

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

API 47-069-00202 County OHIO District LIBERTY
Quad VALLEY GROVE Pad Name WILLIAM RODGERS OHI PAD1 Field/Pool Name PANHANDLE FIELD WET
Farm name WILLIAM I. RODGERS & DOUG W. RODGERS Well Number WILLIAM RODGERS OHI 605H
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 4,439,722.163 Easting 539,871.077
Landing Point of Curve Northing 4,440,289.006 Easting 540,724.416
Bottom Hole Northing 4,441,960.179 Easting 539,997.418

Elevation (ft) 1280 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 11/13/2015 Date drilling commenced 12/13/2015 Date drilling ceased 09/11/2017
Date completion activities began 10/06/2017 Date completion activities ceased 11/29/2017
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

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Freshwater depth(s) ft 334 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 794 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 665 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

Reviewed

C. J. [Signature] 5-10-18

API 47- 069 - 00202 Farm name WILLIAM I. RODGERS & DOUG W. RODGERS Well number WILLIAM RODGERS OHI 605H

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	28	20	126	NEW	J-55/94#		Y
Surface	17.5	13.375	458	NEW	J-55/54.50#		Y
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25	9.625	2099	NEW	J-55/40#		Y
Intermediate 2							
Intermediate 3							
Production	8.75	5.5	13984	NEW	P-110/20#		Y
Tubing		2.375	7728	NEW	L-80/4.7#		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	435	15.60	1.20	522	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	806	15.60	1.20	967.2	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	855/1,640	15.60/15.60	1.21/1.19	1034.55/1951.6	SURFACE	24
Tubing							

Drillers TD (ft) 13984 Loggers TD (ft) 13984
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6665

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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API 47- 069 - 00202 Farm name WILLIAM I. RODGERS & DOUG W. RODGERS Well number WILLIAM RODGERS OHI 605H

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.

API 47- 069 - 00202 Farm name WILLIAM I. RODGERS & DOUG W. RODGERS Well number WILLIAM RODGERS OHI 605H

PRODUCING FORMATION(S)	DEPTHS		
MARCELLUS	6535	TVD	7729 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1327 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 4168 mcfpd Oil 320 bpd NGL _____ bpd Water 440 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
	SEE	ATTACHMENT	3		

Please insert additional pages as applicable.

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

Logging Company WEATHERFORD
Address 11909 FM 529 RD City HOUSTON State TX Zip 77041

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

Stimulating Company US WELL SERVICES
Address 770 S POST OAK LN #405 City HOUSTON State TX Zip 77056

Please insert additional pages as applicable.

Completed by BOBBY WILLIS Telephone 832-796-2884
Signature  Title REGULATORY ANALYST Date 2/26/18

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WILLIAM RODGERS OHI 605H
PERF SUMMARY

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	9/27/2017	13,742	13,812	42
2	10/5/2017	13,637	13,709	66
3	10/6/2017	13,532	13,604	66
4	10/6/2017	13,427	13,499	66
5	10/6/2017	13,322	13,394	66
6	10/7/2017	13,217	13,289	66
7	10/7/2017	13,112	13,219	86
8	10/8/2017	13,007	13,079	66
9	10/8/2017	12,902	12,974	66
10	10/8/2017	12,797	12,869	66
11	10/8/2017	12,692	12,729	42
12	10/9/2017	12,587	12,659	66
13	10/9/2017	12,482	12,554	66
14	10/9/2017	12,377	12,449	66
15	10/9/2017	12,272	12,344	66
16	10/10/2017	12,167	12,239	66
17	10/10/2017	12,062	12,132	42
18	10/10/2017	11,957	12,029	66
19	10/11/2017	11,852	11,924	66
20	10/12/2017	11,747	11,819	66
21	10/12/2017	11,642	11,712	42
22	10/13/2017	11,539	11,607	22
23	10/12/2017	11,432	11,504	66
24	10/13/2017	11,327	11,434	86
25	10/13/2017	11,222	11,294	66
26	10/13/2017	11,012	11,084	66
27	10/14/2017	11,117	11,189	66
28	10/14/2017	10,907	10,979	66
29	10/14/2017	10,802	10,874	66
30	10/15/2017	10,697	10,769	66
31	10/15/2017	10,592	10,664	66
32	10/15/2017	10,487	10,559	66
33	10/16/2017	10,382	10,454	66
34	10/16/2017	10,277	10,349	66
35	10/16/2017	10,172	10,244	66
36	10/16/2017	10,067	10,139	66
37	10/17/2017	9,962	10,034	66
38	10/17/2017	9,857	9,929	66
39	10/17/2017	9,752	9,824	66
40	10/17/2017	9,647	9,719	66
41	10/18/2017	9,542	9,614	66
42	10/18/2017	9,437	9,509	66
43	10/18/2017	9,332	9,404	66
44	10/18/2017	9,227	9,299	66
45	10/18/2017	9,122	9,194	66
46	11/11/2017	9,017	9,089	66
47	11/12/2017	8,914	8,982	22
48	11/12/2017	8,809	8,877	22
49	11/12/2017	8,702	8,774	42
50	11/13/2017	8,599	8,667	22
51	11/13/2017	8,492	8,564	66
52	11/13/2017	8,387	8,459	66
53	11/14/2017	8,282	8,354	66
54	11/14/2017	8,177	8,249	66
55	11/14/2017	8,072	8,144	66
56	11/14/2017	7,967	8,039	66
57	11/15/2017	7,862	7,934	66
58	11/15/2017	7,757	7,829	66

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WILLIAM RODGERS OHI 605H
FRAC STAGE SUMMARY

