

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

API 47-069-00217 County OHIO District RICHLAND
Quad WHEELING Pad Name EDWARD NICHOLS PAD Field/Pool Name PANHANDLE
Farm name NICHOLS, EDWARD & JUDITH Well Number EDWARD NICHOLS OHI 5H
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 4439032.847 Easting 531519.300
Landing Point of Curve Northing 4439363.175 Easting 531665.135
Bottom Hole Northing 4441123.959 Easting 530985.411

Elevation (ft) 1310.4 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 04/19/2017 Date drilling commenced 07/13/2017 Date drilling ceased 09/23/2017
Date completion activities began 11/25/2017 Date completion activities ceased 01/14/2018
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 395 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 671 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 545 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed

[Signature] 5.10.18

Reviewed by: _____

API 47-069 - 00217 Farm name NICHOLS, EDWARD & JUDITH Well number EDWARD NICHOLS OHI 5H

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	126	NEW	J-55/94#		Y
Surface	17.5	13.375	628	NEW	J-55/54.50#	545'; 565'	Y, 30 BBLS
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	2084	NEW	J-55/36#		Y
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	12919	NEW	HCP-110/20#		Y
Tubing		2.375	6597	NEW	P-110/4.7#		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 TO SURFACE				SURFACE	24
Surface	CLASS A	582	15.6	1.20	698.4	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	788	15.6	1.18	929.84	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	860/1410	15.6	1.21/1.19	1070.6/1677.9	SURFACE	24
Tubing							

Drillers TD (ft) 12919 Loggers TD (ft) 12919
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5530

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 - EVERY THIRD JOINT OF CASING
 INTERMEDIATE: 24 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 PRODUCTION: 181 CENTRALIZERS - EVERY THIRD JOINT FROM SURFACE TO TOP OF CURVE, THEN EVERY JOINT UNTIL TD

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	ATTACHMENT	1		

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	ATTACHMENT	2				

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Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>MARCELLUS</u>	<u>6176</u>	<u>TVD</u>	<u>6634</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1164 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 3211 mcfpd Oil 321 bpd NGL _____ bpd Water 400 bpd GAS MEASURED BY Estimated Orifice Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>		<u>BOTTOM</u>		<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H₂S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	
	<u>0</u>		<u>0</u>		
	<u>SEE</u>	<u>ATTACHMENT</u>	<u>3</u>		

Please insert additional pages as applicable.

Drilling Contractor SWN DRILLING COMPANY
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Logging Company KLX ENERGY SERVICES
Address 3040 POST OAK BLVD City HOUSTON State TX Zip 77056

Cementing Company SCHLUMBERGER WELL SERVICES
Address 110 SCHLUMBERGER DRIVE City SUGARLAND State TX Zip 77478

Stimulating Company US WELL SERVICES
Address 7705 POST OAK LN #405 City HOUSTON State TX Zip 77056

Please insert additional pages as applicable.

Completed by ELIZABETH GEE Telephone 832-796-7632
Signature [Signature] Title STAFF REGULATORY ANALYST Date 03/20/2018

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**EDWARD NICHOLS OHI 5H
PERFORATION SUMMARY
ATTACHMENT 1**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	11/3/2017	12,737	12,809	33
2	11/25/2017	12,632	12,704	33
3	11/25/2017	12,527	12,599	33
4	11/26/2017	12,422	12,494	33
5	11/26/2017	12,317	12,389	33
6	11/26/2017	12,212	12,284	33
7	11/27/2017	12,107	12,179	33
8	11/27/2017	12,002	12,074	33
9	11/27/2017	11,897	11,969	33
10	11/28/2017	11,792	11,864	33
11	11/28/2017	11,687	11,759	33
12	11/28/2017	11,582	11,654	33
13	11/29/2017	11,477	11,549	33
14	12/2/2017	11,372	11,444	33
15	12/2/2017	11,263	11,339	33
16	12/3/2017	11,162	11,234	33
17	12/3/2017	11,057	11,129	33
18	12/3/2017	10,952	11,024	33
19	12/3/2017	10,847	10,919	33
20	12/3/2017	10,742	10,814	33
21	12/3/2017	10,639	10,709	33
22	12/4/2017	10,532	10,604	33
23	12/4/2017	10,427	10,499	33
24	12/5/2017	10,322	10,391	33
25	12/6/2017	10,217	10,289	33
26	12/6/2017	10,112	10,184	33
27	12/6/2017	10,011	10,079	33
28	12/6/2017	9,902	9,974	33
29	12/7/2017	9,797	9,869	33
30	12/7/2017	9,697	9,764	33
31	12/8/2017	9,587	9,659	33
32	12/9/2017	9,482	9,554	33
33	12/9/2017	9,379	9,449	33
34	12/9/2017	9,272	9,344	33
35	12/10/2017	9,167	9,239	33
36	12/10/2017	9,066	9,134	33
37	12/10/2017	8,957	9,029	33
38	12/10/2017	8,852	8,924	33
39	12/11/2017	8,747	8,819	33
40	12/11/2017	8,642	8,718	33
41	12/11/2017	8,537	8,609	33
42	12/12/2017	8,430	8,504	33

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EDWARD NICHOLS OHI 5H
PERFORATION SUMMARY
ATTACHMENT 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
43	12/12/2017	8,327	8,399	33
44	12/12/2017	8,222	8,294	33
45	12/13/2017	8,117	8,189	33
46	12/13/2017	8,012	8,084	33
47	12/13/2017	7,907	7,979	33
48	12/14/2017	7,802	7,874	33
49	12/14/2017	7,697	7,769	33
50	12/14/2017	7,592	7,664	33
51	12/15/2017	7,487	7,559	33
52	12/15/2017	7,382	7,454	33
53	12/15/2017	7,277	7,349	33
54	12/16/2017	7,172	7,244	33
55	12/16/2017	7,067	7,139	33
56	12/16/2017	6,962	7,034	33
57	12/17/2017	6,857	6,929	33
58	12/17/2017	6,752	6,824	33
59	12/18/2017	6,647	6,719	33

