

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

API 47-069-00200 County OHIO District LIBERTY
Quad VALLEY GROVE Pad Name WILLIAM RODGERS OHI PAD Field/Pool Name PANHANDLE FIELD WET
Farm name WILLIAM I. RODGERS & DOUGLAS W. RODGERS Well Number WILLIAM RODGERS 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 4,439,734.923 Easting 539,870.328
Landing Point of Curve Northing 4,440,023.991 Easting 540,097.113
Bottom Hole Northing 4,442,279.259 Easting 539,127.776

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 10/14/2015 Date drilling commenced 12/10/2015 Date drilling ceased 08/19/2017
Date completion activities began 10/20/2017 Date completion activities ceased 12/05/2017
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

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

[Handwritten signature] 5.10.18

API 47- 069 - 00200 Farm name WILLIAM I. RODGERS & DOUGLAS W. RODGERS Well number WILLIAM RODGERS 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	28	20	126	NEW	J-55/94#		Y
Surface	17.5	13.375	417	NEW	J-55/54.50#		Y
Coal	SEE INTERMEDIATE						
Intermediate 1	12.25	9.625	2101	NEW	J-55/40#		Y
Intermediate 2							
Intermediate 3							
Production	8.75	5.5	14937	NEW	HCP-110/20#		Y
Tubing		2.375	6963	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	390	15.60	1.20	468	SURFACE	8
Coal	SEE INTERMEDIATE						
Intermediate 1	CLASS A	796	15.60	1.19	947.24	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	1,070/1,715	15.60/15.60	1.22/1.19	1305.4/2040.85	SURFACE	24
Tubing							

Drillers TD (ft) 14937 Loggers TD (ft) 14937

Deepest formation penetrated MARCELLUS Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5835

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

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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 _____

William Rodgers OHI 5H

Perf Summary

Attachment 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	9/26/2017	14,754	14,824	42
2	10/20/2017	14,649	14,721	66
3	10/20/2017	14,544	14,616	66
4	10/20/2017	14,439	14,511	66
5	10/20/2017	14,334	14,406	66
6	10/21/2017	14,229	14,304	66
7	10/21/2017	14,124	14,196	66
8	10/21/2017	14,019	14,091	66
9	10/22/2017	13,885	13,986	132
10	10/22/2017	13,790	13,862	66
11	10/22/2017	13,695	13,767	66
12	10/23/2017	13,599	13,671	66
13	10/23/2017	13,494	13,564	66
14	10/23/2017	13,389	13,461	66
15	10/24/2017	13,287	13,356	66
16	10/24/2017	13,179	13,251	66
17	10/24/2017	13,074	13,146	66
18	10/24/2017	12,969	13,041	66
19	10/25/2017	12,864	12,936	66
20	10/25/2017	12,759	12,831	66
21	10/25/2017	12,654	12,726	66
22	10/26/2017	12,547	12,621	66
23	10/27/2017	12,442	12,519	66
24	10/27/2017	12,339	12,411	66
25	10/27/2017	12,236	12,306	66
26	10/28/2017	12,129	12,201	66
27	10/28/2017	12,024	12,096	66
28	10/28/2017	11,919	11,991	66
29	10/28/2017	11,814	11,886	66
30	10/29/2017	11,709	11,781	66
31	10/29/2017	11,604	11,676	66
32	10/29/2017	11,499	11,571	66
33	10/29/2017	11,394	11,466	66
34	10/30/2017	11,285	11,361	66
35	10/30/2017	11,184	11,256	66
36	10/30/2017	11,079	11,151	66
37	10/31/2017	10,974	11,049	66
38	10/31/2017	10,869	10,941	66
39	10/31/2017	10,764	10,836	66
40	11/1/2017	10,659	10,731	66
41	11/1/2017	10,559	10,626	66
42	11/1/2017	10,449	10,521	66
43	11/1/2017	10,344	10,416	66

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Perf Summary
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STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
44	11/2/2017	10,239	10,311	66
45	11/2/2017	10,134	10,206	66
46	11/2/2017	10,029	10,101	66
47	11/2/2017	9,924	9,996	66
48	11/3/2017	9,819	9,891	66
49	11/3/2017	9,714	9,790	66
50	11/3/2017	9,609	9,681	66
51	11/3/2017	9,504	9,576	66
52	11/3/2017	9,399	9,471	66
53	11/4/2017	9,297	9,366	66
54	11/4/2017	9,189	9,261	66
55	11/4/2017	9,084	9,156	66
56	11/4/2017	8,979	9,056	66
57	11/5/2017	8,874	8,946	66
58	11/5/2017	8,766	8,841	66
59	11/5/2017	8,664	8,736	66
60	11/6/2017	8,559	8,631	66
61	11/6/2017	8,454	8,526	66
62	11/6/2017	8,349	8,421	66
63	11/6/2017	8,244	8,316	66
64	11/7/2017	8,139	8,211	66
65	11/7/2017	8,034	8,106	66
66	11/7/2017	7,929	8,001	66
67	11/8/2017	7,824	7,896	66
68	11/8/2017	7,719	7,791	66
69	11/8/2017	7,614	7,686	66
70	11/9/2017	7,509	7,581	66
71	11/9/2017	7,404	7,476	66
72	11/9/2017	7,299	7,371	66
73	11/9/2017	7,194	7,266	66
74	11/9/2017	7,089	7,161	66
75	11/10/2017	6,984	7,056	66

