6.00	17.49	31.00	-5.84	4.41	
7978.00	85.81	310.14	7411.89	-677.95	-699.44	305.76	14404550 .13	1731624. 85	8.23	8.16	7.62	32.00	-4.00	4.04	
8010.00	88.21	311.00	7413.56	-657.16	-723.71	336.90	14404570 .92	1731600. 58	7.97	7.50	19.71	32.00	-2.44	3.54	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
8042.00	89.51	311.08	7414.20	-636.16	-747.84	368.01	14404591 .92	1731576. 45	4.07	4.06	3.52	32.00	-1.80	2.81	
8136.00	91.42	311.59	7413.43	-574.08	-818.42	459.32	14404654 .00	1731505. 87	2.10	2.03	14.95	94.00	-2.57	0.16	
8231.00	91.97	310.74	7410.62	-511.58	-889.91	551.63	14404716 .50	1731434. 39	1.07	0.58	302.93	95.00	-5.37	-2.23	
8326.00	90.00	307.74	7408.99	-451.50	-963.46	644.64	14404776 .58	1731360. 83	3.78	-2.07	236.74	95.00	-7.01	-1.43	
8421.00	92.53	309.96	7406.89	-391.93	-1037.42	737.78	14404836 .15	1731286. 87	3.54	2.66	41.24	95.00	-9.10	0.02	
8516.00	94.25	311.06	7401.28	-330.33	-1109.52	830.21	14404897 .74	1731214. 78	2.15	1.81	32.52	95.00	-14.68	-1.28	
8611.00	93.21	309.97	7395.10	-268.75	-1181.58	922.61	14404959 .33	1731142. 71	1.58	-1.09	226.32	95.00	-20.87	-2.59	
8706.00	92.16	308.49	7390.65	-208.74	-1255.09	1015.56	14405019 .34	1731069. 20	1.91	-1.11	234.65	95.00	-25.34	-1.78	
8800.00	92.28	307.65	7387.00	-150.82	-1329.03	1107.92	14405077 .26	1730995. 26	0.90	0.13	278.15	94.00	-28.97	0.93	
8895.00	90.99	307.87	7384.29	-92.67	-1404.11	1201.39	14405135 .41	1730920. 18	1.38	-1.36	170.32	95.00	-31.70	4.18	
8990.00	90.55	308.62	7383.02	-33.87	-1478.71	1294.75	14405194 .21	1730845. 58	0.92	-0.46	120.40	95.00	-32.98	6.63	
9085.00	90.86	308.75	7381.85	25.50	-1552.86	1387.97	14405253 .58	1730771. 43	0.35	0.33	22.75	95.00	-34.15	8.35	
9179.00	91.48	309.16	7379.93	84.59	-1625.94	1480.11	14405312 .67	1730698. 35	0.79	0.66	33.47	94.00	-36.06	9.61	
9274.00	91.11	309.29	7377.78	144.65	-1699.52	1573.13	14405372 .73	1730624. 77	0.41	-0.39	160.64	95.00	-38.21	10.44	
9369.00	90.31	308.00	7376.60	203.97	-1773.71	1666.36	14405432 .05	1730550. 58	1.60	-0.84	238.20	95.00	-39.39	12.22	
9464.00	90.92	308.13	7375.58	262.54	-1848.50	1759.78	14405490 .62	1730475. 79	0.66	0.64	12.03	95.00	-40.40	14.97	
9559.00	91.29	309.60	7373.75	322.14	-1922.45	1852.93	14405550 .22	1730401. 84	1.60	0.39	75.86	95.00	-42.24	16.39	
9655.00	91.42	310.52	7371.53	382.62	-1994.38	1944.69	14405610 .70	1730329. 92	0.99	0.14	81.94	94.00	-44.46	15.84	
9748.00	90.86	310.14	7369.64	444.09	-2066.78	2037.33	14405672 .17	1730257. 51	0.71	-0.59	214.16	95.00	-46.36	14.83	