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**EDWARD NICHOLS OHI 5H
STIMULATION SUMMARY
ATTACHMENT 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	11/25/2017	85	7,509	7,775	3,814	379,460	7,381	
2	11/25/2017	91	7,879	8,131	4,416	376,980	5,831	
3	11/26/2017	90	7,690	7,897	4,711	378,240	5,824	
4	11/26/2017	90	7,663	8,194	4,503	376,300	5,665	
5	11/26/2017	91	7,692	7,998	4,796	376,000	6,674	
6	11/26/2017	90	7,392	8,054	4,920	372,380	5,707	
7	11/27/2017	91	7,505	7,866	5,255	375,700	5,662	
8	11/27/2017	88	7,982	8,595	4,854	375,840	5,576	
9	11/27/2017	90	7,794	8,081	4,779	373,660	5,613	
10	11/28/2017	90	7,613	7,968	5,211	375,350	5,684	
11	11/28/2017	90	7,681	8,050	4,730	375,810	5,560	
12	11/29/2017	88	7,691	8,573	5,019	377,460	6,488	
13	12/2/2017	90	7,722	8,804	4,454	375,480	5,537	
14	12/2/2017	89	7,694	8,714	4,129	375,520	5,528	
15	12/2/2017	89	7,651	8,367	4,680	376,340	5,626	
16	12/3/2017	90	7,789	8,323	4,593	375,460	5,629	
17	12/3/2017	90	7,485	8,180	4,653	375,920	5,493	
18	12/3/2017	90	7,609	8,334	4,825	375,920	5,476	
19	12/3/2017	90	7,264	8,095	4,868	375,340	5,466	
20	12/3/2017	90	7,523	8,105	4,862	373,600	5,651	
21	12/4/2017	90	7,544	8,270	4,721	376,820	5,580	
22	12/4/2017	90	7,470	7,955	4,761	375,130	5,520	
23	12/5/2017	90	7,823	8,216	4,928	379,190	6,877	
24	12/6/2017	90	7,485	7,710	4,702	376,030	5,483	
25	12/6/2017	90	7,344	8,209	4,919	374,370	5,413	
26	12/6/2017	90	7,418	8,226	4,793	374,580	5,363	
27	12/6/2017	90	7,505	8,694	4,769	378,510	5,468	
28	12/6/2017	91	7,608	8,499	4,755	373,000	5,357	
29	12/7/2017	89	7,551	8,492	4,831	377,265	5,395	
30	12/8/2017	89	7,597	8,286	4,516	375,670	5,379	
31	12/8/2017	90	7,472	7,765	4,626	375,170	5,349	
32	12/9/2017	88	7,409	7,950	4,571	375,285	5,348	
33	12/9/2017	91	6,980	8,223	4,925	374,410	5,610	
34	12/9/2017	89	7,332	8,330	4,706	375,725	5,388	
35	12/10/2017	88	7,205	8,037	4,827	376,750	5,311	
36	12/10/2017	91	7,344	8,643	5,182	375,020	5,208	
37	12/10/2017	90	7,236	7,702	4,489	375,440	5,313	
38	12/11/2017	87	7,408	9,120	4,483	376,095	5,216	
39	12/11/2017	90	7,215	8,317	4,666	372,640	5,218	
40	12/11/2017	90	6,900	7,798	4,888	376,760	5,195	
41	12/12/2017	89	7,249	7,845	4,533	377,250	5,142	
42	12/12/2017	90	6,998	8,568	4,663	374,340	5,201	
43	12/12/2017	90	7,119	8,145	4,832	371,820	5,186	
44	12/13/2017	89	7,016	7,357	4,681	372,440	5,207	
45	12/13/2017	90	6,956	7,861	4,605	374,380	5,262	
46	12/13/2017	89	6,935	7,964	4,731	374,640	5,168	
47	12/14/2017	89	7,038	7,362	4,643	380,725	5,104	
48	12/14/2017	91	6,816	7,858	4,859	378,940	5,278	
49	12/14/2017	88	6,984	7,573	4,754	379,920	5,153	

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STIMULATION SUMMARY
ATTACHMENT 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
50	12/15/2017	88	7,058	7,469	4,609	379,225	5,097	
51	12/15/2017	90	6,915	8,075	4,719	377,120	5,097	
52	12/15/2017	89	6,933	7,308	4,707	378,085	5,110	
53	12/16/2017	89	7,068	7,635	5,048	374,880	5,059	
54	12/16/2017	90	6,766	7,900	4,755	372,840	5,187	
55	12/16/2017	90	6,937	8,806	4,505	374,380	5,175	
56	12/17/2017	89	6,909	7,252	4,854	373,700	5,070	
57	12/17/2017	90	6,749	7,092	4,518	372,300	5,390	
58	12/18/2017	89	6,643	6,955	4,489	376,210	5,247	
59	12/18/2017	90	6,812	8,626	4,960	372,720	5,087	

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EDWARD NICHOLS OHI 5H

API: 47-069-00217

ATTACHMENT 3

LITHOLOGY/FORMATION	TOP DEPTH, MD (FT)	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, MD (FT)	BOTTOM DEPTH, TVD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	NA	NA	395.00	395.00	
Top of Salt Water	671.00	671.00	NA	NA	
Pittsburgh Coal	545.00	545.00	569.00	569.00	
Big Injun (ss)	1719.00	1717.00	1901.00	1899.00	
Berea (siltstone)	2245.00	2243.00	5811.00	5672.00	
Rhinestreet (shale)	5811.00	5672.00	6061.00	5880.00	
Cashaqua (shale)	6061.00	5880.00	6134.00	5933.00	
Middlesex (shale)	6134.00	5933.00	6242.00	6002.00	
Burket (shale)	6242.00	6002.00	6271.00	6019.00	
Tully (ls)	6271.00	6019.00	6359.00	6067.00	
Mahantango (shale)	6359.00	6067.00	6634.00	6176.00	
Marcellus (shale)	6634.00	6176.00	NA	NA	GAS

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/25/2017
Job End Date:	12/18/2017
State:	West Virginia
County:	Ohio
API Number:	47-069-00217-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Edward Nichols OHI 5H
Latitude:	40.10100062
Longitude:	-80.63020200
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,180
Total Base Water Volume (gal):	13,392,040
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	Southwestern Energy	Carrier/Base Fluid					
Sand	J.S. Well Services, LLC	Proppant	Water	7732-18-5	100.00000	82.36008	
HCl Acid (12.6%-17.5%)	J.S. Well Services, LLC	Bulk Acid	Crystalline Silica, quartz	14808-60-7	100.00000	16.34517	
WFRA-2000	J.S. Well Services, LLC	Friction Reducer	Water	7732-18-5	87.40000	0.97459	
			Hydrogen Chloride	7647-01-0	17.50000	0.22659	
			Water	7732-18-5	60.00000	0.04173	
			2-Propenoic acid, polymer with 29003-06-9 propenamide	29003-06-9	30.00000	0.02087	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01711	
BIOC11139A	Nalco Champion	Anti-Bacterial Agent					
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00686	
			Glutaraldehyde	111-30-8	10.00000	0.00229	
			Ethanol	64-17-5	5.00000	0.00089	