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**William Rodger OHI 5H
Stim 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	9/26/2017	89	7,911	8,201	3,950	748,520	14,958	
2	10/20/2017	86	7,980	8,580	4,731	751,440	11,952	
3	10/20/2017	87	7,848	8,462	4,704	753,740	11,820	
4	10/20/2017	87	7,811	8,179	4,358	755,800	11,504	
5	10/20/2017	86	7,742	8,119	4,851	757,560	11,586	
6	10/21/2017	87	8,075	8,601	4,905	750,040	11,824	
7	10/21/2017	84	8,285	8,723	4,603	753,560	11,872	
8	10/21/2017	86	8,129	8,706	4,653	754,520	11,614	
9	10/22/2017	87	8,063	9,102	4,586	747,000	18,832	
10	10/22/2017	85	7,952	8,354	4,763	753,960	11,878	
11	10/22/2017	68	8,084	9,178	4,855	751,400	19,894	
12	10/23/2017	85	7,541	8,709	4,859	749,840	11,536	
13	10/23/2017	80	7,772	8,482	5,040	753,900	11,580	
14	10/23/2017	81	7,635	8,272	4,834	755,160	11,340	
15	10/24/2017	87	7,927	8,268	5,294	751,120	11,806	
16	10/24/2017	87	7,936	8,289	5,388	752,840	11,894	
17	10/24/2017	81	7,702	9,331	5,027	757,800	11,192	
18	10/24/2017	79	7,757	8,678	4,840	754,880	11,120	
19	10/25/2017	86	7,707	8,229	5,454	756,680	11,602	
20	10/25/2017	82	7,553	8,172	4,892	755,920	11,232	
21	10/25/2017	79	7,466	8,084	5,045	750,220	11,332	
22	10/26/2017	82	7,488	7,971	5,070	748,360	11,186	
23	10/27/2017	88	7,699	8,171	5,204	750,440	11,716	
24	10/27/2017	88	7,633	8,017	5,459	752,400	11,688	
25	10/27/2017	90	7,911	8,145	5,043	751,500	11,604	
26	10/28/2017	89	7,703	8,079	5,153	753,040	11,510	
27	10/28/2017	86	7,737	8,132	4,912	749,160	11,446	
28	10/28/2017	87	7,985	8,281	4,799	756,200	11,426	
29	10/28/2017	88	7,912	8,784	5,109	752,230	11,422	
30	10/29/2017	89	7,812	8,637	5,513	720,446	11,346	
31	10/29/2017	89	7,691	8,011	5,645	751,420	11,412	
32	10/29/2017	88	7,738	8,048	5,286	707,740	10,838	
33	10/29/2017	89	7,731	8,414	5,054	750,580	11,230	
34	10/30/2017	87	7,631	7,941	5,189	746,200	11,176	
35	10/30/2017	81	7,706	8,922	4,704	751,550	10,922	
36	10/30/2017	81	7,560	8,052	4,793	754,130	10,960	
37	10/31/2017	88	7,965	8,380	4,833	753,240	11,198	
38	10/31/2017	86	7,973	8,733	4,860	753,640	11,880	
39	10/31/2017	88	7,767	7,964	4,986	752,720	11,362	

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**William Rodger OHI 5H
Stim 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
40	11/1/2017	89	7,731	8,002	4,938	742,920	11,580	
41	11/1/2017	87	7,777	8,062	5,443	749,520	11,242	
42	11/1/2017	89	7,986	8,368	4,884	750,820	11,102	
43	11/1/2017	88	8,128	8,433	4,959	752,410	11,138	
44	11/2/2017	90	7,917	8,208	4,932	750,400	11,012	
45	11/2/2017	90	7,758	8,016	5,432	750,800	11,218	
46	11/2/2017	89	7,803	8,162	4,912	752,180	11,020	
47	11/2/2017	88	7,874	8,762	4,981	751,660	11,036	
48	11/3/2017	88	7,768	8,224	4,628	750,520	11,036	
49	11/3/2017	89	7,589	8,035	4,949	758,360	11,054	
50	11/3/2017	90	7,587	7,942	5,266	760,360	10,958	
51	11/3/2017	89	7,622	8,024	5,261	752,380	10,906	
52	11/3/2017	88	7,691	8,026	5,269	756,030	10,934	
53	11/4/2017	89	7,804	8,814	5,241	751,040	10,884	
54	11/4/2017	90	7,761	8,223	4,809	754,240	10,922	
55	11/4/2017	88	7,690	8,112	4,805	747,090	10,762	
56	11/4/2017	89	7,693	8,219	4,865	753,550	10,854	
57	11/5/2017	90	7,620	7,811	4,966	758,880	11,264	
58	11/5/2017	90	7,750	8,136	5,076	755,160	10,740	
59	11/5/2017	89	7,680	8,027	4,866	753,880	10,790	
60	11/6/2017	90	7,454	7,980	5,105	754,480	10,794	
61	11/6/2017	90	7,615	7,915	5,046	748,560	10,872	
62	11/6/2017	89	7,777	8,925	5,433	752,560	10,666	
63	11/6/2017	89	7,688	8,119	5,429	753,720	10,702	
64	11/7/2017	90	7,726	8,605	4,901	760,840	10,654	
65	11/7/2017	90	7,488	7,951	5,151	746,840	10,582	
66	11/7/2017	90	7,508	8,042	5,061	751,960	10,562	
67	11/8/2017	90	7,730	8,056	4,987	748,840	10,562	
68	11/8/2017	90	7,602	8,429	5,015	747,040	10,390	
69	11/8/2017	90	7,259	7,536	5,020	751,500	10,502	
70	11/9/2017	91	7,576	8,350	4,945	749,960	10,436	
71	11/9/2017	89	7,464	8,121	4,845	751,720	10,290	
72	11/9/2017	90	7,434	8,099	5,023	750,060	10,534	
73	11/9/2017	88	7,509	7,802	5,092	749,140	10,596	
74	11/9/2017	85	7,268	7,555	5,246	754,600	10,484	
75	11/10/2017	88	7,502	7,741	5,244	753,120	10,554	

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Attachment 3

Well Name: **William Rodgers OHI 5H** 47069002000000

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)	6233.00	6099.00	6329.00	6180.00	
Cashaqua (shale)	6329.00	6180.00	6414.00	6249.00	
Middlesex (shale)	6414.00	6249.00	6535.00	6333.00	
Burket (shale)	6535.00	6333.00	6559.00	6348.00	
Tully (ls)	6559.00	6348.00	6614.00	6380.00	
Mahantango (shale)	6614.00	6380.00	6969.00	6513.00	
Marcellus (shale)	6969.00	6513.00	NA	NA	GAS

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/20/2017
Job End Date:	11/10/2017
State:	West Virginia
County:	Ohio
API Number:	47-069-00200-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	William Rodgers OHI 5H
Latitude:	40.10689500
Longitude:	-80.53218400
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,500
Total Base Water Volume (gal):	17,751,766
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	82.95134	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	15.78573	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.40000	0.93024	
			Hydrogen Chloride	7647-01-0	17.50000	0.21628	
WFRA-2000	U.S. Well Services, LLC	Friction Reducer					
			Water	7732-18-5	60.00000	0.05380	
			2-Propenoic acid, polymer with 2 propenamide	9003-06-9	30.00000	0.02690	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.02206	
BIOC11139A	Nalco Champion	Anti-Bacterial Agent					
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00576	
			Glutaraldehyde	111-30-8	10.00000	0.00192	
			Ethanol	64-17-5	5.00000	0.00075	