WV Department of
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5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
9843.00	91.30	310.38	7367.85	505.47	-2139.27	2130.01	14405733 .55	1730185. 03	0.53	0.46	28.60	95.00	-48.14	13.94	
9937.00	91.30	309.85	7365.72	566.02	-2211.13	2221.75	14405794 .10	1730113. 16	0.56	0.00	270.01	94.00	-50.27	13.30	
10033.00	92.34	309.69	7362.67	627.40	-2284.88	2315.54	14405855 .48	1730039. 41	1.10	1.08	351.26	96.00	-53.29	13.22	
10127.00	92.59	309.66	7358.62	687.36	-2357.17	2407.38	14405915 .44	1729967. 13	0.27	0.27	353.16	94.00	-57.32	13.30	
10222.00	92.90	309.28	7354.07	747.68	-2430.42	2500.24	14405975 .76	1729893. 87	0.52	0.33	309.25	95.00	-61.84	13.72	
10317.00	91.54	308.88	7350.39	807.52	-2504.10	2593.27	14406035 .60	1729820. 19	1.49	-1.43	196.39	95.00	-65.58	14.78	
10411.00	90.62	309.78	7348.62	867.08	-2576.80	2685.29	14406095 .16	1729747. 49	1.37	-0.98	135.63	94.00	-67.37	15.42	
10506.00	90.80	309.03	7347.45	927.39	-2650.20	2778.27	14406155 .46	1729674. 09	0.81	0.19	283.50	95.00	-68.54	15.95	
10601.00	91.91	309.30	7345.20	987.37	-2723.83	2871.31	14406215 .44	1729600. 46	1.20	1.17	13.66	95.00	-70.76	16.88	
10696.00	91.60	310.78	7342.29	1048.45	-2796.53	2964.04	14406276 .53	1729527. 76	1.59	-0.33	101.81	95.00	-73.69	16.35	
10791.00	90.92	311.34	7340.20	1110.84	-2868.14	3056.40	14406338 .92	1729456. 15	0.93	-0.72	140.53	95.00	-75.80	14.13	
10886.00	91.79	311.53	7337.95	1173.69	-2939.34	3148.62	14406401 .76	1729384. 95	0.94	0.92	12.31	95.00	-78.02	11.29	
10981.00	92.34	310.65	7334.53	1236.08	-3010.90	3240.94	14406464 .16	1729313. 40	1.09	0.58	302.04	95.00	-81.41	9.03	
11075.00	91.66	311.37	7331.25	1297.73	-3081.78	3332.32	14406525 .81	1729242. 51	1.05	-0.72	133.37	94.00	-84.72	6.92	
11170.00	91.30	311.78	7328.80	1360.75	-3152.83	3424.48	14406588 .83	1729171. 46	0.57	-0.38	131.29	95.00	-87.18	3.85	
11264.00	92.34	311.96	7325.81	1423.45	-3222.79	3515.53	14406651 .53	1729101. 50	1.12	1.11	9.81	94.00	-90.11	0.33	
11359.00	93.33	311.00	7321.11	1486.30	-3293.87	3607.64	14406714 .38	1729030. 42	1.45	1.04	315.94	95.00	-94.72	-2.58	
11454.00	92.16	309.59	7316.56	1547.66	-3366.25	3700.21	14406775 .74	1728958. 04	1.93	-1.23	230.32	95.00	-99.37	-3.53	
11549.00	91.48	309.54	7313.55	1608.14	-3439.44	3793.10	14406836 .22	1728884. 85	0.72	-0.72	184.20	95.00	-102.42	-3.27	