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)		Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/other
				ISIP (PSI)				
1	9/27/2017	89	7,740	8,182	4,186	751,640	16,424	N/A
2	10/5/2017	88	7,688	8,033	5,530	760,440	11,966	N/A
3	10/6/2017	89	7,946	8,182	5,038	753,080	11,754	N/A
4	10/6/2017	87	7,810	8,230	4,791	754,680	13,198	N/A
5	10/6/2017	87	7,965	8,172	5,408	748,500	11,648	N/A
6	10/7/2017	87	7,882	8,530	4,878	750,840	11,566	N/A
7	10/7/2017	87	7,906	8,415	5,062	748,520	11,712	N/A
8	10/8/2017	88	7,896	8,187	5,733	752,680	11,446	N/A
9	10/8/2017	90	8,045	8,386	4,499	747,220	11,460	N/A
10	10/8/2017	89	7,886	8,436	4,603	756,800	11,532	N/A
11	10/8/2017	88	7,919	8,329	5,385	751,220	11,562	N/A
12	10/9/2017	89	7,967	8,357	4,960	746,060	11,424	N/A
13	10/9/2017	83	7,878	8,565	5,014	759,930	11,072	N/A
14	10/9/2017	90	8,019	8,225	5,128	762,680	11,326	N/A
15	10/9/2017	89	7,896	8,279	5,424	751,200	11,226	N/A
16	10/10/2017	83	7,783	8,344	4,559	751,160	11,906	N/A
17	10/10/2017	85	7,988	8,858	5,017	746,200	13,926	N/A
18	10/10/2017	89	7,594	7,608	5,372	742,800	12,672	N/A
19	10/11/2017	87	7,722	8,699	5,084	744,560	14,352	N/A
20	10/12/2017	84	7,775	8,281	5,362	750,520	11,100	N/A
21	10/12/2017	82	7,541	7,887	4,443	753,460	11,710	N/A
22	10/13/2017	88	7,824	8,586	4,509	751,720	11,010	N/A
23	10/12/2017	89	7,723	8,423	4,985	756,200	11,098	N/A
24	10/13/2017	84	7,559	7,815	5,058	751,320	11,048	N/A
25	10/13/2017	90	7,556	7,803	4,825	744,860	11,230	N/A
26	10/13/2017	89	7,675	7,978	4,936	743,240	11,140	N/A
27	10/14/2017	85	7,529	7,822	5,642	694,900	10,900	N/A
28	10/14/2017	85	7,432	7,722	4,841	750,160	10,768	N/A
29	10/14/2017	90	7,588	8,145	5,174	751,800	11,156	N/A
30	10/15/2017	84	7,481	7,903	5,278	751,240	10,898	N/A
31	10/15/2017	89	7,686	7,981	4,707	752,240	13,500	N/A
32	10/15/2017	91	7,591	8,247	4,900	746,200	10,986	N/A
33	10/16/2017	87	7,551	8,050	5,447	750,680	10,716	N/A
34	10/16/2017	87	7,417	8,140	5,335	746,440	10,702	N/A
35	10/16/2017	87	7,461	8,101	4,882	745,960	10,812	N/A
36	10/16/2017	91	7,517	8,511	5,263	742,920	10,990	N/A
37	10/17/2017	88	7,592	8,162	5,626	751,000	10,672	N/A
38	10/17/2017	90	7,515	8,241	4,916	753,280	10,902	N/A
39	10/17/2017	87	7,723	8,664	4,934	612,760	10,138	N/A
40	10/17/2017	68	8,296	8,675	4,730	330,760	11,928	N/A
41	10/18/2017	90	7,272	7,733	4,807	754,240	10,944	N/A
42	10/18/2017	89	7,496	8,118	4,844	750,280	10,646	N/A
43	10/18/2017	89	7,217	7,641	5,075	760,840	10,754	N/A
44	10/18/2017	90	7,402	7,881	5,289	762,040	10,824	N/A
45	10/18/2017	89	7,651	8,087	4,898	753,640	10,786	N/A
46	11/11/2017	88	7,727	8,106	4,988	754,560	10,746	N/A
47	11/12/2017	85	7,367	7,941	5,345	745,840	10,622	N/A
48	11/12/2017	88	7,769	8,121	5,275	753,960	10,766	N/A
49	11/12/2017	87	7,835	8,188	5,161	752,400	10,616	N/A
50	11/13/2017	89	7,687	8,253	4,754	752,780	10,716	N/A
51	11/13/2017	87	7,647	8,044	5,034	750,240	10,600	N/A
52	11/13/2017	89	7,729	8,476	5,273	748,200	10,490	N/A
53	11/14/2017	89	7,919	8,590	5,285	753,780	10,492	N/A
54	11/14/2017	90	7,475	8,137	5,680	753,840	10,456	N/A
55	11/14/2017	88	7,286	7,626	5,694	755,760	10,384	N/A
56	11/14/2017	90	7,192	8,596	5,017	750,140	10,344	N/A
57	11/15/2017	89	7,362	8,317	5,196	750,560	10,362	N/A
58	11/15/2017	89	7,603	8,703	5,327	751,520	10,354	N/A

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Well Name:

William Rodgers OHI 605H

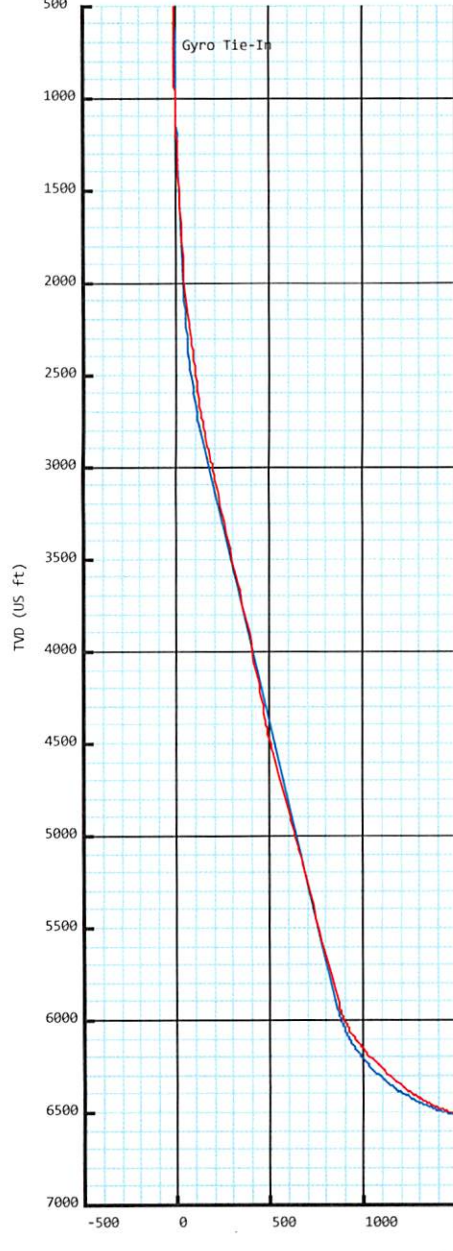
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LITHOLOGY/FORMATION	TOP DEPTH, MD (FT)	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, MD (FT)	BOTTOM DEPTH, TVD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	0.00	0.00	334.00	334.00	
Top of Salt Water	794.00	794.00	NA	NA	
Pittsburgh Coal	665.00	665.00	670.00	670.00	
Pottsville (ss)	794.00	794.00	927.00	927.00	
Mauch Chunk (shale)	927.00	927.00	1707.00	1707.00	
Raven Cliff (ss)	1164.00	1164.00	1403.00	1403.00	
Maxton (ss)	1566.00	1566.00	1620.00	1620.00	
Greenbriar (ls)	1707.00	1707.00	1813.00	1813.00	
Big Injun (ss)	1813.00	1813.00	2038.00	2038.00	
Berea (siltstone)	2373.00	2373.00	2417.00	2417.00	
Rhinestreet (shale)	6664.00	5902.00	7064.00	6200.00	
Cashaqua (shale)	7064.00	6200.00	7170.00	6270.00	
Middlesex (shale)	7170.00	6270.00	7294.00	6348.00	
Burket (shale)	7294.00	6348.00	7330.00	6371.00	
Tully (ls)	7330.00	6371.00	7383.00	6402.00	
Mahantango (shale)	7383.00	6402.00	7729.00	6535.00	
Marcellus (shale)	7729.00	6535.00	NA	NA	GAS



William Rodgers OHI 605H
Ohio County, WV
SDC 40

KB: 1306'
GL: 1280'



Plan Data for William Rodgers OHI 605H

Plan Point Information:									
Dogleg (USft)	Severity (°)	Unit (°)	°/100.00ft	Position offsets from Slot centre (+N/-S (USft))	+E/-W (USft)	VSec (USft)	DLS (DLSU)	Toolface (°)	Comments
0.00	0.00	0.00	0.00	-0.00	-0.00	0.00	0.00	0.0	0.0 KB Offset
26.00	0.00	0.00	26.00	-0.00	-0.00	0.00	0.00	0.0	0.0 Nudge KOP
600.00	0.00	0.00	600.00	-0.00	-0.00	0.00	0.00	0.0	0.0 Hold
1350.00	15.00	80.00	1341.46	16.95	96.13	16.31	2.00	80.0	0.0 Build/Turn
2083.53	15.00	80.00	2050.00	49.92	283.10	48.04	0.00	0.0	0.0 Build/Turn
3079.04	34.50	69.59	2950.00	171.85	678.18	167.35	2.00	342.5	0.0 Curve KOP 7° DLS
6715.02	34.50	69.59	5946.59	890.13	2608.31	872.81	0.00	0.0	279.3 Build/Turn 9° DLS
7561.76	70.00	5.08	6489.61	1417.97	2894.26	1398.75	7.00	302.8	0.0 Landing Point
7947.14	90.46	336.49	6556.00	1786.34	2831.52	1767.52	9.00	0.0	0.0 PBHL WR605H
14006.62	90.46	336.49	6507.00	7342.67	414.48	7339.76	0.00	0.0	