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SCAL16486A	Nalco Champion	Scale Inhibitor					
			Ethylene Glycol	107-21-1	30.00000	0.00239	
			Amine Triphosphate	Proprietary	30.00000	0.00214	
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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**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 5H*
Survey: *Definitive survey*

18 December 2017



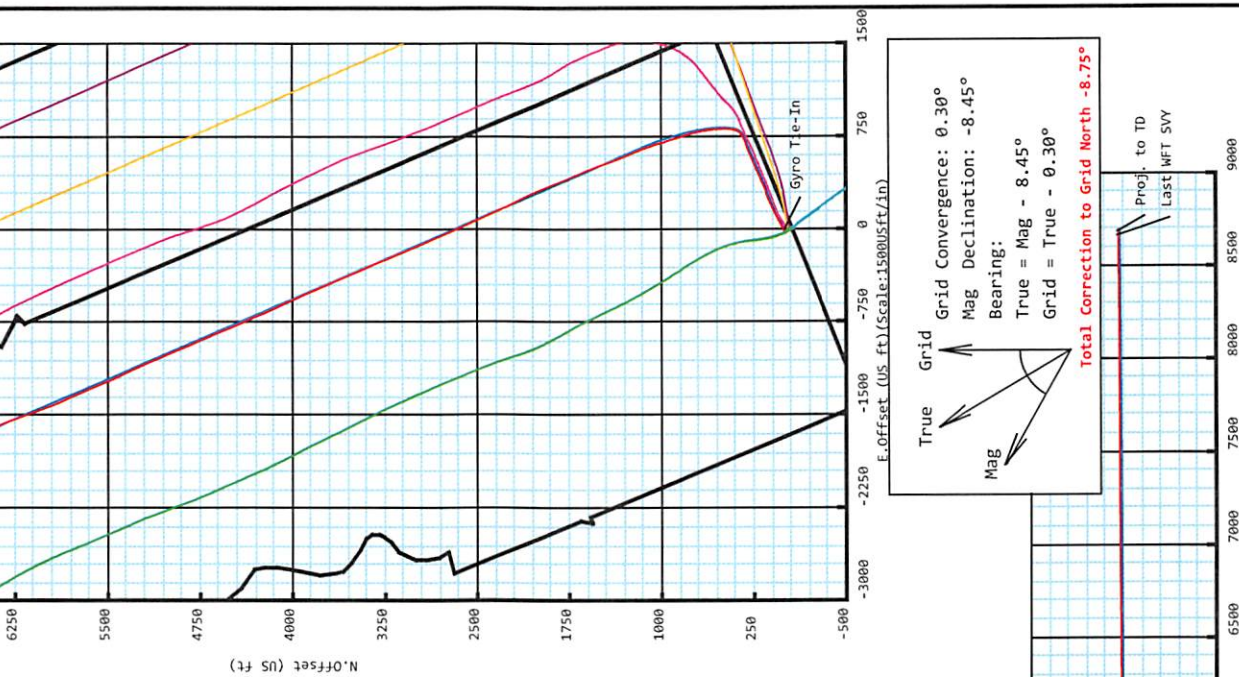


Southwestern Energy®
William Rodgers OHI 5H
Ohio County, WV

SDC 40

Plan vs Actual

KB: 1306'
GL: 1280'



Plan Data for William Rodgers OHI 5H

Dogleg Severity Unit: °/100.00ft		Plan Point Information:		Position offsets from Slot centre		DLS Toolface Comments	
MD (USft)	Inc (°)	Az (°)	TVD (USft)	+N/-S (USft)	+E/-W (USft)	VSec (DLSU)	(°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
26.00	0.00	0.00	26.00	0.00	0.00	0.00	0.0 KB Offset
550.00	0.00	0.00	550.00	0.00	0.00	0.00	0.0 Nudge #1
700.00	3.00	268.00	699.93	-0.14	-3.92	0.97	268.0 Hold
900.00	3.00	268.00	899.66	-0.50	-14.38	3.55	0.0 Drop
1200.00	0.00	0.00	1199.52	-0.78	-22.23	5.48	180.0 Hold
2200.48	0.00	0.00	2200.00	-0.78	-22.23	5.48	0.0 Nudge #2
2950.48	15.00	66.73	2941.46	37.79	67.44	17.39	2.00
5859.59	15.00	66.73	5751.44	335.29	759.11	109.19	0.0
6842.10	70.00	344.20	64084.15	899.11	748.99	653.26	7.00
7081.89	90.31	336.74	6525.00	1120.29	670.04	887.70	9.00
14948.48	90.31	336.74	6483.00	8347.50	-2436.22	8695.74	0.00

Target Set Information:
Name: William Rodgers 5H

Position offsets from Slot centre		Lat		Long	
Name	TVD (USft)	+N/-S (USft)	+E/-W (USft)	(°)	(°)
LP WRSH	6525.00	948.29	743.97	14566978.66	1771968.57
PBHL WRSH	6483.00	8347.50	-2436.22	14574377.87	1768788.38

Plan Data for William Rodgers OHI 5H
Field: SOUTHWESTERN_OHIO CO, WV UTM NAD 83 (17N)
Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / UTM zone 17N

Site: William Rodgers Pad
Unit: USFeet
Company Name: SOUTHWESTERN ENERGY
Position: Northing: 14566030.37USft Latitude: 40.106071°
Easting: 1771224.60USft Longitude: -80.532184°
North Reference: Grid
Grid Convergence: 0.30°
Elevation Above VPD: 1280.00USft