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 Environmental Protection

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5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Drill Floor)															
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Face (°)	CL (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
11643.00	91.48	308.43	7311.12	1667.26	-3512.49	3885.21	14406895.34	1728811.80	1.18	0.00	270.01	94.00	-104.85	-2.06	
11738.00	90.86	308.06	7309.18	1726.06	-3587.08	3978.56	14406954.13	1728737.21	0.76	-0.65	210.83	95.00	-106.81	0.39	
11833.00	90.18	307.99	7308.32	1784.57	-3661.91	4071.99	14407012.65	1728662.38	0.72	-0.72	185.88	95.00	-107.68	3.20	
11928.00	90.25	307.63	7307.96	1842.81	-3736.97	4165.48	14407070.89	1728587.32	0.39	0.07	281.00	95.00	-108.04	6.37	
12023.00	90.53	309.55	7307.31	1902.06	-3811.22	4258.73	14407130.14	1728513.08	2.04	0.29	81.70	95.00	-108.68	8.25	
12118.00	91.42	310.81	7305.70	1963.35	-3883.79	4351.43	14407191.43	1728440.51	1.62	0.94	54.75	95.00	-110.27	7.49	
12214.00	91.23	309.96	7303.48	2025.53	-3956.89	4445.03	14407253.61	1728367.40	0.91	-0.20	257.41	96.00	-112.50	6.39	
12307.00	91.36	310.09	7301.37	2085.32	-4028.09	4535.83	14407313.40	1728296.20	0.20	0.14	44.99	93.00	-114.59	5.89	FINAL MWD SURVEY
12370.00	91.36	310.09	7299.88	2125.88	-4076.27	4597.32	14407353.96	1728248.02	0.00	0.00	0.00	63.00	-116.03	5.51	PROJ TO BIT

Formation Points (Relative to Slot centre, TVD relative to Drill Floor)				
Name	TVD (US ft)	MD (US ft)	F.Dip (°)	F.Dir (°)
BEREA	2421.00	2421.18	0	0
BURKET	7205.00	7434.72	0	0
MAHANTANGO	7224.00	7464.04	0	0
TULLY	7242.00	7493.19	0	0
UPPER MARCELLUS	7319.00	7631.09	0	0
LOWER MARCELLUS	7340.00	7676.66	0	0
ONONDAGA	7388.00	7826.71	0	0

WV Department of Environmental Protection

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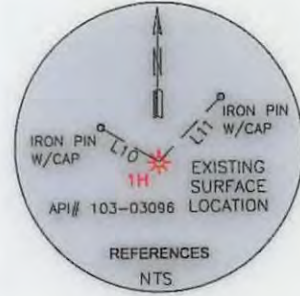
RETTEW

RETTEW Associates, Inc.
27 Travato Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rettew@rettew.com
Website: www.rettew.com

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT

LINE	DESCRIPTION	DISTANCE	DESCRIPTION
L1	S 49°36'52" W	982'	SHL TO LPL
L2	N 19°48'34" E	1,266'	SHL TO LANDMARK
L3	S 67°26'03" E	1,207'	SHL TO LANDMARK
L4	S 22°51'52" E	1,432'	SHL TO LANDMARK
L5	N 50°46'05" W	1,421'	ASDRILLED BORE
L6	N 50°19'53" W	1,042'	ASDRILLED BORE
L7	N 49°13'14" W	1,042'	ASDRILLED BORE
L8	N 50°53'19" W	821'	ASDRILLED BORE
L9	N 50°18'47" W	4,325'	LPL TO BHL
L10	N 59°00'51" W	175'	REBAR
L11	N 43°59'57" E	234'	REBAR