Target Set Information:

Name: William Rodgers 605H

Position offsets from Slot centre							
Name	TVD (USft)	+N/-S (USft)	+E/-W (USft)	Northing (USft)	Easting (USft)	Lat (°)	Long (°)
LP WR605H	6556.00	1786.45	2831.48	14567774.91	1774058.50	40.111720	-80.522016
PBHL WR605H	6507.00	7342.67	414.48	14573331.13	1771641.50	40.127013	-80.530555

Plan Data for William Rodgers OHI 605H

Field: SOUTHWESTERN_OHIO CO, WV UTM NAD 83 (17N)
Map Unit: USFT Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / UTM zone 17N

Site: William Rodgers Pad
Unit: USFeet TVD Reference:
Company Name: SOUTHWESTERN ENERGY
Position: Northing: 14566030.37USft Latitude: 40.106971°
Easting: 1771224.60USft Longitude: -80.532184°
North Reference: Grid Grid Convergence: 0.30°
Elevation Above VRD: 1280.00USft

Slot: William Rodgers OHI 605H
Position:
Offset is from Site centre
+N/-S: -41.91USft Northing: 14565988.46USft Latitude: 40.106856°
+E/-W: 2.42USft Easting: 1771227.02USft Longitude: -80.532176°
Elevation Above VRD: 1280.00USft

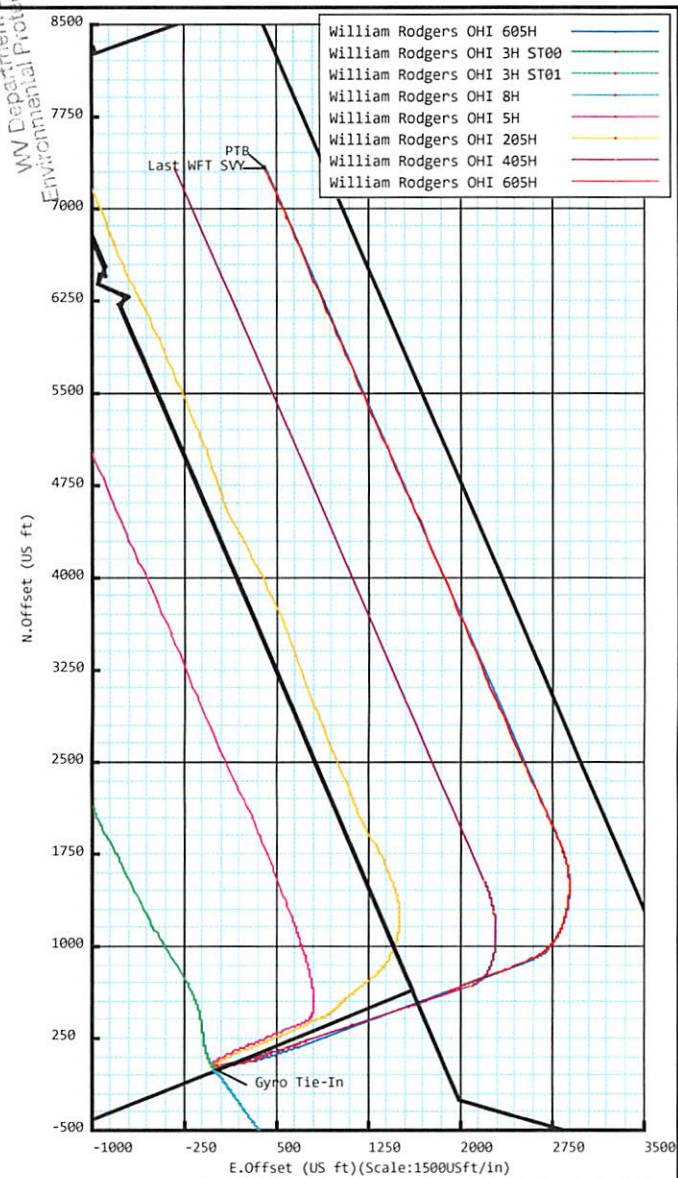
Well: William Rodgers OHI 605H
Type: Main-Well
File Number:

Plan Folder: P1 Plan: P1:V4
Vertical Section: Position offset of origin from Slot centre:
+N/-S: -0.00USft Azimuth: 359.62°
+E/-W: -0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
HDGM 52793(nT) -8.45° 67.52° 2017-07-31



Drawing By: GWR Date: 08/29/2017
Weatherford Drilling Services
7725 W. Reno, Ste. #220
Oklahoma City, OK 73127
+1.405.773.1100 Main
+1.405.773.1887 Fax

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True Mag Grid
Grid Convergence: 0.30°
Mag Declination: -8.45°
Bearing:
True = Mag - 8.45°
Grid = True - 0.30°
Total Correction to Grid -8.75°

PTB
Last WFT SVY

**5D Survey Report****SOUTHWESTERN ENERGY**

Field Name: *SOUTHWESTERN_OHIO CO, WV UTM NAD 83 (17N)*
Site Name: *William Rodgers Pad*
Well Name: *William Rodgers OHI 605H*
Survey: *Definitive survey*

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Weatherford®

William Rodgers OHI 605H

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

Site: William Rodgers Pad	Units: US ft	North Reference: Grid	Convergence Angle: 0.30
	Position:	Northing: 14566030.37 US ft	Latitude: 40° 6' 25.10"
		Easting: 1771224.60 US ft	Longitude: -80° 31' 55.86"
Elevation above MSL: 1280.00 US ft		Comment:	

Slot: William Rodgers OHI 605H	Position (Relative to Site Centre)		
	+N/-S: -41.91 US ft	Northing: 14565988.46 US ft	Latitude: 40°6'24.68"
	+E/-W: 2.42 US ft	Easting: 1771227.02 US ft	Longitude: -80°31'55.83"
Elevation above MSL: 1280.00 US ft		Comment:	

Well: William Rodgers OHI 605H	Type: Main well	UWI:
	File Number:	Comment:
	Closure Distance: 7347.12 US ft	Closure Azimuth: 3.14°
Vertical Section: Position of Origin (Relative to Slot centre)		
	+N/-S: -0.00 US ft	+E/-W: -0.00 US ft Az: 3.23°

Drill floor: Survey Name: Definitive Survey	Rig Height (Drill Floor): 26.00 US ft	Elevation above MSL: 1306.00 US ft	Inclination: 0.00°	Azimuth: 0.00°
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Survey Name: Definitive Survey				
Date: 04/Nov/2015	Survey Tool: See Survey Tool Ranges below.	Comment:	Company:	
Magnetic Model:				
Model Name: HDGM	Date: 31/Jul/2017	Field Strength: 52793.0nT	Declination: -8.45°	Dip: 67.52°
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
GYRO-NS_OW	0.00	421.00	Gyro_01
GYRO-NS_OW	421.00	735.00	Gyro_02
MFAC_US_V2	735.00	826.00	WFT MWD_01-MFAC
MWD	826.00	2034.00	WFT MWD_01-MWD
MWD	2034.00	5441.00	WFT MWD_03

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5D Survey Report

Survey Tool Ranges:			
Name	Start MD(USft)	End MD(USft)	Source Survey
MWD	5441.00	13984.00	WFT MWD_04

Wellpath created using minimum curvature.