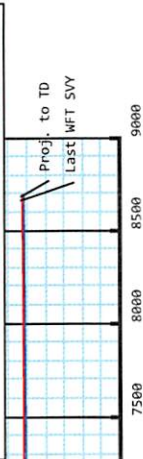
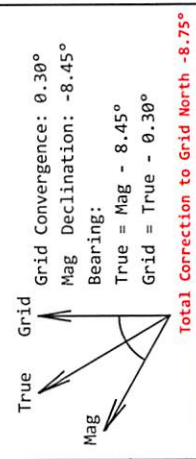
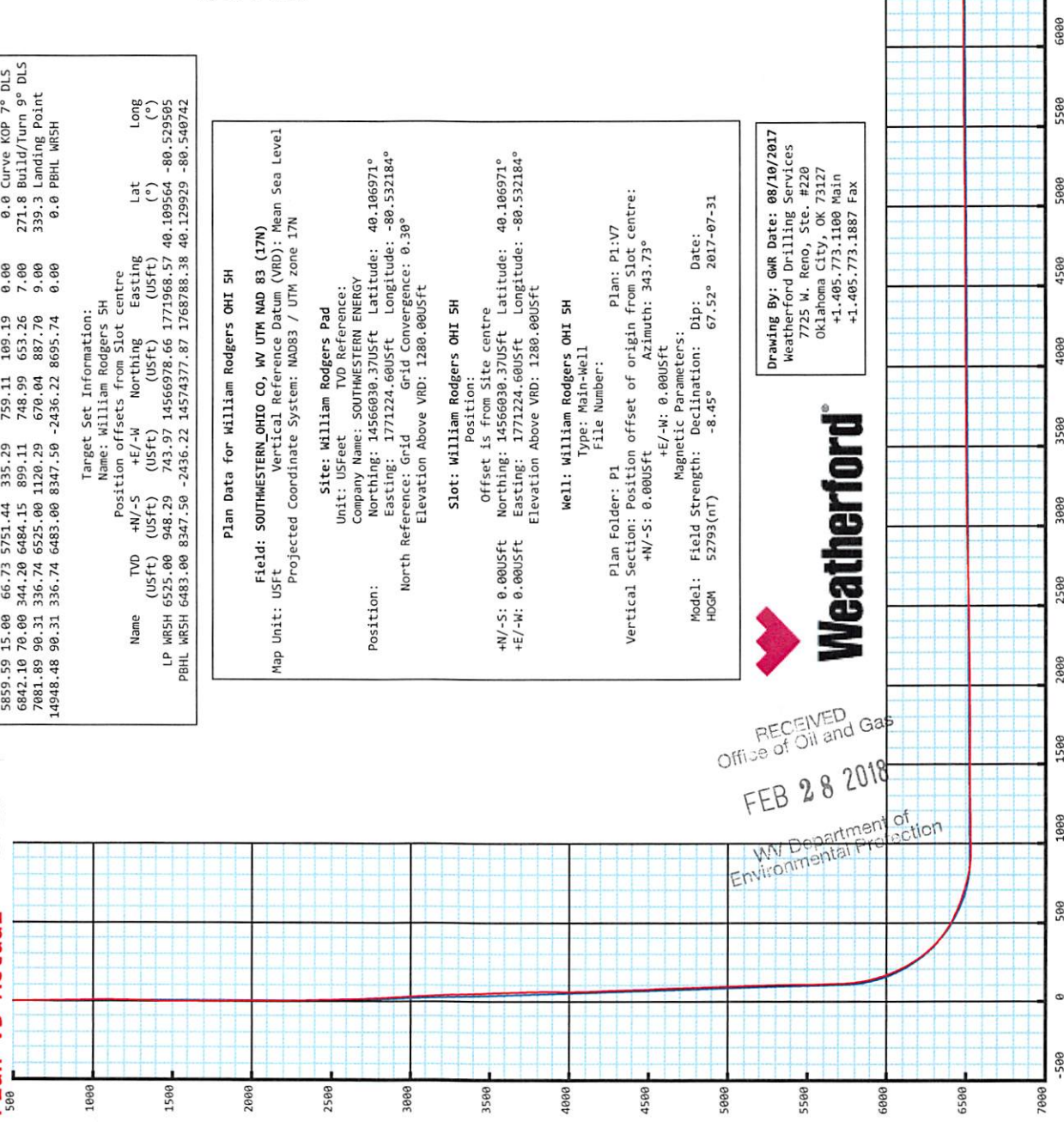
Slot: William Rodgers OHI 5H
Position: Offsets is from Site centre
+N/-S: 0.00USft Northing: 14566030.37USft Latitude: 40.106071°
+E/-W: 0.00USft Easting: 1771224.60USft Longitude: -80.532184°
Elevation Above VRD: 1280.00USft

Well: William Rodgers OHI 5H
Type: Main-Well
File Number:
Plan Folder: P1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 343.73°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
HOGM 52793(nT) -8.45° 67.52° 2017-07-31

Drawing By: GMR Date: 08/10/2017
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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William Rodgers OHI 5H

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

Site:	Units: US ft	North Reference: Grid	Convergence Angle: 0.30
William Rodgers Pad	Position:	Northing: 14566030.37 US ft	Latitude: 40.106971
		Easting: 1771224.60 US ft	Longitude: -80.532184
	Elevation above MSL: 1280.00 US ft		
	Comment:		

Slot:	Position (Relative to Site Centre)		
William Rodgers OHI 5H	+N/-S: 0.00 US ft	Northing: 14566030.37 US ft	Latitude: 40.106971
	+E/-W: 0.00 US ft	Easting: 1771224.60 US ft	Longitude: -80.532184
	Elevation above MSL: 1280.00 US ft		
	Comment:		

Well:	Type: Main well	UWI:
William Rodgers OHI 5H	File Number:	Comment:
	Closure Distance: 8695.03 US ft	Closure Azimuth: 343.74°
	Vertical Section: Position of Origin (Relative to Slot centre)	
	+N/-S: 0.00 US ft	+E/-W: 0.00 US ft
	Az: 343.73°	

Drill floor:	Survey Name: Definitive Survey		
Rig Height (Drill Floor):	Elevation above MSL:	Inclination: 0.00°	Azimuth: 0.00°
26.00us ft	1306.00us ft		

Survey Name: Definitive Survey			
Date: 02/Nov/2015	Survey Tool: See Survey	Comment:	Company:
<i>Tool Ranges below.</i>			

Magnetic Model:				
Model Name: HDGM	Date: 31/Jul/2017	Field Strength:	Declination: -8.45°	Dip: 67.52°
52793.0nT				