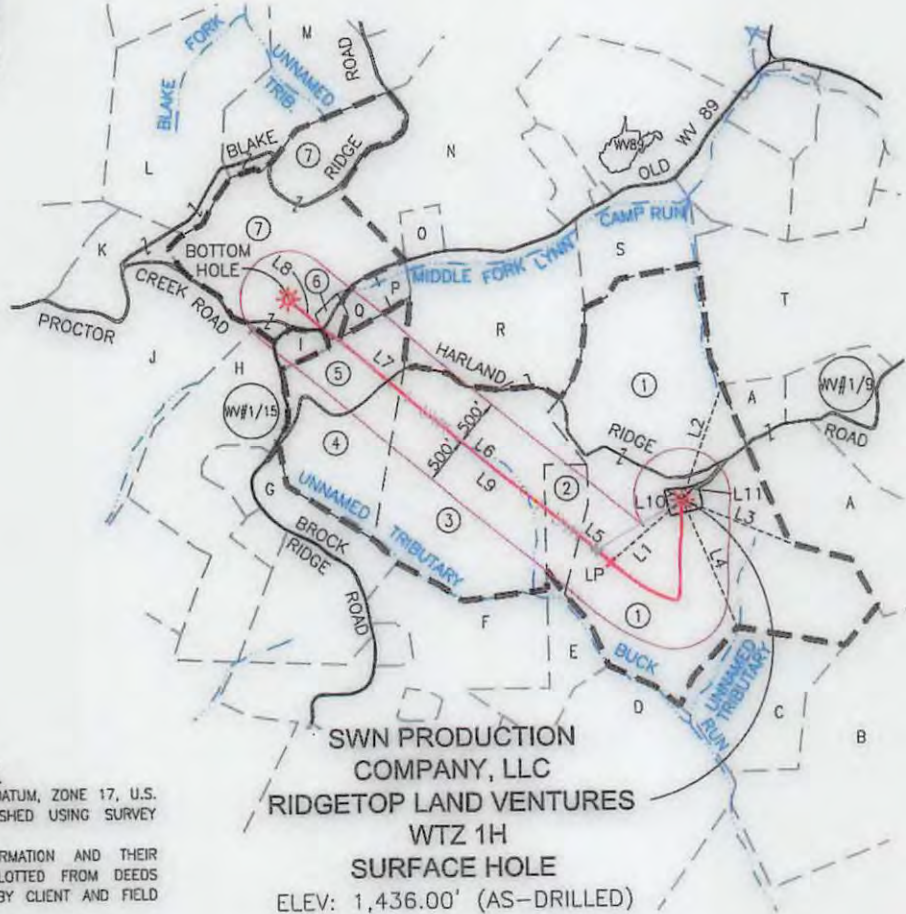
Latitude: 39°40'00" SHL



Longitude: 80°40'00"

SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,390,722.300 EASTING: 528,013.500
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,390,528.403 EASTING: 527,785.554
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,391,370.276 EASTING: 526,771.048

TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	RIDGETOP CAPITAL, LP (S)	12-14-25	±173.0
2	CATHERINE L. GODDARD & JAMES M. LEDERGERBER (S)	12-14-24	±9.25
3	CATHERINE L. GODDARD & JAMES M. LEDERGERBER (S)	12-14-23	±84.0
4	OWEN E. SCHMUCKER (S)	12-14-22	±27.25
5	T & C TRUST (S)	12-14-22-1	±17.87
6	QUENTIN YOCUM SR. & FRANCES YOCUM (S)	12-14-22-2	±1.87
7	CHESAPEAKE APPALACHIA, LLC. (S)	12-14-13	±85.31



NOTES ON SURVEY

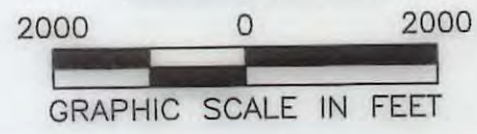
- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



AS-DRILLED

ADJOINING OWNER INFORMATION (SEE ADJOINING OWNER SHEET)



COMPANY: **SWN** Production Company, LLC

P.S. 2313

<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p>	<p>MINIMUM DEGREE OF ACCURACY: 1/200</p> <p>PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)</p>	<p>COMPANY: SWN Production Company, LLC</p> <p>OPERATOR'S WELL #: 1H</p> <p>API WELL #: 47 103 03096</p> <p>STATE COUNTY PERMIT</p>
	<p>WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/></p> <p>WATERSHED: LITTLE FISHING CREEK</p> <p>DISTRICT: PROCTOR COUNTY: WETZEL</p> <p>SURFACE OWNER: RIDGETOP CAPITAL, LP</p> <p>OIL & GAS ROYALTY OWNER: RIDGETOP CAPITAL, LP</p> <p>DRILL <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/></p> <p>CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input checked="" type="checkbox"/> (SPECIFY) AS-DRILLED</p> <p>TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,414'</p>	<p>RIDGETOP LAND VENTURES WTZ</p> <p>ELEVATION: 1,436.00' (AS-DRILLED)</p> <p>QUADRANGLE: WILEYVILLE, WV</p> <p>ACREAGE: ±173.00</p> <p>ACREAGE: ±173.00</p>