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)	Northing (US ft)	Easting (US ft)	DLS (%/100US ft)	Comment
0.00	0.00	0.00	0.00	0.00	-0.00	-0.00	14565988.46	1771227.02	0.00	
100.00	0.55	148.76	100.00	-0.40	-0.41	0.25	14565988.05	1771227.27	0.55	
205.00	1.44	154.94	204.98	-1.97	-2.04	1.07	14565986.42	1771228.09	0.85	
265.00	0.98	163.42	264.97	-3.12	-3.21	1.53	14565985.25	1771228.55	0.82	
296.00	0.58	147.73	295.97	-3.50	-3.60	1.69	14565984.86	1771228.71	1.45	
329.00	0.44	3.89	328.96	-3.51	-3.61	1.79	14565984.85	1771228.81	2.94	
360.00	0.43	269.72	359.96	-3.39	-3.49	1.68	14565984.97	1771228.70	2.06	
391.00	0.52	1.98	390.96	-3.26	-3.35	1.57	14565985.11	1771228.59	2.22	
421.00	0.51	290.69	420.96	-3.08	-3.17	1.45	14565985.29	1771228.47	2.00	
503.00	0.16	326.21	502.96	-2.88	-2.95	1.05	14565985.51	1771228.07	0.48	
549.00	0.24	122.32	548.96	-2.88	-2.95	1.09	14565985.51	1771228.11	0.85	
611.00	0.71	114.00	610.96	-3.08	-3.17	1.55	14565985.29	1771228.57	0.76	
700.00	1.56	97.62	699.94	-3.37	-3.56	3.26	14565984.90	1771230.28	1.01	
735.00	2.65	96.04	734.92	-3.44	-3.70	4.53	14565984.76	1771231.55	3.12	Gyro Tie-In
826.00	5.43	78.03	825.68	-2.42	-3.03	10.84	14565985.43	1771237.86	3.32	
872.00	6.42	76.95	871.44	-1.12	-2.00	15.47	14565986.46	1771242.49	2.17	
965.00	9.01	78.16	963.59	2.23	0.67	27.67	14565989.13	1771254.69	2.79	
1058.00	10.12	75.73	1055.29	6.58	4.18	42.72	14565992.64	1771269.74	1.27	
1150.00	10.91	76.30	1145.75	11.54	8.23	59.01	14565996.69	1771286.03	0.87	
1243.00	12.79	80.38	1236.76	16.40	12.04	77.71	14566000.50	1771304.73	2.21	
1336.00	12.73	78.88	1327.47	21.23	15.73	97.91	14566004.19	1771324.93	0.36	
1429.00	13.92	79.52	1417.96	26.42	19.74	118.97	14566008.20	1771345.99	1.29	
1522.00	14.96	79.46	1508.02	31.93	23.97	141.77	14566012.43	1771368.79	1.12	
1614.00	14.67	77.62	1596.97	37.89	28.64	164.82	14566017.10	1771391.84	0.60	
1707.00	15.19	77.08	1686.83	44.45	33.89	188.20	14566022.35	1771415.22	0.58	
1799.00	16.84	78.40	1775.25	51.21	39.27	213.00	14566027.73	1771440.02	1.84	
1892.00	17.49	79.15	1864.11	58.06	44.61	239.93	14566033.07	1771466.95	0.74	
1984.00	17.62	77.41	1951.83	65.22	50.24	267.09	14566038.70	1771494.11	0.59	
2034.00	17.59	76.32	1999.48	69.48	53.68	281.82	14566042.14	1771508.84	0.66	
2201.00	18.05	69.78	2158.49	87.12	68.59	330.62	14566057.05	1771557.64	1.23	
2293.00	18.68	66.28	2245.80	99.47	79.45	357.48	14566067.91	1771584.50	1.38	
2386.00	18.94	61.89	2333.84	114.07	92.55	384.43	14566081.01	1771611.45	1.55	
2479.00	19.94	69.84	2421.55	128.22	105.13	412.64	14566093.59	1771639.66	3.04	
2571.00	22.18	74.11	2507.41	140.14	115.29	444.07	14566103.75	1771671.09	2.95	
2664.00	25.11	71.77	2592.59	153.11	126.27	479.71	14566114.73	1771706.73	3.31	
2756.00	27.63	72.65	2675.01	167.75	138.74	518.62	14566127.20	1771745.64	2.77	
2849.00	30.52	72.49	2756.29	183.70	152.28	561.73	14566140.74	1771788.75	3.11	
2942.00	32.83	71.08	2835.43	201.57	167.56	608.11	14566156.02	1771835.13	2.61	
3034.00	33.38	68.62	2912.50	221.51	184.88	655.27	14566173.34	1771882.29	1.58	
3124.00	33.59	66.50	2987.56	243.02	203.83	701.15	14566192.29	1771928.17	1.32	
3217.00	33.45	71.28	3065.11	264.18	222.32	749.03	14566210.78	1771976.05	2.84	
3310.00	33.76	72.92	3142.57	282.73	238.13	798.01	14566226.59	1772025.03	1.03	
3402.00	33.80	71.97	3219.04	300.88	253.56	846.78	14566242.02	1772073.80	0.58	
3495.00	33.99	73.00	3296.23	319.25	269.17	896.23	14566257.63	1772123.25	0.65	
3588.00	34.75	72.59	3373.00	337.59	284.70	946.39	14566273.16	1772173.41	0.85	
3680.00	35.59	71.42	3448.20	356.78	301.08	996.78	14566289.54	1772223.80	1.17	
3773.00	36.08	70.74	3523.60	377.31	318.73	1048.29	14566307.19	1772275.31	0.68	
3866.00	35.97	70.45	3598.81	398.36	336.91	1099.88	14566325.37	1772326.90	0.22	
3959.00	33.98	71.13	3675.01	418.71	354.45	1150.21	14566342.91	1772377.23	2.18	
4051.00	34.21	70.95	3751.20	438.19	371.21	1198.98	14566359.67	1772426.00	0.27	
4144.00	33.76	69.99	3828.31	458.30	388.58	1247.98	14566377.04	1772475.00	0.75	
4237.00	33.07	71.18	3905.94	478.02	405.61	1296.28	14566394.07	1772523.30	1.02	