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

Survey Tool Ranges:			
Name	Start MD(USFt)	End MD(USFt)	Source Survey
GYRO-NS_OW	0.00	381.00	Gyro_01
MFAC_US_V2	381.00	779.00	WFT MWD_01-MFAC
MWD	779.00	2036.00	WFT MWD_01-MWD
MWD	2036.00	6174.00	WFT MWD_02
MWD	6174.00	14937.00	WFT MWD_03

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	40.106971	-80.532184	0.00	
23.00	0.00	0.00	23.00	0.00	0.00	0.00	40.106971	-80.532184	0.00	KB Offset
198.00	0.10	113.35	198.00	-0.10	-0.06	0.14	40.106971	-80.532183	0.06	
289.00	0.10	167.55	289.00	-0.23	-0.17	0.23	40.106971	-80.532183	0.10	
381.00	0.00	0.00	381.00	-0.31	-0.25	0.25	40.106970	-80.532183	0.11	Gyro Tie-In
442.00	0.04	289.33	442.00	-0.29	-0.24	0.23	40.106970	-80.532183	0.07	
503.00	0.53	328.01	503.00	-0.01	0.01	0.06	40.106971	-80.532184	0.82	
594.00	1.51	276.55	593.98	0.86	0.50	-1.36	40.106972	-80.532189	1.37	
686.00	3.30	272.95	685.90	2.20	0.77	-5.21	40.106973	-80.532202	1.95	
779.00	4.22	270.66	778.70	4.08	0.95	-11.30	40.106974	-80.532224	1.00	
872.00	4.99	267.73	871.40	6.05	0.83	-18.76	40.106974	-80.532251	0.87	
965.00	4.00	265.99	964.11	7.72	0.44	-26.04	40.106973	-80.532277	1.07	
1057.00	2.45	254.14	1055.96	8.42	-0.32	-31.13	40.106971	-80.532295	1.83	
1150.00	1.03	208.22	1148.92	7.83	-1.60	-33.44	40.106967	-80.532304	2.03	
1243.00	1.54	141.47	1241.90	6.08	-3.31	-33.06	40.106962	-80.532302	1.59	
1336.00	2.53	121.72	1334.84	3.40	-5.37	-30.53	40.106957	-80.532293	1.29	
1429.00	1.30	131.67	1427.79	0.98	-7.15	-28.00	40.106952	-80.532284	1.37	
1521.00	0.21	306.67	1519.78	0.23	-7.74	-27.35	40.106950	-80.532282	1.64	
1614.00	0.43	291.97	1612.78	0.58	-7.51	-27.82	40.106951	-80.532284	0.25	
1707.00	0.81	310.54	1705.78	1.35	-6.95	-28.64	40.106952	-80.532286	0.46	
1799.00	0.77	27.92	1797.77	2.34	-5.98	-28.84	40.106955	-80.532287	1.07	
1892.00	1.51	72.64	1890.75	2.81	-5.07	-27.38	40.106958	-80.532282	1.19	
1984.00	2.02	71.73	1982.71	2.89	-4.20	-24.68	40.106960	-80.532272	0.56	
2036.00	2.62	69.82	2034.67	3.00	-3.50	-22.70	40.106962	-80.532265	1.16	
2109.00	3.35	66.41	2107.57	3.39	-2.07	-19.18	40.106966	-80.532253	1.03	
2201.00	3.74	62.79	2199.39	4.30	0.38	-14.05	40.106972	-80.532234	0.49	
2294.00	3.43	60.09	2292.21	5.53	3.15	-8.94	40.106980	-80.532216	0.38	
2386.00	3.20	55.20	2384.05	6.99	5.99	-4.44	40.106988	-80.532200	0.40	
2479.00	4.46	52.49	2476.84	9.13	9.67	0.56	40.106998	-80.532182	1.37	
2572.00	6.31	57.80	2569.43	11.84	14.60	7.75	40.107011	-80.532156	2.06	
2664.00	8.52	63.22	2660.66	14.47	20.36	18.11	40.107027	-80.532119	2.52	
2757.00	10.77	62.13	2752.34	17.48	27.53	31.95	40.107046	-80.532069	2.43	
2850.00	13.02	59.57	2843.33	21.79	36.90	48.67	40.107072	-80.532009	2.48	
2942.00	15.14	62.63	2932.57	26.64	47.67	68.27	40.107101	-80.531939	2.44	
3035.00	15.22	63.56	3022.32	31.13	58.69	89.99	40.107131	-80.531861	0.28	
3125.00	14.45	61.93	3109.32	35.51	69.24	110.48	40.107160	-80.531788	0.97	
3217.00	13.62	61.16	3198.57	40.22	79.86	130.09	40.107188	-80.531717	0.92	
3310.00	14.66	65.55	3288.76	44.28	90.02	150.40	40.107216	-80.531644	1.61	
3403.00	14.86	65.87	3378.69	47.58	99.76	171.99	40.107243	-80.531567	0.23	
3496.00	14.06	63.67	3468.74	51.18	109.65	193.00	40.107269	-80.531492	1.04	
3588.00	15.34	66.59	3557.73	54.65	119.44	214.19	40.107296	-80.531416	1.61	
3681.00	15.44	67.93	3647.40	57.43	128.98	236.95	40.107322	-80.531334	0.40	
3774.00	14.41	65.79	3737.26	60.28	138.38	258.98	40.107347	-80.531255	1.26	
3867.00	14.59	73.02	3827.30	62.02	146.54	280.74	40.107369	-80.531177	1.95	
3959.00	14.05	75.07	3916.45	61.91	152.81	302.61	40.107386	-80.531099	0.81	
4052.00	12.24	74.72	4007.00	61.47	158.31	323.03	40.107401	-80.531026	1.95	
4145.00	12.46	67.51	4097.86	62.39	164.75	341.81	40.107419	-80.530958	1.67	
4237.00	12.43	60.36	4187.70	65.75	173.44	359.58	40.107442	-80.530895	1.67	
4330.00	13.01	65.19	4278.42	69.62	182.78	377.79	40.107468	-80.530829	1.30	
4423.00	13.45	66.53	4368.95	72.53	191.48	397.21	40.107491	-80.530760	0.58	
4515.00	14.82	65.35	4458.17	75.59	200.65	417.72	40.107516	-80.530686	1.52	
4608.00	15.32	64.59	4547.97	79.27	210.89	439.63	40.107544	-80.530608	0.58	
4701.00	15.70	64.90	4637.58	83.16	221.50	462.12	40.107573	-80.530527	0.42	
4793.00	16.59	68.09	4725.95	86.36	231.68	485.58	40.107600	-80.530443	1.37	
4886.00	16.32	67.59	4815.14	89.06	241.61	509.97	40.107627	-80.530356	0.33	
4979.00	16.90	68.49	4904.26	91.69	251.55	534.63	40.107654	-80.530267	0.68	
5071.00	16.68	67.10	4992.34	94.44	261.59	559.23	40.107681	-80.530179	0.50	
5164.00	15.75	65.91	5081.64	97.70	271.94	583.05	40.107709	-80.530094	1.06	
5257.00	16.38	67.74	5171.01	100.78	282.06	606.71	40.107737	-80.530009	0.87	