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

DESIGNATED AGENT: DEE SOUTHALL
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

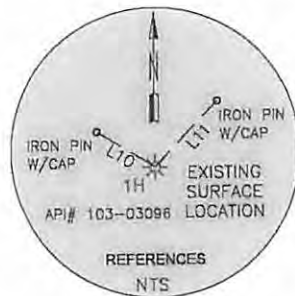
RETTEW

RETTEW Associates, Inc.
27 Travato Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rettew@rettew.com
Website: www.rettew.com

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT

LINE	DESCRIPTION	DISTANCE	DESCRIPTION
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L6	N 50°19'53" W	1,042'	ASDRILLED BORE
L7	N 49°13'14" W	1,042'	ASDRILLED BORE
L8	N 50°53'19" W	821'	ASDRILLED BORE
L9	N 50°18'47" W	4,325'	LPL TO BHL
L10	N 59°00'51" W	175'	REBAR
L11	N 43°59'57" E	234'	REBAR

Latitude: 39°40'00" SHL



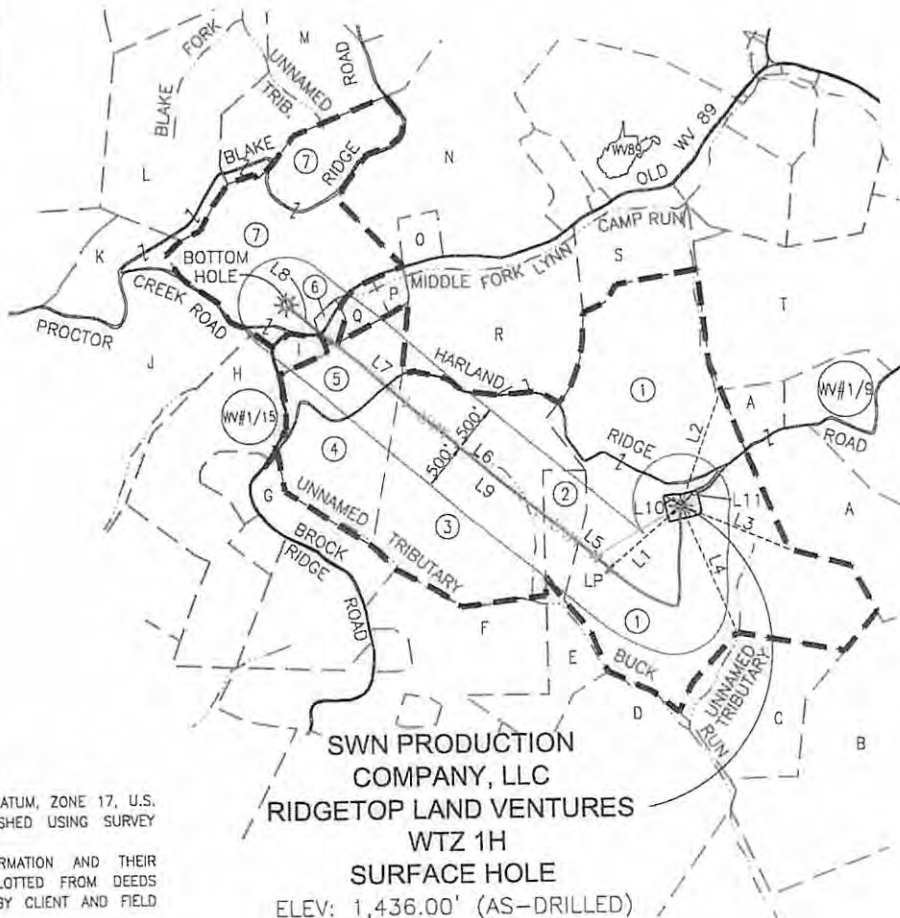
Longitude: 80°40'00"

TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	RIDGETOP CAPITAL, LP (S)	12-14-25	±173.0
2	CATHERINE L. GODDARD & JAMES M. LEDERGERBER (S)	12-14-24	±9.25
3	CATHERINE L. GODDARD & JAMES M. LEDERGERBER (S)	12-14-23	±84.0
4	OWEN E. SCHMUCKER (S)	12-14-22	±27.25
5	T & C TRUST (S)	12-14-22-1	±17.87
6	QUENTIN YOCUM SR. & FRANCES YOCUM (S)	12-14-22-2	±1.87
7	CHESAPEAKE APPALACHIA, LLC. (S)	12-14-13	±85.31

SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,390,722.300
EASTING: 528,013.500

LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,390,528.403
EASTING: 527,785.554

BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,391,370.276
EASTING: 526,771.048



NOTES ON SURVEY

- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
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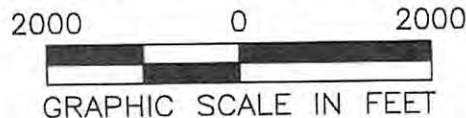
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P.S. 2313



AS-DRILLED

ADJOINING OWNER INFORMATION
(SEE ADJOINING OWNER SHEET)



COMPANY: **SWN** Production Company, LLC

RIDGETOP LAND VENTURES WTZ
OPERATOR'S WELL #: **RECEIVED**
API WELL #: **47** 103-03096
STATE: WV COUNTY: WETZEL PERMIT: APR 21 2016

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
WVDEP OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW
WATERSHED: LITTLE FISHING CREEK
DISTRICT: PROCTOR COUNTY: WETZEL
SURFACE OWNER: RIDGETOP CAPITAL, LP
OIL & GAS ROYALTY OWNER: RIDGETOP CAPITAL, LP
DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) AS-DRILLED
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,414' ±

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

DESIGNATED AGENT: DEE SOUTHALL
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:
○ PROPOSED SURFACE HOLE / BOTTOM HOLE
* EXISTING / PRODUCING WELLHEAD
⊗ ABANDONED WELL
⊗⊗ PLUGGED & ABANDONED WELL
△ CUT CONDUCTOR

REVISIONS:
△ ADDED PROPOSED LATERAL 11-05-2015

DATE: 10-21-2015
SHEET: 1 OF 3
DRAWN BY: J. ROSS
SCALE: 1" = 2000'
DRAWING NO: 087569007
WELL LOCATION PLAT



RETTEW Associates, Inc.
 27 Travato Street, Suite 101
 Bridgeport, WV 26330
 Phone (800) 738-8395
 Email: rettow@rettow.com
 Website: www.rettow.com

ADJOINING OWNERS

TRACT	ADJOINING SURFACE OWNER	TAX PARCEL	ACRES
A	ANTHONY A PITOSIA & DAVID T. PITOSCIA	12-14-26	±66.58
B	ROBERT LEE CECIL	12-15-33	±139.0
C	MARY M. BALLOUZ DAVIS	12-14-35	±36.0
D	ERICK D. & PHYLLIS BECKER	12-18-7	±57.13
E	PAUL BRENT BLAKE, ET AL	12-14-34	±18.0
F	PAUL BRENT BLAKE, ET AL	12-14-32-3	±85.96
G	OWEN E. SCHMUCKER	12-14-21-4	±15.0
H	JAMES H. FOGG	12-14-21-1	±66.44
I	ALAN QUENTIN YOCUM, JR.	12-14-22-3	±3.21
J	BUSTER & BARBARA A. BLAKE	12-14-12-1	±134.5
K	SHEILA K. WHITE	12-14-12-4	±18.35
L	ROBERT C. & DENISE M. PENDLEBURY	12-14-3	±67.50
M	NORMAN E. KEENEY, JR. & NANCY M. KEENEY	12-09-45	±113.4
N	RONNIE E. & YVONNE M. WADE	12-14-4-1	±94.37
O	RONNIE E. & YVONNE M. WADE	12-14-4-4	±5.00
P	ALAN SHERAL YOCUM	12-14-22-4	±2.38
Q	JULIE SNIDER	12-14-22-6	±4.67
R	JAMES & JORETTA RITCHEA	12-14-40	±62.11
S	MICHAEL E. & VELVA C. LASURE	12-14-14	±25.00
T	WILLIAM R. PITOSCIA	12-14-16	±104.0