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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)	Northing (US ft)	Easting (US ft)	DLS (%/100US ft)	Comment
4329.00	31.66	71.88	3983.65	496.24	421.22	1342.98	14566409.68	1772570.00	1.59	
4422.00	32.02	72.60	4062.65	513.81	436.18	1389.71	14566424.64	1772616.73	0.56	
4515.00	32.05	72.49	4141.49	531.24	450.98	1436.77	14566439.44	1772663.79	0.07	
4607.00	30.31	71.85	4220.20	548.35	465.56	1482.11	14566454.02	1772709.13	1.93	
4700.00	31.94	72.14	4299.81	565.76	480.41	1527.83	14566468.87	1772754.85	1.76	
4793.00	33.75	73.65	4377.94	583.27	495.23	1576.04	14566483.69	1772803.06	2.14	
4885.00	36.98	72.93	4452.96	601.44	510.55	1627.02	14566499.01	1772854.04	3.54	
4978.00	37.28	70.54	4527.10	622.01	528.15	1680.32	14566516.61	1772907.34	1.58	
5071.00	35.23	69.13	4602.10	643.83	547.09	1731.95	14566535.55	1772958.97	2.38	
5163.00	35.51	68.83	4677.12	665.70	566.19	1781.66	14566554.65	1773008.68	0.36	
5256.00	35.05	67.99	4753.04	688.25	585.95	1831.61	14566574.41	1773058.63	0.72	
5349.00	35.55	66.62	4828.94	711.75	606.69	1881.18	14566595.15	1773108.20	1.01	
5441.00	35.53	65.79	4903.80	736.05	628.27	1930.11	14566616.73	1773157.13	0.52	
5469.00	35.75	67.19	4926.56	743.39	634.77	1945.07	14566623.23	1773172.09	3.02	
5562.00	34.60	66.23	5002.57	767.30	655.95	1994.28	14566644.41	1773221.30	1.37	
5654.00	35.72	65.50	5077.79	791.66	677.62	2042.63	14566666.08	1773269.65	1.30	
5747.00	35.93	67.38	5153.19	816.19	699.37	2092.52	14566687.83	1773319.54	1.20	
5840.00	35.92	68.49	5228.50	839.50	719.87	2143.09	14566708.33	1773370.11	0.70	
5933.00	35.37	69.21	5304.08	861.88	739.42	2193.63	14566727.88	1773420.65	0.74	
6025.00	35.43	70.80	5379.07	882.89	757.64	2243.71	14566746.10	1773470.73	1.00	
6118.00	35.41	71.62	5454.86	903.10	775.01	2294.73	14566763.47	1773521.75	0.51	
6211.00	35.41	70.05	5530.66	923.63	792.69	2345.63	14566781.15	1773572.65	0.98	
6304.00	34.64	67.37	5606.82	945.77	812.06	2395.36	14566800.52	1773622.38	1.85	
6396.00	34.89	66.03	5682.40	969.20	832.81	2443.53	14566821.27	1773670.55	0.87	
6489.00	35.00	67.11	5758.64	993.10	853.99	2492.41	14566842.45	1773719.43	0.68	
6582.00	34.91	68.46	5834.86	1015.99	874.14	2541.73	14566862.60	1773768.75	0.84	
6675.00	35.39	68.98	5910.90	1038.21	893.57	2591.63	14566882.03	1773818.65	0.61	
6721.00	36.95	65.73	5948.04	1050.06	904.03	2616.67	14566892.49	1773843.69	5.37	
6768.00	38.81	61.92	5985.14	1064.24	916.77	2642.55	14566905.23	1773869.57	6.36	
6814.00	40.07	55.88	6020.68	1080.72	931.87	2667.53	14566920.33	1773894.55	8.78	
6860.00	41.29	50.92	6055.57	1099.93	949.74	2691.58	14566938.20	1773918.60	7.51	
6907.00	43.01	46.25	6090.42	1122.09	970.61	2715.20	14566959.07	1773942.22	7.60	
6953.00	44.71	41.59	6123.60	1146.26	993.57	2737.28	14566982.03	1773964.30	7.93	
6999.00	46.44	37.43	6155.80	1172.74	1018.91	2758.16	14567007.37	1773985.18	7.47	
7046.00	47.68	34.18	6187.82	1201.73	1046.82	2778.28	14567035.28	1774005.30	5.71	
7092.00	48.37	31.19	6218.59	1231.51	1075.60	2796.74	14567064.06	1774023.76	5.06	
7139.00	49.00	26.99	6249.63	1263.26	1106.43	2813.89	14567094.89	1774040.91	6.84	
7185.00	50.06	23.25	6279.49	1295.73	1138.11	2828.73	14567126.57	1774055.75	6.60	
7231.00	50.49	20.24	6308.89	1329.27	1170.97	2841.83	14567159.43	1774068.85	5.12	
7278.00	51.00	17.72	6338.64	1364.29	1205.38	2853.66	14567193.84	1774080.68	4.29	
7324.00	52.56	15.58	6367.10	1399.44	1240.00	2864.01	14567228.46	1774091.03	4.99	
7370.00	54.74	13.20	6394.36	1435.79	1275.88	2873.20	14567264.34	1774100.22	6.31	
7417.00	57.85	9.88	6420.45	1474.46	1314.18	2881.00	14567302.64	1774108.02	8.85	
7463.00	61.35	6.66	6443.72	1513.97	1353.44	2886.69	14567341.90	1774113.71	9.71	
7509.00	64.50	4.38	6464.66	1554.89	1394.20	2890.62	14567382.66	1774117.64	8.15	
7556.00	66.95	1.68	6483.99	1597.73	1436.97	2892.87	14567425.43	1774119.89	7.39	
7602.00	69.80	359.43	6500.94	1640.43	1479.73	2893.28	14567468.19	1774120.30	7.68	
7649.00	72.75	356.64	6516.03	1684.75	1524.20	2891.74	14567512.66	1774118.76	8.43	
7695.00	74.47	354.13	6529.01	1728.46	1568.18	2888.19	14567556.64	1774115.21	6.43	
7741.00	76.70	351.62	6540.46	1772.28	1612.38	2882.66	14567600.84	1774109.68	7.17	
7788.00	79.97	347.68	6549.97	1817.01	1657.65	2874.38	14567646.11	1774101.40	10.76	
7834.00	83.77	344.21	6556.47	1860.47	1701.80	2863.32	14567690.26	1774090.34	11.13	
7880.00	87.16	341.59	6560.11	1903.46	1745.62	2849.84	14567734.08	1774076.86	9.30	
7927.00	90.37	338.98	6561.12	1946.72	1789.85	2833.99	14567778.31	1774061.01	8.80	
7973.00	91.72	338.45	6560.28	1988.57	1832.70	2817.29	14567821.16	1774044.31	3.15	
8066.00	91.23	336.84	6557.89	2027.42	1918.68	2781.93	14567907.14	1774008.95	1.81	
8158.00	91.05	333.68	6556.06	2153.64	2002.21	2743.44	14567990.67	1773970.46	3.44	
8251.00	91.23	335.23	6554.21	2235.14	2086.10	2703.35	14568074.56	1773930.37	1.68	
8344.00	91.17	335.39	6552.26	2317.30	2170.58	2664.51	14568159.04	1773891.53	0.18	