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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
5349.00	16.44	66.87	5259.26	103.69	292.09	630.69	40.107764	-80.529923	0.27	
5442.00	16.14	70.77	5348.53	105.93	301.51	655.00	40.107790	-80.529836	1.22	
5535.00	14.92	71.21	5438.13	107.12	309.63	678.54	40.107811	-80.529751	1.32	
5627.00	14.92	70.84	5527.03	108.24	317.33	700.94	40.107832	-80.529671	0.10	
5720.00	16.30	67.05	5616.60	110.36	326.35	724.27	40.107857	-80.529588	1.84	
5813.00	15.59	64.80	5706.02	113.82	336.76	747.59	40.107885	-80.529504	1.01	
5859.00	15.47	58.30	5750.35	116.41	342.61	758.41	40.107901	-80.529465	3.79	
5905.00	16.03	49.68	5794.63	120.64	349.95	768.47	40.107921	-80.529429	5.23	
5951.00	16.73	39.89	5838.77	126.91	359.14	777.56	40.107946	-80.529396	6.18	
5998.00	18.04	31.53	5883.63	135.57	370.54	785.71	40.107977	-80.529367	5.99	
6044.00	20.26	23.82	5927.09	146.45	383.90	792.65	40.108014	-80.529342	7.31	
6091.00	21.78	17.29	5970.96	159.94	399.67	798.53	40.108057	-80.529321	5.94	
6137.00	23.14	11.35	6013.48	175.07	416.68	802.84	40.108104	-80.529305	5.75	
6174.00	25.60	7.86	6047.18	188.81	431.73	805.37	40.108145	-80.529296	7.70	
6266.00	29.87	1.47	6128.61	228.79	474.35	808.68	40.108262	-80.529283	5.65	
6313.00	33.01	357.79	6168.71	252.37	498.85	808.48	40.108329	-80.529283	7.83	
6359.00	36.63	355.48	6206.47	277.97	525.06	806.92	40.108401	-80.529288	8.37	
6405.00	40.45	354.97	6242.44	306.05	553.62	804.53	40.108480	-80.529296	8.33	
6452.00	43.85	354.73	6277.28	336.99	585.03	801.69	40.108566	-80.529306	7.24	
6498.00	47.57	352.62	6309.40	369.42	617.74	798.05	40.108656	-80.529318	8.73	
6544.00	51.72	350.10	6339.18	404.15	652.38	792.76	40.108751	-80.529336	9.94	
6591.00	54.77	348.02	6367.31	441.64	689.35	785.60	40.108853	-80.529361	7.39	
6637.00	58.12	345.82	6392.73	479.91	726.67	776.92	40.108955	-80.529392	8.30	
6684.00	62.01	344.81	6416.18	520.61	766.06	766.59	40.109064	-80.529428	8.48	
6730.00	65.34	343.68	6436.58	561.83	805.73	755.39	40.109173	-80.529467	7.57	
6776.00	68.34	342.87	6454.67	604.12	846.23	743.21	40.109284	-80.529510	6.72	
6823.00	70.61	342.79	6471.14	648.13	888.28	730.22	40.109400	-80.529556	4.83	
6869.00	72.48	342.32	6485.71	691.75	929.91	717.14	40.109514	-80.529602	4.18	
6916.00	73.96	342.15	6499.27	736.73	972.76	703.41	40.109632	-80.529650	3.17	
6962.00	75.54	342.52	6511.37	781.10	1015.05	689.94	40.109748	-80.529697	3.52	
7008.00	79.46	342.29	6521.33	825.99	1057.85	676.37	40.109866	-80.529745	8.54	
7055.00	84.07	341.81	6528.06	872.47	1102.09	662.04	40.109988	-80.529795	9.86	
7101.00	87.78	339.45	6531.33	918.28	1145.36	646.82	40.110107	-80.529849	9.55	
7148.00	90.62	337.72	6531.98	965.08	1189.11	629.66	40.110227	-80.529910	7.08	
7240.00	90.55	337.08	6531.04	1056.51	1274.04	594.31	40.110461	-80.530034	0.70	
7333.00	90.62	339.68	6530.09	1149.09	1360.48	560.05	40.110699	-80.530155	2.80	
7426.00	90.74	339.73	6528.99	1241.86	1447.70	527.79	40.110939	-80.530269	0.14	
7519.00	91.32	340.32	6527.32	1334.65	1535.09	496.03	40.111179	-80.530381	0.89	
7611.00	90.06	337.82	6526.21	1426.33	1621.01	463.17	40.111416	-80.530497	3.04	
7704.00	89.94	336.63	6526.21	1518.73	1706.75	427.17	40.111652	-80.530624	1.29	
7797.00	89.63	337.49	6526.56	1611.09	1792.40	390.92	40.111887	-80.530752	0.98	
7889.00	89.88	338.65	6526.95	1702.64	1877.74	356.56	40.112122	-80.530873	1.29	
7982.00	90.55	338.28	6526.60	1795.25	1964.25	322.43	40.112360	-80.530994	0.82	
8075.00	90.43	334.91	6525.81	1887.51	2049.58	285.49	40.112595	-80.531124	3.63	
8167.00	90.43	333.11	6525.12	1978.19	2132.27	245.18	40.112823	-80.531267	1.96	
8260.00	90.55	333.45	6524.32	2069.64	2215.33	203.36	40.113052	-80.531415	0.39	
8353.00	90.68	335.07	6523.32	2161.36	2299.10	162.98	40.113282	-80.531558	1.75	
8445.00	91.17	335.36	6521.84	2252.34	2382.61	124.42	40.113512	-80.531694	0.62	
8538.00	90.74	336.23	6520.29	2344.43	2467.42	86.29	40.113745	-80.531829	1.04	
8631.00	90.80	336.87	6519.04	2436.69	2552.73	49.29	40.113980	-80.531960	0.69	
8724.00	90.86	335.81	6517.69	2528.91	2637.91	11.97	40.114215	-80.532091	0.85	
8816.00	90.92	336.59	6516.26	2620.11	2722.07	-25.15	40.114446	-80.532223	0.52	
8909.00	90.86	337.07	6514.82	2712.42	2807.56	-61.74	40.114682	-80.532352	1.20	
9002.00	91.54	336.19	6512.87	2804.69	2892.91	-98.62	40.114917	-80.532482	1.23	
9094.00	90.86	337.09	6510.94	2895.96	2977.35	-135.09	40.115149	-80.532611	0.94	
9187.00	91.17	337.91	6509.30	2988.40	3063.26	-170.67	40.115385	-80.532737	0.34	
9280.00	90.92	337.71	6507.60	3080.89	3149.35	-205.79	40.115622	-80.532861	0.39	
9372.00	90.80	337.37	6506.22	3172.34	3234.37	-240.94	40.115856	-80.532985	0.50	
9465.00	90.74	336.91	6504.97	3264.72	3320.05	-277.06	40.116092	-80.533112		