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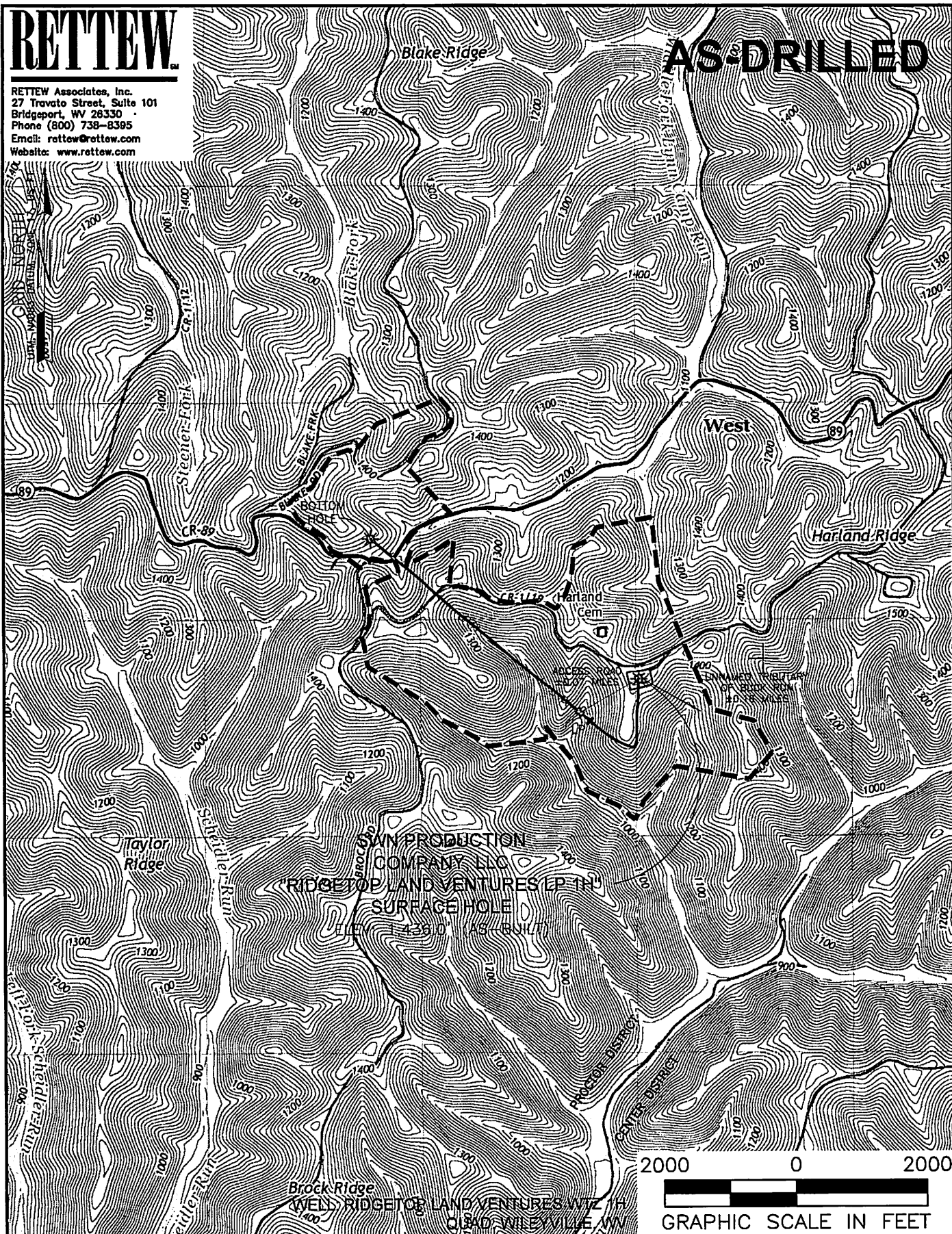
06/24/2016