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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)	Northing (US ft)	Easting (US ft)	DLS (%/100US ft)	Comment
8436.00	91.05	335.88	6550.48	2398.81	2254.37	2626.56	14568242.83	1773853.58	0.55	
8529.00	91.11	336.41	6548.73	2481.60	2339.41	2588.96	14568327.87	1773815.98	0.57	
8622.00	90.62	335.27	6547.32	2564.16	2424.25	2550.90	14568412.71	1773777.92	1.33	
8715.00	90.86	335.86	6546.12	2646.52	2508.91	2512.43	14568497.37	1773739.45	0.68	
8807.00	90.99	335.67	6544.64	2728.14	2592.79	2474.67	14568581.25	1773701.69	0.25	
8900.00	90.43	336.22	6543.48	2810.79	2677.71	2436.77	14568666.17	1773663.79	0.84	
8993.00	90.86	336.56	6542.44	2893.76	2762.92	2399.52	14568751.38	1773626.54	0.59	
9085.00	90.86	334.21	6541.06	2975.09	2846.54	2361.21	14568835.00	1773588.23	2.55	
9178.00	90.68	334.23	6539.81	3056.42	2930.28	2320.77	14568918.74	1773547.79	0.19	
9270.00	90.92	336.07	6538.52	3137.58	3013.75	2282.11	14569002.21	1773509.13	2.02	
9363.00	90.68	336.90	6537.22	3220.62	3099.02	2245.01	14569087.48	1773472.03	0.93	
9456.00	90.37	338.70	6536.37	3304.60	3185.12	2209.87	14569173.58	1773436.89	1.96	
9549.00	90.68	337.95	6535.52	3388.95	3271.54	2175.53	14569260.00	1773402.55	0.87	
9641.00	90.74	338.53	6534.38	3472.33	3356.97	2141.42	14569345.43	1773368.44	0.63	
9734.00	90.55	337.35	6533.33	3556.40	3443.16	2106.50	14569431.62	1773333.52	1.29	
9824.00	90.43	336.85	6532.56	3637.20	3526.06	2071.48	14569514.52	1773298.50	0.57	
9916.00	90.37	337.08	6531.92	3719.70	3610.72	2035.48	14569599.18	1773262.50	0.26	
10009.00	90.31	338.06	6531.37	3803.53	3696.69	2000.00	14569685.15	1773227.02	1.06	
10101.00	90.55	337.03	6530.68	3886.43	3781.71	1964.86	14569770.17	1773191.88	1.15	
10194.00	90.37	337.19	6529.93	3969.93	3867.38	1928.68	14569855.84	1773155.70	0.26	
10287.00	90.62	336.47	6529.13	4053.23	3952.88	1892.09	14569941.34	1773119.11	0.82	
10380.00	90.49	335.65	6528.23	4135.96	4037.87	1854.36	14570026.33	1773081.38	0.89	
10472.00	90.55	336.59	6527.39	4217.85	4121.99	1817.12	14570110.45	1773044.14	1.02	
10565.00	90.31	336.93	6526.69	4301.10	4207.44	1780.42	14570195.90	1773007.44	0.45	
10658.00	90.49	337.20	6526.04	4384.56	4293.09	1744.18	14570281.55	1772971.20	0.35	
10748.00	90.55	337.10	6525.23	4465.40	4376.02	1709.23	14570364.48	1772936.25	0.13	
10841.00	90.55	336.21	6524.33	4548.56	4461.40	1672.38	14570449.86	1772899.40	0.96	
10930.00	90.37	335.66	6523.62	4627.65	4542.66	1636.09	14570531.12	1772863.11	0.65	
11023.00	90.49	334.81	6522.92	4709.77	4627.11	1597.14	14570615.57	1772824.16	0.92	
11116.00	90.55	335.11	6522.08	4791.67	4711.36	1557.78	14570699.82	1772784.80	0.33	
11208.00	90.55	335.79	6521.19	4873.06	4795.04	1519.55	14570783.50	1772746.57	0.74	
11298.00	90.68	335.65	6520.23	4952.88	4877.08	1482.55	14570865.54	1772709.57	0.21	
11391.00	91.11	337.23	6518.78	5035.88	4962.31	1445.38	14570950.77	1772672.40	1.76	
11484.00	90.62	336.87	6517.37	5119.33	5047.94	1409.12	14571036.40	1772636.14	0.65	
11577.00	90.55	335.87	6516.42	5202.29	5133.14	1371.85	14571121.60	1772598.87	1.08	
11669.00	91.05	335.46	6515.14	5283.84	5216.95	1333.94	14571205.41	1772560.96	0.70	
11762.00	90.68	336.68	6513.73	5366.57	5301.95	1296.22	14571290.41	1772523.24	1.37	
11855.00	90.55	335.83	6512.74	5449.45	5387.07	1258.78	14571375.53	1772485.80	0.92	
11948.00	90.62	335.60	6511.79	5531.93	5471.84	1220.53	14571460.30	1772447.55	0.26	
12041.00	90.74	336.06	6510.68	5614.49	5556.68	1182.46	14571545.14	1772409.48	0.51	
12133.00	90.68	337.23	6509.54	5696.75	5641.13	1145.99	14571629.59	1772373.01	1.27	
12226.00	90.31	336.83	6508.74	5780.19	5726.75	1109.70	14571715.21	1772336.72	0.59	
12319.00	90.12	336.69	6508.39	5863.44	5812.21	1073.00	14571800.67	1772300.02	0.25	
12412.00	90.43	336.02	6507.94	5946.39	5897.40	1035.70	14571885.86	1772262.72	0.79	
12505.00	90.25	336.00	6507.39	6029.09	5982.36	997.89	14571970.82	1772224.91	0.19	
12597.00	90.31	334.56	6506.94	6110.36	6065.93	959.42	14572054.39	1772186.44	1.57	
12690.00	90.12	335.81	6506.59	6192.44	6150.34	920.39	14572138.80	1772147.41	1.36	
12783.00	90.31	336.78	6506.24	6275.35	6235.49	883.00	14572223.95	1772110.02	1.06	
12876.00	90.31	336.72	6505.74	6358.59	6320.94	846.29	14572309.40	1772073.31	0.06	
12968.00	90.31	338.05	6505.24	6441.38	6405.86	810.91	14572394.32	1772037.93	1.45	
13061.00	90.31	337.81	6504.74	6525.46	6492.04	775.97	14572480.50	1772002.99	0.26	
13154.00	89.75	337.42	6504.69	6609.32	6578.04	740.55	14572566.50	1771967.57	0.73	
13247.00	90.12	336.20	6504.80	6692.60	6663.52	703.93	14572651.98	1771930.95	1.37	
13340.00	89.75	336.93	6504.90	6775.71	6748.85	666.95	14572737.31	1771893.97	0.88	
13432.00	89.91	335.91	6505.17	6857.82	6833.16	630.14	14572821.62	1771857.16	1.12	
13525.00	89.94	337.28	6505.30	6940.95	6918.51	593.20	14572906.97	1771820.22	1.47	
13618.00	89.82	334.30	6505.49	7023.47	7003.32	555.07	14572991.78	1771782.09	3.21	
13711.00	90.37	337.32	6505.34	7106.01	7088.14	516.97	14573076.60	1771743.99	3.30	
13804.00	89.94	336.01	6505.09	7189.19	7173.54	480.13	14573162.00	1771707.15	1.48	

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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)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
13896.00	90.25	333.57	6504.93	7270.08	7256.77	440.95	14573245.23	1771667.97	2.67	
13961.00	90.18	334.75	6504.69	7326.89	7315.27	412.62	14573303.73	1771639.64	1.82	Last WFT SVY
13984.00	90.18	334.75	6504.62	7347.11	7336.07	402.81	14573324.53	1771629.83	0.00	PTB

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Hydraulic Fracturing Fluid Product Component Information Disclosure

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West Virginia Department of Environmental Protection

Job Start Date:	10/5/2017
Job End Date:	11/15/2017
State:	West Virginia
County:	Ohio
API Number:	47-069-00202-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	William Rodgers OHI 605H
Latitude:	40.10685600
Longitude:	-80.53217600
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,523
Total Base Water Volume (gal):	13,605,655
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	Water	7732-18-5	100.00000	83.01799	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	15.73961	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.92700	
			Hydrogen Chloride	7647-01-0	17.50000	0.21553	
WFRA-2000	U.S. Well Services, LLC	Friction Reducer	Water	7732-18-5	60.00000	0.04279	
			2-Propenoic acid, polymer with 2 propenamide	9003-06-9	30.00000	0.02139	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01754	
BIOC11139A	Nalco Champion	Anti-Bacterial Agent	Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00540	
			Glutaraldehyde	111-30-8	10.00000	0.00180	
			Ethanol	64-17-5	5.00000	0.00070	