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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
9558.00	90.62	336.05	6503.87	3356.96	3405.32	-314.17	40.116327	-80.533244	0.93	
9650.00	90.55	337.15	6502.93	3448.25	3489.75	-350.71	40.116559	-80.533373	1.20	
9743.00	90.00	336.46	6502.48	3540.57	3575.23	-387.34	40.116794	-80.533502	0.95	
9836.00	90.25	336.70	6502.28	3632.84	3660.57	-424.30	40.117029	-80.533633	0.37	
9925.00	90.25	337.00	6501.89	3721.20	3742.40	-459.29	40.117254	-80.533756	0.34	
10018.00	90.25	336.23	6501.48	3813.48	3827.76	-496.20	40.117489	-80.533887	0.83	
10111.00	90.25	335.89	6501.08	3905.65	3912.76	-533.94	40.117723	-80.534020	0.37	
10203.00	90.62	335.99	6500.38	3996.80	3996.76	-571.44	40.117955	-80.534153	0.42	
10296.00	90.43	334.71	6499.53	4088.80	4081.28	-610.23	40.118187	-80.534290	1.39	
10389.00	90.00	335.16	6499.18	4180.71	4165.52	-649.63	40.118419	-80.534429	0.67	
10481.00	90.31	337.16	6498.93	4271.90	4249.67	-686.81	40.118651	-80.534561	2.20	
10574.00	90.06	335.84	6498.63	4364.16	4334.95	-723.89	40.118885	-80.534692	1.44	
10667.00	90.12	336.51	6498.48	4456.35	4420.03	-761.46	40.119120	-80.534824	0.72	
10760.00	90.35	336.62	6498.10	4548.62	4505.36	-798.45	40.119354	-80.534955	0.27	
10850.00	90.06	338.22	6497.78	4638.07	4588.45	-833.00	40.119583	-80.535077	1.81	
10942.00	90.18	337.10	6497.59	4729.56	4673.55	-867.97	40.119817	-80.535201	1.22	
11032.00	89.94	336.18	6497.49	4818.87	4756.17	-903.66	40.120045	-80.535327	1.06	
11125.00	90.00	336.62	6497.54	4911.11	4841.39	-940.89	40.120279	-80.535458	0.48	
11217.00	90.80	337.40	6496.90	5002.47	4926.08	-976.82	40.120512	-80.535585	1.21	
11310.00	90.99	336.71	6495.45	5094.83	5011.71	-1013.07	40.120748	-80.535713	0.77	
11400.00	91.17	336.99	6493.75	5184.16	5094.45	-1048.45	40.120976	-80.535838	0.37	
11493.00	90.37	335.98	6492.50	5276.41	5179.72	-1085.55	40.121210	-80.535969	1.39	
11586.00	90.00	335.72	6492.20	5368.53	5264.57	-1123.60	40.121444	-80.536104	0.49	
11678.00	90.74	335.41	6491.60	5459.60	5348.33	-1161.65	40.121675	-80.536239	0.87	
11771.00	91.60	334.78	6489.71	5551.52	5432.66	-1200.81	40.121907	-80.536377	1.15	
11864.00	89.57	337.59	6488.76	5643.70	5517.73	-1238.35	40.122141	-80.536510	3.73	
11957.00	90.31	337.31	6488.85	5736.14	5603.62	-1274.02	40.122377	-80.536636	0.85	
12050.00	90.31	335.86	6488.35	5828.41	5688.96	-1310.97	40.122612	-80.536766	1.56	
12142.00	89.75	335.55	6488.30	5919.51	5772.81	-1348.82	40.122843	-80.536900	0.70	
12235.00	90.25	336.23	6488.30	6011.64	5857.69	-1386.81	40.123076	-80.537034	0.91	
12328.00	90.06	337.87	6488.05	6104.01	5943.33	-1423.08	40.123312	-80.537163	1.78	
12421.00	90.18	338.93	6487.86	6196.60	6029.80	-1457.31	40.123550	-80.537283	1.15	
12514.00	90.00	340.73	6487.71	6289.38	6117.09	-1489.38	40.123790	-80.537396	1.95	
12606.00	90.74	341.28	6487.12	6381.28	6204.08	-1519.32	40.124030	-80.537502	1.00	
12699.00	90.06	339.36	6486.47	6474.10	6291.64	-1550.64	40.124270	-80.537612	2.19	
12792.00	90.18	337.75	6486.27	6566.72	6378.20	-1584.64	40.124509	-80.537732	1.74	
12885.00	90.53	336.26	6485.70	6659.08	6463.80	-1620.97	40.124744	-80.537861	1.65	
12977.00	90.68	337.55	6484.72	6750.42	6548.42	-1657.05	40.124977	-80.537988	1.41	
13070.00	90.00	336.79	6484.17	6842.81	6634.14	-1693.13	40.125213	-80.538116	1.10	
13163.00	90.37	335.71	6483.87	6935.01	6719.26	-1730.59	40.125447	-80.538248	1.23	
13256.00	90.49	334.86	6483.17	7027.00	6803.74	-1769.47	40.125680	-80.538386	0.92	
13349.00	90.12	334.71	6482.68	7118.87	6887.87	-1809.09	40.125911	-80.538526	0.43	
13441.00	90.31	335.45	6482.33	7209.82	6971.31	-1847.85	40.126141	-80.538663	0.83	
13534.00	90.06	337.32	6482.03	7302.05	7056.51	-1885.11	40.126376	-80.538795	2.03	
13627.00	90.18	337.84	6481.84	7394.52	7142.48	-1920.58	40.126612	-80.538920	0.57	
13720.00	90.00	338.20	6481.69	7487.06	7228.72	-1955.38	40.126849	-80.539043	0.43	
13812.00	90.25	337.91	6481.49	7578.61	7314.06	-1989.77	40.127084	-80.539164	0.42	
13905.00	90.37	335.86	6480.99	7670.94	7399.58	-2026.27	40.127320	-80.539293	2.21	
13998.00	90.18	335.46	6480.54	7763.01	7484.32	-2064.60	40.127553	-80.539429	0.48	
14091.00	90.12	336.93	6480.30	7855.21	7569.40	-2102.14	40.127787	-80.539561	1.58	
14184.00	90.31	336.79	6479.95	7947.54	7654.92	-2138.69	40.128022	-80.539691	0.25	
14276.00	90.18	337.45	6479.56	8038.93	7739.68	-2174.45	40.128256	-80.539817	0.73	
14369.00	90.12	337.44	6479.31	8131.37	7825.57	-2210.13	40.128492	-80.539943	0.07	
14462.00	90.06	337.23	6479.17	8223.79	7911.38	-2245.96	40.128728	-80.540070	0.23	
14555.00	90.37	336.72	6478.82	8316.14	7996.97	-2282.34	40.128964	-80.540198	0.64	
14648.00	90.62	336.72	6478.01	8408.44	8082.40	-2319.09	40.129199	-80.540328	0.27	
14740.00	90.37	337.15	6477.22	8499.79	8167.04	-2355.13	40.129432	-80.540455	0.54	
14830.00	90.55	335.97	6476.50	8589.08	8249.61	-2390.93	40.129659	-80.540582	1.33	