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SCAL16486A	Nalco Champion	Scale Inhibitor	Ethylene Glycol	107-21-1	30.00000	0.00164
			Amine Triphosphate	Proprietary	30.00000	0.00147
AI-303	J.S. Well Services, LLC	Acid Corrosion Inhibitors	Ethylene Glycol	107-21-1	40.00000	0.00031
			Cinnamaldehyde	104-55-2	20.00000	0.00011
			Formic acid	64-18-6	20.00000	0.00011
			Butyl cellosolve	111-76-2	20.00000	0.00010
			Polyether	60828-78-6	10.00000	0.00006
			Acetophenone,thiourea,formaldehyde polymer	68527-49-1	5.00000	0.00003
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)

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**5D Survey Report**

SOUTHWESTERN ENERGY

Field Name: *SOUTHWESTERN_OHIO CO, WV UTM NAD 83 (17N)*
Site Name: *Edward Nichols Pad*
Well Name: *Edward Nichols OHI 5H*
Survey: *Definitive survey*

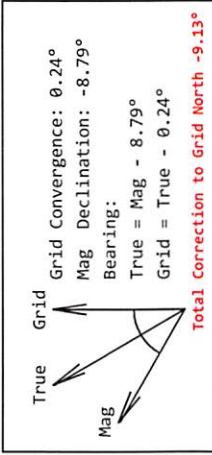
22 September 2017

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Edward Nichols OHI 5H Ohio County, WV Plan vs Actual



Plan Data for Edward Nichols OHI 5H
 Field: SOUTHWESTERN_OHIO_CO, WV UTM MAD 83 (17N)
 Vertical Reference Datum (VRD): Mean Sea Level
 Map Unit: USft
 Projected Coordinate System: NAD83 / UTM zone 17N

Site: Edward Nichols Pad
 Unit: USfeet
 TVD Reference:
 Company Name: SOUTHWESTERN ENERGY
 Northing: 14563684.96USft Latitude: 40.100885°
 Easting: 1743883.84USft Longitude: -80.630283°
 North Reference: Grid Grid Convergence: 0.24°
 Elevation Above VRD: 1310.00USft

Slot: Edward Nichols OHI 5H
 Position:
 Offset is from Site centre
 +N/-S: 42.23USft Northing: 14563727.19USft Latitude: 40.101001°
 +E/-W: 22.36USft Easting: 1743826.19USft Longitude: -80.630202°
 Elevation Above VRD: 1310.00USft

Well: Edward Nichols OHI 5H
 Type: Main-Well
 File Number:
 Plan Folder: P3
 Plan: P3:V2
 Vertical Section: Position offset of origin from Slot centre:
 +N/-S: 0.00USft Azimuth: 345.62°
 +E/-W: 0.00USft

Model: Field Strength: Declination: Dip: Date:
 bggm2017 52391(nt) -8.79° 2017-07-10
 Magnetic Parameters:
 +E/-W: 0.00USft

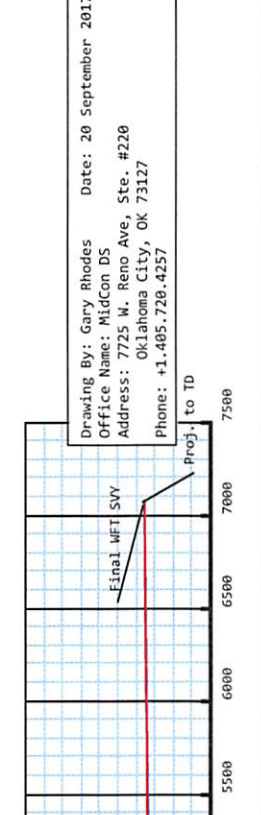
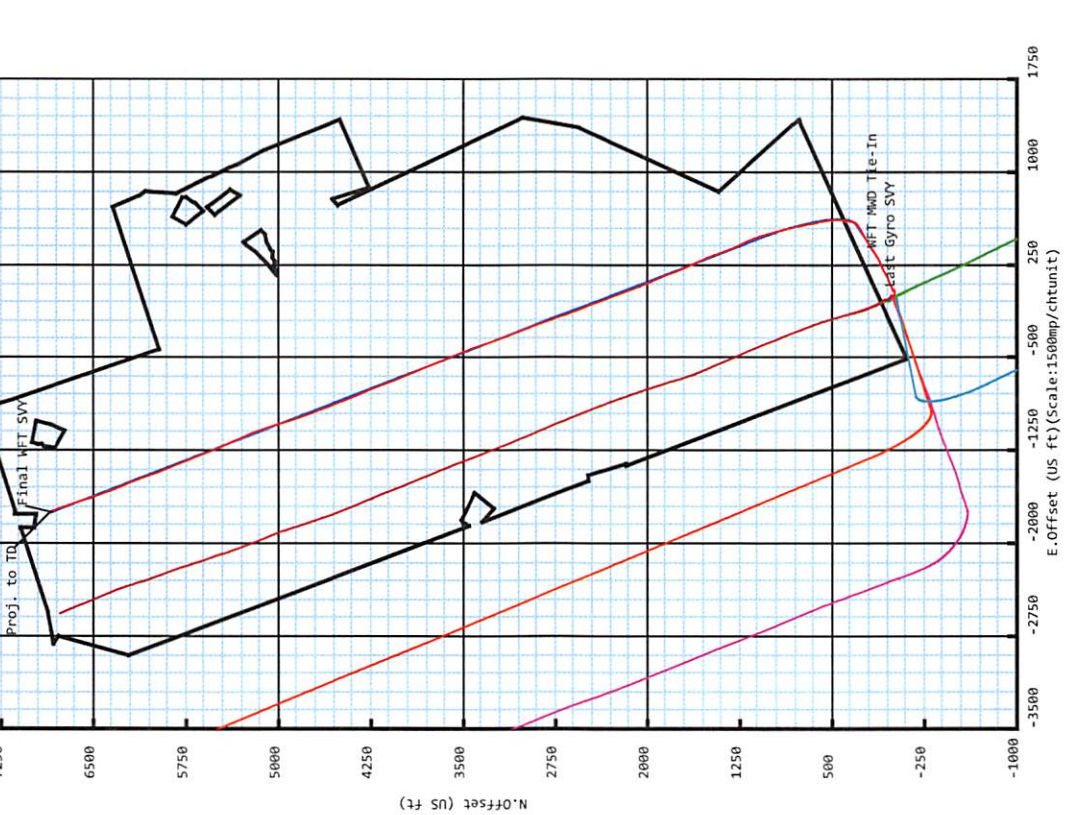
Plan Point Information:

Dogleg Severity Unit	MD Inc	Az	+N/-S	+E/-W	VSec	DLS	Toolface Comments
4416.00	15.01	57.07	4378.36	142.03	328.15	56.06	1.41
5543.83	15.01	57.07	5467.71	308.82	573.31	148.97	0.00
6495.26	78.00	343.00	6170.92	859.68	542.48	697.97	7.00
6728.29	90.59	338.94	6210.00	1875.52	467.77	925.60	9.00
12926.38	90.59	338.94	6146.00	6859.38	-1759.16	7081.36	0.00

Target Set Information:

Name	+N/-S	+E/-W	Northing	Eastng	Lat	Long
LP_ENSH 614210	517.29	14564674.11	1744343.48	40.103595	-80.628339	
PBHL_ENSH 614210	-1759.16	14570586.57	1742067.03	40.119857	-80.636393	

- Edward Nichols OHI 5H
- Edward Nichols OHI 6H
- Edward Nichols OHI 1H
- Edward Nichols OHI 5H
- Edward Nichols 3H
- Edward Nichols 201H
- Edward Nichols 8H
- Edward Nichols 8H ST_01



Drawing By: Gary Rhodes Date: 20 September 2017
 Office Name: MidCon DS
 Address: 7725 W. Reno Ave, Ste. #220
 Oklahoma City, OK 73127
 Phone: +1.405.720.4257

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 WV Department of Environmental Protection

Edward Nichols OHI 5H

Map Units: US ft	Company Name: SOUTHWESTERN ENERGY
Field Name:	Vertical Reference Datum (VRD): Mean Sea Level
SOUTHWESTER N_OHIO CO, WV UTM NAD 83 (17N)	Projected Coordinate System: NAD83 / UTM zone 17N
	Comment:

Site: Edward Nichols Pad	Units: US ft	North Reference: Grid	Convergence Angle: 0.24
	Position:	Northing: 14563684.97 US ft	Latitude: 40.100885
		Easting: 1743803.84 US ft	Longitude: -80.630283
		Elevation above MSL: 1310.00 US ft	
	Comment:		

Slot: Edward Nichols OHI 5H	Position (Relative to Site Centre)		
	+N/-S: 42.23 US ft	Northing: 14563727.19 US ft	Latitude: 40.101001
	+E/-W: 22.36 US ft	Easting: 1743826.19 US ft	Longitude: -80.630202
	Elevation above MSL: 1310.00 US ft		
	Comment:		

Well: Edward Nichols OHI 5H	Type: Main well	UWI:
	File Number:	Comment:
	Closure Distance: 7080.65 US ft	Closure Azimuth: 345.68°
	Vertical Section: Position of Origin (Relative to Slot centre)	
	+N/-S: -0.00 US ft	+E/-W: 0.00 US ft Az: 345.62°

Drill floor: Survey Name: Definitive Survey			
Rig Height (Drill Floor): 26.00 US ft	Elevation above MSL: 1336.00 US ft	Inclination: 0.00°	Azimuth: 0.00°

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Survey Name: Definitive Survey			
Date: 06/Jul/2017	Survey Tool: See Survey Tool Ranges below.	Comment:	Company:

Magnetic Model:				
Model Name: bggm2017	Date: 10/Jul/2017	Field Strength: 52391.4nT	Declination: -8.79°	Dip: 67.19°

Tie Point:						
MD: 0.00 US ft	Inclination: 0.00°	Azimuth: 0.00°	TVD: 0.00 US ft	North Offset: -0.00 US ft	East Offset: 0.00 US ft	

Survey Tool Ranges:			
Name	Start MD(USFt)	End MD(USFt)	Source Survey
MWD	0.00	13.00	
GYRO-NS_OW	13.00	923.00	Gyro_01
MWD	923.00	4416.00	WFT MWD_03
MWD	4416.00	12919.00	WFT MWD_04