SCAL16486A	Nalco Champion	Scale Inhibitor					
			Ethylene Glycol	107-21-1	30.00000	0.00270	
			Amine Triphosphate	Proprietary	30.00000	0.00242	
WFRA-1000	U.S. Well Services, LLC	Friction Reducer					
			2-Propenoic acid, polymer with 2-propenamide	9003-06-9	30.00000	0.00244	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.00200	
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00030	
			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	0.00005	
			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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 U.S. Department of
 Environmental Protection

Longitude: 80°30'00"

SURFACE HOLE 8976'

Longitude: 80°10'00"

BOTTOM HOLE 8790'

BOTTOM HOLE 700'

Latitude: 40°07'30"

Latitude: 40°07'30"



CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
600 MARKETPLACE AVENUE, SUITE 200
BRIDGEPORT, WV 26330
304-933-3119

SURFACE HOLE LOCATION (SHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,439,722.163
EASTING: 539,871.077

LANDING POINT (LPL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,440,289.006
EASTING: 540,724.416

BOTTOM HOLE LOCATION (BHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,441,960.179
EASTING: 539,997.418

PERMIT SURFACE HOLE LOCATION (SHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,439,722.162
EASTING: 539,871.075

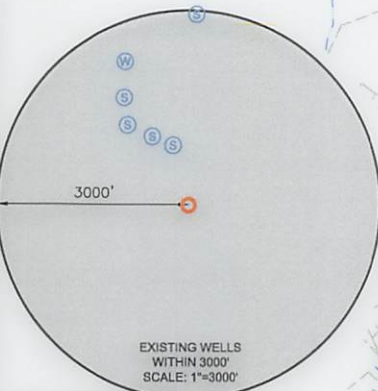
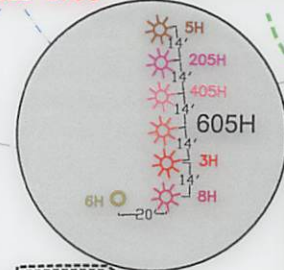
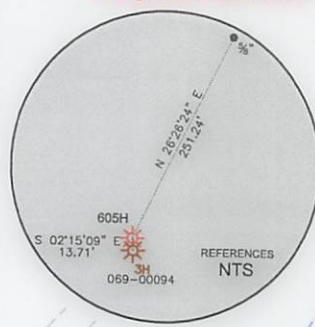
PERMIT LANDING POINT (LPL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,440,280.770
EASTING: 540,729.787

PERMIT BOTTOM HOLE LOCATION (BHL):

UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,441,958.201
EASTING: 539,993.852

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



SWN PRODUCTION COMPANY, LLC
"WILLIAM RODGERS OHI 605"
SURFACE HOLE

WELL RESTRICTIONS

- 1. NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
- 2. NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
- 3. WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 969 FEET OF PROPOSED WELL.
- 4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 800 FEET OF THE LIMITS OF DISTURBANCE.
- 5. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
- 6. 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

- 1. 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.
- 2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- 4. 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. 991



2000 0 2000

GRAPHIC SCALE IN FEET

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)

WILLIAM RODGERS OHI
OPERATOR'S WELL #: 605H
API WELL #: 47 STATE 069 COUNTY 00202 PERMIT

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW
WATERSHED: WHEELING CREEK ELEVATION: 1280.0
DISTRICT: LIBERTY COUNTY: OHIO QUADRANGLE: VALLEY GROVE
SURFACE OWNER: WILLIAM I RODGERS & DOUGLAS W RODGERS ACREAGE: 143±
OIL & GAS ROYALTY OWNER: WILLIAM I RODGERS & DOUGLAS W RODGERS ACREAGE: 143±
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: 6567 TVD 14,015 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: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD LPL * LANDING POINT LOCATION W EXISTING WATER WELL S EXISTING SPRING	— SURVEYED BOUNDARY — DRILLING UNIT = LEASE BOUNDARY — ASDRILLED PATH — PROPOSED PATH	REVISIONS:	DATE: 02-21-2018 DRAWN BY: K.E.S. SCALE: 1" = 2000' DRAWING NO: 171-944 WELL LOCATION PLAT
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CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
 600 MARKETPLACE AVENUE, SUITE 200
 BRIDGEPORT, WV 26330
 304-933-3119

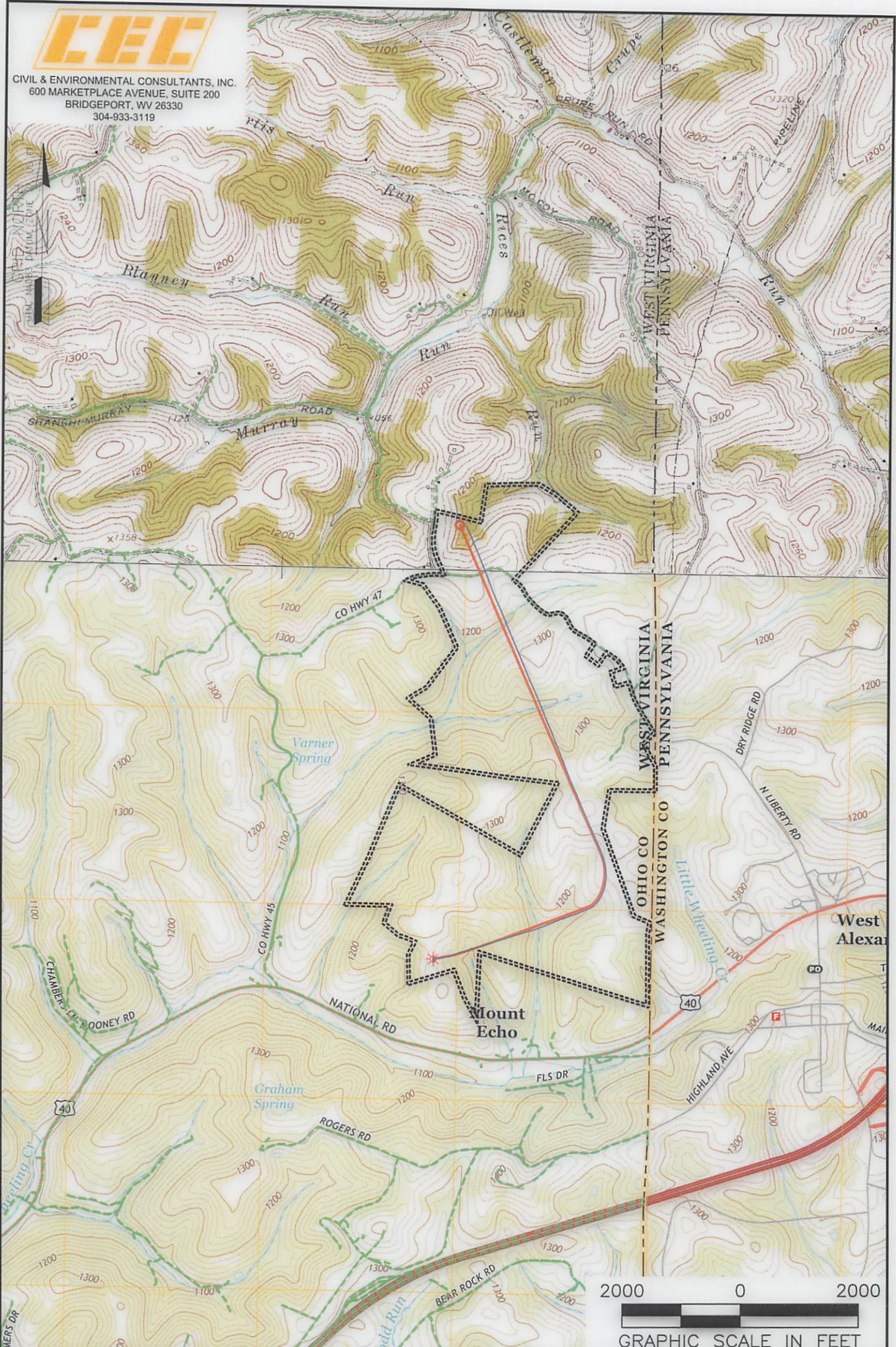
WELL BORE TABLE FOR SURFACE OWNERS			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	William I. Rodgers & Douglas Wayne Rodgers (S/R)	3-L12-1	143.09
2	TUNNEL RIDGE, LLC (S) LOIS MILLER (R) ALICE ANDERSON (R)	3-L12-4.6	60.00
3	RAYMOND M. C/O HILDA E. MILLER (S) HILDA E. MILLER (R)	3-L12-2	81.355
4	JEFFREY S. & DANA R. OCH	3-L12-2.1	44.145
5	THELMA A. MILLER LIFE ESTATE (S/R) CARL E. MILLER JR., REMAINDERMAN (S/R)	3-L9-15	54.91
6	THELMA A. MILLER LIFE ESTATE (S/R) CARL E. MILLER JR., REMAINDERMAN (S/R)	3-L9-15.3	42.38
7	THELMA A. MILLER LIFE ESTATE (S/R) CARL E. MILLER JR., REMAINDERMAN (S/R)	3-L9-15.4	60.9082
8	DANIEL LEE HENRY & DIANE L. HENRY	3-L9-6.5	30.278
9	HENRY DONALD L & J A	3-L9-6.7	2.99
10	MARK S. MIKESINOVICH (S/R)	3-L9-6.9	44.33
11	DAVID E. MCNABB & BRENDA L. MCNABB (S/R)	3-L9-6.8	15.66