REVISIONS:	COMPANY:	 SWN Production Company, LLC	DATE: 10-26-2015
△ ADDED PROPOSED LATERAL 11-05-2015			Production Company™
	OPERATOR'S	RIDGETOP LAND VENTURES WTZ	SHEET: 2 OF 3
	WELL #:	1H	DRAWN BY: J. ROSS
	LOCATION:	PROCTOR DISTRICT, WETZEL COUNTY, WEST VIRGINIA	SCALE: NTS
			DRAWING NO:087569007
			ADJOINING OWNERS

RETTEW

RETTEW Associates, Inc.
27 Travato Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rttew@rttew.com
Website: www.rttew.com

AS-DRILLED



NAME AND DISTANCE TO THE NEAREST STREAM: AN UNNAMED TRIBUTARY TO BUCK RUN IS LOCATED 853 FEET± SOUTHEAST OF THE CENTER OF THE DRILL PAD.		STREAM CROSSING COORDINATES (NAD 83): NO NEW CROSSINGS.		COMPANY: SWN Office of Oil and Gas Production Company, LLC	
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET		OPERATOR'S RIDGETOP LAND VENTURES WTZ WELL #: 1H APR 21 2016		LOCATION: PROCTOR DISTRICT, WETZEL COUNTY, WEST VIRGINIA	
FEMA FLOOD INFORMATION: PER FEMA TILE 54051C0250E, EFFECTIVE DATE SEPTEMBER 25, 2009, NO FLOOD ZONES		SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 39.665854° LONGITUDE: -80.673405°		BOTTOM HOLE LOCATION: 06/24/2016 GEOGRAPHIC (NAD83): LATITUDE: 39.671732° LONGITUDE: -80.687864°	
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ✖ EXISTING / PRODUCING WELLHEAD ✖ ABANDONED WELL ✖ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR		- - - - - PROPOSED DHP AS-DRILLED DHP - - - - - LEASE BOUNDARY = = = = = ACCESS ROAD = = = = = ACCESS ROAD TO PREV. SITE = = = = = HIGHWAY/INTERSTATE = = = = = COUNTY ROAD		REVISIONS: △ ADDED PROPOSED LATERAL 11-05-2015	
				DATE: 10-26-2015 3 OF 3 DRAWN BY: J. ROSS SCALE: 1" = 2000' DRAWING NO: 087569007 TOPOGRAPHIC MAP	

Via Federal Express

April 20, 2016

Kay Holtsclaw
Office of Oil & Gas
601 57th Street
Charleston WV 25304

RE: Form WR-35 Filing

Well: Ridgetop Land Ventures 1H API: 47-103-03096
Rayle Coal 1H 47-069-00182

Ms. Holtsclaw:

As requested, please find prior Form 35 filings and attachments for the referenced wells.

If you have any questions or require additional information, please contact me via email at liz_gee@swn.com or telephone at (832) 796-7632.

Sincerely,



Elizabeth Gee
Sr. Regulatory Analyst
West Virginia Division

/lg
Encl.

RECEIVED
Office of Oil and Gas
APR 21 2016
WV Department of
Environmental Protection

$\frac{R^2}{A} \rightarrow V^+$

VIA FEDERALEXpress OVERNIGHT

November 19, 2015

West Virginia Department of Environmental Protection- Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
RE: Ridgetop Land Ventures 1H, 3H, 5H, and 201H CR-35s

Dear Sir and/or Madam,

Enclosed please find the original Well Operator's Report of Well Work, the frac focus report, and the Well Operator's Report of Initial Gas-Oil Ratio for the above referenced well.

If there are any errors or questions feel free to contact me either by phone or email.

Regards,

Cody D. Magby
Sr. Staff Regulatory Analyst
Cody_magby@swn.com
832-796-6215

Enclosure;

RECEIVED
Office of Oil and Gas
APR 21 2016
WV Department of
Environmental Protection
 $\frac{R^L}{A} \rightarrow V^+$