Wellpath 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)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
0.00	0.00	0.00	0.00	0.00	-0.00	0.00	40.101001	-80.630202	0.00	
13.00	0.00	0.00	13.00	0.00	-0.00	0.00	40.101001	-80.630202	0.00	
113.00	0.13	277.52	113.00	0.04	0.01	-0.11	40.101001	-80.630203	0.13	
213.00	0.03	316.82	213.00	0.11	0.05	-0.24	40.101001	-80.630203	0.11	
313.00	0.25	294.83	313.00	0.27	0.16	-0.46	40.101001	-80.630204	0.22	
413.00	0.37	305.64	413.00	0.65	0.44	-0.92	40.101002	-80.630206	0.13	
513.00	0.36	282.06	513.00	1.04	0.69	-1.49	40.101003	-80.630208	0.15	
575.00	0.41	206.97	574.99	0.96	0.54	-1.78	40.101002	-80.630209	0.76	
659.00	0.66	195.24	658.99	0.32	-0.20	-2.04	40.101000	-80.630210	0.32	
747.00	1.39	142.42	746.98	-1.11	-1.53	-1.53	40.100996	-80.630208	1.27	
836.00	3.32	126.05	835.90	-4.09	-3.91	1.22	40.100990	-80.630198	2.27	
923.00	5.14	120.35	922.66	-8.77	-7.36	6.62	40.100980	-80.630179	2.14	Last Gyro SVY
1019.00	5.78	105.03	1018.23	-14.17	-10.78	15.00	40.100971	-80.630149	1.65	
1062.00	5.39	94.05	1061.03	-15.87	-11.49	19.10	40.100969	-80.630134	2.64	
1150.00	4.06	79.91	1148.73	-17.41	-11.23	26.29	40.100969	-80.630109	2.00	
1237.00	4.06	79.21	1235.51	-17.84	-10.12	32.35	40.100972	-80.630087	0.06	
1325.00	2.49	68.10	1323.36	-17.78	-8.82	37.19	40.100976	-80.630070	1.92	
1413.00	2.10	53.53	1411.29	-16.93	-7.15	40.26	40.100981	-80.630059	0.79	
1502.00	1.65	30.88	1500.25	-15.41	-5.08	42.22	40.100986	-80.630052	0.96	
1545.00	1.39	26.26	1543.23	-14.58	-4.08	42.77	40.100989	-80.630050	0.67	
1632.00	1.24	22.25	1630.21	-13.02	-2.27	43.60	40.100994	-80.630047	0.20	
1718.00	1.12	7.00	1716.19	-11.50	-0.57	44.05	40.100999	-80.630045	0.39	
1806.00	0.74	314.02	1804.18	-10.21	0.68	43.75	40.101002	-80.630046	1.02	
1895.00	0.68	279.12	1893.17	-9.51	1.16	42.81	40.101003	-80.630049	0.48	
1983.00	0.78	271.68	1981.17	-9.14	1.26	41.70	40.101004	-80.630053	0.16	
2027.00	0.80	266.49	2025.16	-9.00	1.25	41.09	40.101004	-80.630056	0.17	
2130.00	0.66	283.09	2128.15	-8.59	1.34	39.80	40.101004	-80.630060	0.24	
2218.00	0.83	279.29	2216.15	-8.10	1.56	38.67	40.101004	-80.630064	0.20	
2306.00	0.86	282.63	2304.14	-7.54	1.81	37.40	40.101005	-80.630069	0.07	
2394.00	0.92	275.42	2392.13	-7.00	2.02	36.05	40.101006	-80.630074	0.14	
2483.00	0.72	264.21	2481.12	-6.68	2.03	34.79	40.101006	-80.630078	0.29	
2570.00	0.41	216.71	2568.11	-6.79	1.72	34.06	40.101005	-80.630081	0.62	
2657.00	0.38	255.44	2655.11	-6.99	1.40	33.59	40.101004	-80.630082	0.30	
2745.00	1.31	88.19	2743.11	-7.21	1.36	34.31	40.101004	-80.630080	1.91	
2834.00	3.90	81.71	2832.01	-7.75	1.83	38.33	40.101005	-80.630065	2.92	
2920.00	4.91	78.75	2917.75	-8.26	2.97	44.83	40.101008	-80.630042	1.20	
3008.00	8.18	67.64	3005.17	-7.60	6.09	54.32	40.101017	-80.630008	3.97	
3096.00	9.01	63.49	3092.18	-5.28	11.54	66.27	40.101032	-80.629965	1.18	
3184.00	9.66	59.04	3179.02	-1.73	18.42	78.77	40.101050	-80.629921	1.10	
3271.00	11.12	65.99	3264.59	1.76	25.59	92.69	40.101070	-80.629871	2.21	
3359.00	12.64	70.96	3350.71	3.96	32.18	109.55	40.101088	-80.629810	2.08	
3446.00	14.39	71.53	3435.29	5.50	38.71	128.80	40.101105	-80.629741	2.02	RECEIVED Office of Oil and Gas
3535.00	14.29	65.76	3521.52	8.17	46.73	149.31	40.101127	-80.629668	1.61	
3623.00	14.92	57.09	3606.69	13.63	57.34	168.72	40.101156	-80.629598	2.58	MAR 21 2018
3711.00	13.44	53.29	3692.01	21.11	69.61	186.44	40.101190	-80.629535	1.99	
3798.00	11.96	58.99	3776.88	27.54	80.30	202.27	40.101219	-80.629478	2.23	WV Department of Environmental Protection
3886.00	11.06	64.18	3863.11	31.82	88.67	217.68	40.101242	-80.629423	1.56	
3973.00	10.58	65.30	3948.57	34.90	95.65	232.45	40.101261	-80.629370	0.60	
4062.00	12.02	68.48	4035.84	37.52	102.46	248.50	40.101279	-80.629312	1.76	
4149.00	13.64	68.13	4120.67	39.98	109.61	266.44	40.101299	-80.629248	1.86	
4237.00	15.15	64.64	4205.90	43.52	118.40	286.47	40.101322	-80.629176	1.98	
4325.00	16.01	60.10	4290.67	48.96	129.37	307.38	40.101352	-80.629101	1.69	
4416.00	15.01	57.07	4378.36	56.06	142.03	328.15	40.101387	-80.629027	1.41	WFT MWD Tie-In
4514.00	13.38	54.06	4473.36	64.27	155.59	347.98	40.101424	-80.628956	1.83	
4609.00	12.00	52.22	4566.04	72.23	168.09	364.69	40.101458	-80.628896	1.51	
4705.00	15.41	54.23	4659.29	80.84	181.66	382.93	40.101495	-80.628830	3.59	
4801.00	15.56	60.44	4751.82	88.86	195.47	404.48	40.101533	-80.628753	1.73	