ADJOINING OWNERS TABLE			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
A	WILLIAM I. RODGERS	3-L12-5.1	17.16
B	TODD M. MAXWELL	3-L12-27	11.74
C	CATHY J. CALDWELL & JERRY W. CALDWELL	3-L12-6	5.52
D	MARION S. MAZGAJ & MILDRED J. MAZGAJ	3-L11-62	52.63
E	JAMES R. CREIGHTON & MARTHA E. CREIGHTON	3-L11-29	70.05
F	TIMMY B. MINCH & AMY LYNN MINCH	3-L9-12	109.75
G	WILLIAM H. BALL & LARRY G. BALL	3-L9-11	44.69
H	WILLIAM E. NOBLE	3-L9-14	47.28
I	DOROTHY BALL	3-L9-6.2	0.24
J	WILLIAM H. BALL & DOROTHY M. BALL	3-L9-6.3	2.01
K	MICHAEL E. FISHER & SUSAN K. FISHER (S/R)	3-L9-6.6	29.65
L	RODNEY G. & JESSICA J. PLANTS	3-L9-2	112.08
M	MARK S. MIKESINOVICH	3-L9-6.9	44.33
N	JOHN A. SCHULTZ	3-L9-6.10	53.71
O	ROBERT L. COOK & FLORENCE A. COOK	3-L9-6	13.28
P	NANCY C. BALL	3-L9-6.1	0.81
Q	NANCY C. BALL	3-L9-16	1.26
R	NANCY C. BALL	3-L9-6.11	6.43
S	MARTHA E. SHALER	3-L9-15.1	1.09
T	LEWIS E. NICHOLSON & SUSAN L. NICHOLSON	3-L9-17	20.38
U	KEVIN R. & J A WURTZBACHER	3-L9-17.3	1.09
V	KEVIN R. & J A WURTZBACHER	3-L9-17.3	1.09
W	WILLIAM R. & JEAN W. WURTZBACHER	3-L9-17.1	4.252
X	WILLIAM R. & JEAN W. WURTZBACHER	230-008-00-00-0001-00	70.32
Y	LARRY LEE RODGERS	230-008-00-00-0004-03	21.26
Z	TUNNEL RIDGE LLC	3-L12-3	23.59
AA	TUNNEL RIDGE LLC	230-007-00-00-0012-05	7.55
BB	HILDA E. MILLER	230-007-00-00-0012-00	6.935

REVISIONS:	COMPANY:			
	OPERATOR'S		WILLIAM RODGERS OHI	
	WELL #:		605H	
	DISTRICT:	COUNTY:	STATE:	DATE: 02-21-2018
	LIBERTY	OHIO	WV	
				DRAWN BY: K.E.S.
				SCALE: N/A
				DRAWING NO: 171-944
				WELL LOCATION PLAT 2



CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
 600 MARKETPLACE AVENUE, SUITE 200
 BRIDGEPORT, WV 26330
 304-933-3119



NOTES ON SURVEY

1. 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.
2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
3. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- ⊙ EXISTING / PRODUCING WELLHEAD
- ✱ LPL LANDING POINT LOCATION
- FLOOD PLAN
- ACCESS ROAD
- PUBLIC ROAD
- ACCESS ROAD TO PREV. SITE
- LEASE BOUNDARY
- PROPOSED PATH
- ASDRILLED PATH

WELL OPERATOR:
 SWN PRODUCTION COMPANY, LLC

ADDRESS:
 P.O. BOX 1300 JANE LEW, WV 26378

SURFACE OWNER:
 WILLIAM I RODGERS & DOUGLAS W RODGERS

WELL (FARM) NAME:
 WILLIAM RODGERS OHI

COUNTY - CODE
 OHIO - 069

USGS 7 1/2 QUADRANGLE MAP NAME
 VALLEY GROVE, WV

WELL # 605H
SERIAL # XXXX

DISTRICT;
 LIBERTY

Via Federal Express

February 26, 2018

State of West Virginia
Department of Environmental Protection
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

RE: SWN Production Company, LLC
Operator ID: 494512924
Regulatory Filings: WR-34 & WR-35 Filing

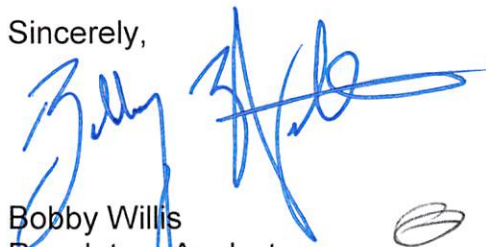
To Whom It May Concern:

Please find enclosed forms WR-34 No Discharge, WR-35 Well Operator's Report of Well Work for the following wells:

William Rodgers OHI 605H (API 47-069-00202)

If you have any questions or require additional information, please contact me via email at bobby_willis@swn.com or telephone at (832) 796-2884.

Sincerely,



Bobby Willis
Regulatory Analyst
West Virginia Division

/bw
Encl.

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Office of Oil and Gas
FEB 27 2018
WV Department of
Environmental Protection

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