5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N. Offset (US ft)	E. Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
4897.00	15.65	62.23	4844.28	95.23	207.86	427.14	40.101567	-80.628672	0.51	
4994.00	15.89	60.75	4937.63	101.67	220.44	450.30	40.101601	-80.628589	0.48	
5089.00	15.79	59.53	5029.02	108.59	233.35	472.79	40.101636	-80.628508	0.37	
5186.00	15.80	60.74	5122.36	115.63	246.50	495.68	40.101672	-80.628426	0.34	
5282.00	15.72	58.79	5214.75	122.75	259.63	518.21	40.101708	-80.628346	0.56	
5378.00	15.59	57.19	5307.19	130.59	273.35	540.17	40.101745	-80.628267	0.47	
5475.00	15.84	56.68	5400.56	139.01	287.69	562.19	40.101784	-80.628188	0.29	
5571.00	16.53	42.60	5492.79	150.71	304.95	582.39	40.101831	-80.628115	4.14	
5619.00	18.07	26.31	5538.65	160.08	316.65	590.32	40.101863	-80.628087	10.55	
5667.00	20.13	19.11	5584.01	172.61	331.13	596.32	40.101903	-80.628065	6.51	
5715.00	21.70	13.90	5628.85	187.32	347.56	601.16	40.101948	-80.628048	5.07	
5763.00	24.15	11.11	5673.06	204.00	365.81	605.18	40.101998	-80.628033	5.58	
5811.00	27.55	8.08	5716.25	223.13	386.44	608.64	40.102055	-80.628020	7.60	
5858.00	30.45	5.04	5757.35	244.41	409.07	611.21	40.102117	-80.628011	6.92	
5906.00	32.85	2.33	5798.21	268.35	434.20	612.81	40.102186	-80.628005	5.81	
5954.00	34.81	359.61	5838.09	294.12	460.91	613.25	40.102259	-80.628003	5.16	
6002.00	36.84	356.13	5877.01	321.57	488.98	612.18	40.102336	-80.628006	5.99	
6050.00	38.93	353.64	5914.89	350.65	518.33	609.54	40.102417	-80.628015	5.39	
6098.00	42.20	351.31	5951.35	381.64	549.26	605.43	40.102502	-80.628029	7.51	
6146.00	46.31	349.19	5985.73	415.02	582.26	599.74	40.102593	-80.628049	9.10	
6194.00	49.62	347.68	6017.86	450.62	617.18	592.58	40.102689	-80.628074	7.28	
6242.00	51.64	347.88	6048.31	487.70	653.44	584.73	40.102788	-80.628102	4.22	
6290.00	54.25	348.90	6077.23	525.96	690.96	577.02	40.102891	-80.628129	5.70	
6338.00	58.11	349.23	6103.94	565.75	730.11	569.46	40.102999	-80.628155	8.06	
6386.00	62.60	348.22	6127.68	607.40	771.01	561.30	40.103111	-80.628184	9.53	
6434.00	66.32	347.06	6148.37	650.67	813.30	552.03	40.103228	-80.628216	8.05	
6483.00	70.98	345.44	6166.21	696.29	857.62	541.17	40.103350	-80.628254	10.00	
6531.00	74.06	345.25	6180.62	742.07	901.90	529.59	40.103471	-80.628295	6.43	
6579.00	76.76	344.73	6192.71	788.52	946.77	517.56	40.103595	-80.628338	5.72	
6627.00	80.03	344.44	6202.37	835.52	992.09	505.06	40.103719	-80.628382	6.84	
6675.00	84.56	344.14	6208.80	883.06	1037.87	492.18	40.103845	-80.628427	9.46	
6723.00	87.72	342.59	6212.03	930.91	1083.74	478.48	40.103971	-80.628475	7.33	
6771.00	87.35	339.34	6214.10	978.70	1129.07	462.84	40.104096	-80.628531	6.81	
6819.00	87.10	336.32	6216.42	1026.20	1173.47	444.75	40.104218	-80.628595	6.31	
6867.00	86.92	335.11	6218.92	1073.42	1217.16	425.03	40.104338	-80.628664	2.55	
6915.00	89.20	335.03	6220.55	1120.57	1260.66	404.81	40.104458	-80.628736	4.75	
7012.00	91.42	338.82	6220.02	1216.44	1349.87	366.81	40.104703	-80.628871	4.53	
7107.00	90.99	341.42	6218.03	1310.97	1439.18	334.51	40.104949	-80.628985	2.77	
7204.00	91.05	336.57	6216.30	1407.28	1529.70	299.76	40.105198	-80.629108	5.00	
7300.00	91.48	335.44	6214.18	1501.91	1617.38	260.73	40.105439	-80.629246	1.26	
7397.00	91.30	336.52	6211.83	1597.51	1705.95	221.26	40.105683	-80.629386	1.13	
7492.00	91.54	340.05	6209.47	1691.69	1794.17	186.12	40.105925	-80.629510	3.72	
7589.00	91.29	336.48	6207.08	1787.85	1884.23	150.22	40.106173	-80.629637	3.69	
7685.00	90.74	335.42	6205.37	1882.47	1971.88	111.10	40.106414	-80.629776	1.24	
7781.00	91.05	338.53	6203.87	1977.35	2060.21	73.56	40.106657	-80.629909	3.26	
7877.00	91.42	339.44	6201.81	2072.69	2149.80	39.15	40.106904	-80.630031	1.02	
7973.00	90.86	340.16	6199.90	2168.17	2239.88	6.00	40.107151	-80.630148	0.95	
8069.00	90.74	339.46	6198.56	2263.67	2329.97	-27.13	40.107399	-80.630265	0.74	
8166.00	90.74	339.22	6197.30	2360.08	2420.73	-61.35	40.107649	-80.630386	0.25	
8262.00	90.18	336.85	6196.53	2455.23	2509.75	-97.25	40.107894	-80.630513	2.54	
8358.00	90.74	339.00	6195.76	2550.36	2598.70	-133.33	40.108138	-80.630641	2.31	
8454.00	90.74	340.15	6194.52	2645.82	2688.66	-166.82	40.108386	-80.630759	1.20	
8550.00	90.56	341.15	6193.43	2741.45	2779.23	-198.63	40.108635	-80.630872	1.06	
8646.00	90.68	341.31	6192.39	2837.16	2870.12	-229.52	40.108885	-80.630981	0.21	
8742.00	90.56	338.82	6191.35	2932.70	2960.35	-262.25	40.109133	-80.631096	2.60	
8839.00	90.74	339.18	6190.25	3029.05	3050.90	-297.00	40.109382	-80.631219	0.41	
8935.00	90.74	339.84	6189.01	3124.49	3140.82	-330.61	40.109629	-80.631338	0.69	
9031.00	90.74	341.15	6187.77	3220.10	3231.30	-362.66	40.109878	-80.631451	1.36	
9127.00	90.62	340.25	6186.63	3315.74	3321.90	-394.38	40.110127	-80.631564	0.95	

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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)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (° ' ")	Longitude (° ' ")	DLS (°/100US ft)	Comment
9224.00	90.68	340.48	6185.53	3412.33	3413.26	-426.98	40.110379	-80.631679	0.25	
9319.00	90.56	337.97	6184.51	3506.72	3502.07	-460.67	40.110623	-80.631798	2.64	
9416.00	90.86	337.39	6183.30	3602.79	3591.79	-497.50	40.110870	-80.631928	0.67	
9512.00	90.80	338.70	6181.91	3697.94	3680.82	-533.39	40.111115	-80.632055	1.37	
9608.00	91.11	338.53	6180.31	3793.21	3770.20	-568.39	40.111360	-80.632179	0.37	
9705.00	90.86	336.05	6178.65	3889.16	3859.66	-605.83	40.111606	-80.632312	2.57	
9801.00	91.05	337.93	6177.05	3984.06	3948.00	-643.35	40.111849	-80.632445	1.97	
9898.00	90.86	337.86	6175.43	4080.17	4037.86	-679.85	40.112097	-80.632574	0.21	
9994.00	90.99	340.03	6173.88	4175.50	4127.43	-714.33	40.112343	-80.632696	2.26	
10090.00	91.11	337.14	6172.12	4270.75	4216.78	-749.37	40.112589	-80.632820	3.01	
10185.00	90.86	337.23	6170.49	4364.71	4304.33	-786.20	40.112830	-80.632950	0.28	
10281.00	90.99	337.55	6168.94	4459.71	4392.94	-823.10	40.113073	-80.633081	0.36	
10377.00	90.74	338.58	6167.49	4554.87	4481.98	-858.96	40.113318	-80.633208	1.10	
10474.00	90.68	340.08	6166.28	4651.27	4572.73	-893.20	40.113568	-80.633329	1.55	
10570.00	90.99	339.01	6164.89	4746.72	4662.67	-926.74	40.113815	-80.633448	1.16	
10667.00	90.56	339.78	6163.57	4843.14	4753.45	-960.88	40.114065	-80.633569	0.91	
10763.00	90.43	341.71	6162.74	4938.79	4844.07	-992.53	40.114314	-80.633680	2.01	
10859.00	90.68	343.13	6161.81	5034.63	4935.58	-1021.52	40.114566	-80.633783	1.50	
10956.00	90.25	342.38	6161.03	5131.51	5028.22	-1050.28	40.114820	-80.633884	0.89	
11052.00	90.49	340.67	6160.41	5227.26	5119.27	-1080.70	40.115071	-80.633992	1.80	
11149.00	90.43	338.80	6159.63	5323.74	5210.25	-1114.29	40.115321	-80.634111	1.93	
11245.00	89.94	335.11	6159.32	5418.63	5298.58	-1151.87	40.115564	-80.634244	3.88	
11341.00	90.06	336.55	6159.32	5513.23	5386.16	-1191.17	40.115805	-80.634383	1.51	
11436.00	90.49	336.01	6158.86	5606.97	5473.13	-1229.39	40.116044	-80.634518	0.73	
11533.00	90.12	338.37	6158.35	5702.91	5562.54	-1266.99	40.116290	-80.634651	2.46	
11629.00	90.62	339.93	6157.73	5798.30	5652.25	-1301.16	40.116537	-80.634772	1.71	
11726.00	90.86	338.33	6156.47	5894.66	5742.87	-1335.71	40.116786	-80.634895	1.67	
11822.00	90.62	337.82	6155.23	5989.82	5831.92	-1371.55	40.117031	-80.635022	0.59	
11918.00	90.62	337.01	6154.19	6084.84	5920.55	-1408.42	40.117275	-80.635152	0.84	
12015.00	90.55	340.32	6153.20	6181.11	6010.89	-1443.70	40.117523	-80.635277	3.41	
12111.00	90.56	340.81	6152.27	6276.73	6101.41	-1475.64	40.117772	-80.635390	0.51	
12208.00	90.49	338.42	6151.38	6373.19	6192.33	-1509.43	40.118022	-80.635509	2.46	
12304.00	90.43	337.77	6150.61	6468.36	6281.39	-1545.24	40.118267	-80.635636	0.68	
12400.00	90.49	339.57	6149.84	6563.64	6370.81	-1580.15	40.118513	-80.635760	1.88	
12496.00	90.56	339.70	6148.96	6659.12	6460.81	-1613.56	40.118761	-80.635878	0.15	
12592.00	90.49	342.57	6148.08	6754.81	6551.64	-1644.60	40.119011	-80.635988	2.99	
12689.00	90.43	340.97	6147.31	6851.59	6643.76	-1674.94	40.119264	-80.636095	1.65	
12785.00	90.62	341.40	6146.43	6947.29	6734.63	-1705.90	40.119514	-80.636204	0.49	
12881.00	90.49	339.43	6145.50	7042.89	6825.07	-1738.08	40.119763	-80.636318	2.06	
12896.00	90.49	339.12	6145.37	7057.80	6839.09	-1743.38	40.119801	-80.636337	2.07	
12919.00	90.49	339.12	6145.17	7080.65	6860.58	-1751.58	40.119860	-80.636366	2.07	

Final WFT
 RECEIVED BY
 09:00 of Oil and Gas
 Proj. to TD
 MAR 21 2018
 WV Department of
 Environmental Protection

**JACKSON SURVEYING
INC.**

P.O. Box 1460
677 W. Main St.
Clarksburg, WV 26302
304-623-5851

SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,439,032.847 EASTING: 531,519.300
LANDING POINT (LPL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,439,363.175 EASTING: 531,665.135
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,441,123.959 EASTING: 530,985.411

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

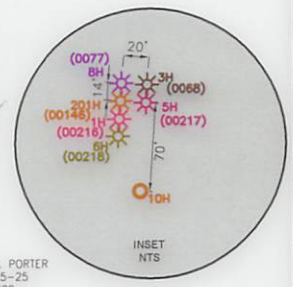
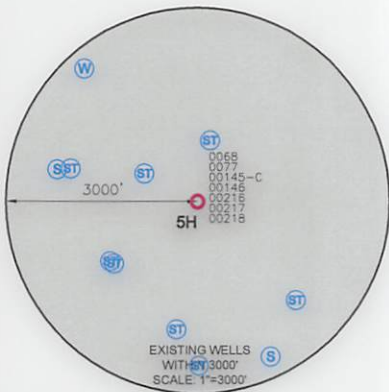
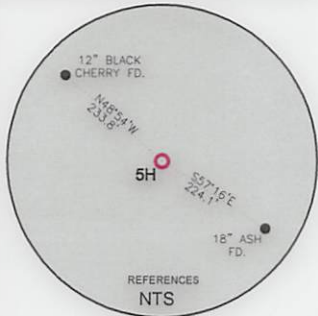
WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS			
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	EDWARD NICHOLS & JUDITH NICHOLS (S/R)	04-R15-16	240.064
SURFACE OWNER			
2	RONALD WILLIAM KASSEEMAN & ELIZABETH A. KASSEEMAN (S)	04-R15-32.10	1.932
3	JOSHUA CONTRAGUERRO (S)	04-R15-32.16	2.645
4	WEST RENTAL INC. (S)	04-R15-32	10.219
5	CLINT SHEPARD & STACEY BUTCH (S)	04-R15-32.11	1.774
6	JOHN D. EDMOND & DIANA K. EDMAN (S)	04-R15-32.17	1.246
7	GARY E. GRUBB (S)	04-R15-20.7	2.271
8	GARY E. GRUBB (S)	04-R15-20.4	14.80
9	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION(S)	WV STATE ROUTE 88	
10	ODLEBAY FOUNDATION INC. (S)	04-R12-10.2	114.3
11	WEST RENTALS INC. (S)	04-R12-10.16	15.47

Latitude: 40°07'30" SURFACE HOLE 1,455'
Latitude: 40°07'30" BOTTOM HOLE 3178'



LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 44°06'56" W	2104.99'	SHL TO LANDMARK	2" IRON PIPE FD.
L2	S 80°25'24" W	884.51'	SHL TO LANDMARK	5/8" REBAR FD.
LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L3	N 23°49'15" E	1184.67'	1499.19'	SHL TO LP

SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,439,032.916 EASTING: 531,519.286
LANDING POINT (LPL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,439,321.538 EASTING: 531,676.956
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,441,123.660 EASTING: 530,983.093



WELL RESTRICTIONS

- NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
- NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
- WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 250 FEET OF PROPOSED WELL.
- PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
- NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.

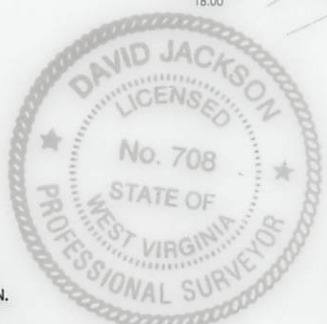
NOTES ON SURVEY

- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

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.

P.S. 708

David L. Jackson



COMPANY: **SWN** Production Company, LLC

(+) 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 SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

EDWARDS NICHOLS OHI
OPERATOR'S WELL #: 5H
API WELL #: 47 069 00217
STATE COUNTY PERMIT



WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW
WATERSHED: PETERS RUN OF LITTLE WHEELING CREEK ELEVATION: 1310.4'
DISTRICT: RICHLAND COUNTY: OHIO QUADRANGLE: WHEELING, WV
SURFACE OWNER: EDWARD NICHOLS & JUDITH NICHOLS ACREAGE: ±240.064
OIL & GAS ROYALTY OWNER: EDWARD NICHOLS & JUDITH NICHOLS ACREAGE: ±240.064
DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) ASDRILLED
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,220 TVD 12,919 TMD

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

LEGEND:	— SURVEYED BOUNDARY	— REVISIONS:	DATE: 02-23-2018
○ PROPOSED SURFACE HOLE / BOTTOM HOLE	— DRILLING UNIT		
⊙ EXISTING / PRODUCING WELLHEAD	— LEASE BOUNDARY		
LPL* LANDING POINT LOCATION	— ASDRILLED PATH		
⊙ EXISTING WATER WELL	— PROPOSED PATH		
⊙ EXISTING SPRING			
			DRAWN BY: N. MANO
			SCALE: 1" = 2000'
			DRAWING NO:
			WELL LOCATION PLAT

JACKSON SURVEYING
 INC.
 P.O. Box 1460
 677 W. Main St.
 Clarksburg, WV 26302
 304-623-5851

ADJOINING OWNERS TABLE			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
A	CRAIG E. STEPHAN & JENNIFER L. GILES	04-R15-10	1.74
B	LARRY TRANK & PATRICIA TRANK	04-R15-16.17	0.62
C	VENEIDA K. BAKER	04-R15-16.15	2.16
D	VENEIDA K. BAKER	04-R15-16.28	0.576
E	CHRISTOPHER J. NORMAN	04-R15-16.25	1.21
F	CHRISTOPHER J. NORMAN	04-R15-16.29	1.21
G	VENEIDA K. BAKER	04-R15-16.30	0.232
H	VENEIDA K. BAKER	04-R15-16.16	1.09
I	JEFFREY W. PFISTER & JENNIFER J. PFISTER	04-R15-16.33	1.36
J	JEFFREY W. PFISTER & JENNIFER J. PFISTER	04-R15-16.34	0.0419
K	RICHARD L. BRAK	04-R15-16.21	1.173
L	CECIL CHIPLINSKI & TAMMY K. CHIPLINSKI	04-R15-16.23	1.023
M	PATTY M. JEWETT & JAMES A. JEWETT	04-R15-16.24	1.01
N	LESLIE DAVID LEWIS	04-R15-16.22	1.484
O	GREGORY FUNARI & DEANNA L. FUNARI	04-R15-16.20	1.000
P	OLDGA V. RINE & DENISE E. RINE	04-R15-16.4	1.049
Q	CHARLES L. HODGSON & K.P. HODGSON	04-R15-16.3	0.766
R	EDWARD E. NICHOLS & MARJORIE C. NICHOLS	04-R15-16.18	1.91
S	EDWARD J. NICHOLS, MAJORIE C. NICHOLS & JUDY C. NICHOLS	04-R15-16.31	0.192
T	JUDITH C. NICHOLS	04-R15-16.32	0.953
U	EDWARD E. NICHOLS, MAJORIE C. NICHOLS & JUDY C. NICHOLS	04-R15-16.19	0.219
V	LAWRENCE D. BOLE & J.L. BOLE	04-R15-16.14	0.772
W	LAWRENCE R. DIXON & JAMES M. DIXON	04-R15-16.7	0.875
X	ANDREW S. GAUDINO	04-R15-18	1.37
Y	TAMILA LYNN WADE C/O TAMILA L. HIGLEY	04-R15-16.10	2.73
Z	BOARD OF COMMISSION OHIO COUNTY	04-R15-16.11	3.090
AA	LINDA H. ROSS	04-R15-16.12	1.62
BB	HAROLD L. PICKENS & DEBORAH A. MCCLELLAND	04-R15-16.13	1.59
CC	M & J CONSTRUCTION	04-R15-32.18	1.50
DD	PHILIP M. JACKSON	04-R14-30.1	0.95
EE	JEFFREY RUTHERFORD & BRIDGET RUTHERFORD	04-R14-30.2	1.00
FF	ROBERT W. MINCH III & M.J. MINCH	04-R14-30.3	1.05
GG	GENE C. VALENTINE TRUSTEE	04-R14-30	2.88
HH	JAMES E. SPARGO & SUSAN P. SPARGO	04-R14-26	0.92
II	WILLIAM J. WAGNER & PAMELA S. WAGNER	04-R12J-14	1.170
JJ	THOMAS M. REGAL & JENNIFER L. REGAL	04-R12J-13	0.81
KK	RODNEY W. HALEY & RHONDA L. HALEY	04-R12J-12	0.82
LL	DANIEL W. HOPKINS	04-R12J-11	0.88
MM	THOMAS J. CONTI & N.J. CONTI REVOCABLE TRUST	04-R12J-10	0.442
NN	JORDAN K. VILLANI	04-R12J-09	1.02
OO	EDWIN V. KLUTH & R.C. KLUTH	04-R12J-01	1.100
PP	MICHAEL WINIESDORFFER & VERONICA WINIESDORFFER	04-R12J-40.5	0.276
QQ	ZAVEEN A. KUREISHY	04-R15-32.2	1.358
RR	ZAK PROPERTIES LLC	04-R15-32.4	1.578
SS	GARY E. GRUBB	04-R15-20.8	1.00
TT	JOHN D. EDGMON & DIANA K. EDGMON	04-R15-32.3	1.247
UU	BRADLEY A. SCHMITT & KAREN M. SCHMITT	04-R15-32.1	1.811
VV	BRADLEY A. SCHMITT & KAREN M. SCHMITT	04-R15-32.14	2.157
WW	ROBERT C. CONTRAGUERRO & KIMBERLY S. CONTRAGUERRO	04-R15-32.7	1.08
XX	ROBERT C. CONTRAGUERRO & KIMBERLY S. CONTRAGUERRO	04-R15-32.8	1.00
YY	ADAM C. MULL & LAURA E. MULL	04-R15-32.9	1.00

REVISIONS:	COMPANY:	 	
	OPERATOR'S	EDWARD NICHOLS OHI	
	WELL #:	5H	
	DISTRICT:	COUNTY:	STATE:
	RICHLAND	OHIO	WV
			DATE: 02-23-2018
			DRAWN BY: N. MANO
			SCALE: N/A
			DRAWING NO:
			WELL LOCATION PLAT 2