RECEIVED
Office of Oil and Gas
FEB 28 2018
Weatherford International

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
14914.00	90.74	335.56	6475.55	8672.27	8326.20	-2425.41	40.129870	-80.540704	0.54	Last WFT SVY
14937.00	90.74	335.56	6475.25	8695.03	8347.14	-2434.93	40.129928	-80.540738	0.00	Proj. to TD

RECEIVED
Office of Oil and Gas
FEB 28 2018
WV Department of
Environmental Protection

Longitude: 80°30'00"

SURFACE HOLE 8980'

Longitude: 80°10'00" BOTTOM HOLE 11378'

SURFACE HOLE 6578'

BOTTOM HOLE 13190'

Latitude: 40°07'20"

Latitude: 40°07'30"

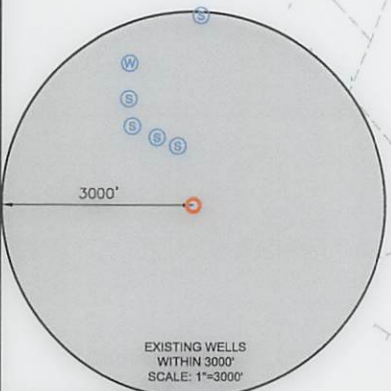
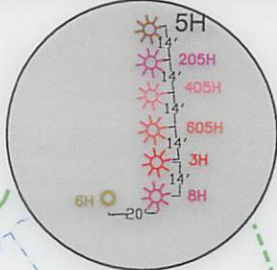
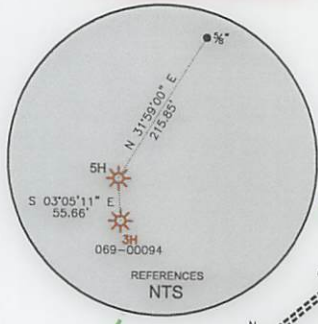


CIVIL & ENVIRONMENTAL CONSULTANTS, INC. 600 MARKETPLACE AVENUE, SUITE 200 BRIDGEPORT, WV 26330 304-933-3119

SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,439,734.923 EASTING: 539,870.328 LANDING POINT (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,440,023.991 EASTING: 540,097.113 BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,442,279.259 EASTING: 539,127.776

PERMIT SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,439,734.923 EASTING: 539,870.328 PERMIT LANDING POINT (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,440,018.339 EASTING: 540,088.891 PERMIT BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,442,279.192 EASTING: 539,128.136

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



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 959 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.
3. 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 SURVEY GRADE GPS ELEVATION: (NAVD 88, US FT)

WILLIAM RODGERS OHI OPERATOR'S WELL #: 5H API WELL #: 47 STATE 069 COUNTY 00200 PERMIT

WELL TYPE: OIL [] WASTE DISPOSAL [] PRODUCTION [X] DEEP [] GAS [X] LIQUID INJECTION [] STORAGE [] SHALLOW [X] WATERSHED: WHEELING CREEK DISTRICT: LIBERTY COUNTY: OHIO SURFACE OWNER: WILLIAM I RODGERS & DOUGLAS W RODGERS OIL & GAS ROYALTY OWNER: WILLIAM I RODGERS & DOUGLAS W RODGERS DRILL [] DRILL DEEPER [] REDRILL [] FRACTURE OR STIMULATE [] PLUG OFF OLD FORMATION [] PERFORATE NEW FORMATION [] CONVERT [] PLUG & ABANDON [] CLEAN OUT & REPLUG [] OTHER CHANGE [X] (SPECIFY) ASDRILLED TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6547 TVD 15,070 TMD

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

Table with 3 columns: LEGEND, REVISIONS, DATE. Legend includes Proposed Surface Hole, Existing Wellhead, Landing Point, Existing Water Well, Existing Spring, Surveyed Boundary, Drilling Unit, Lease Boundary, Asdrilled Path, Proposed Path. Revisions and Date are blank.



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

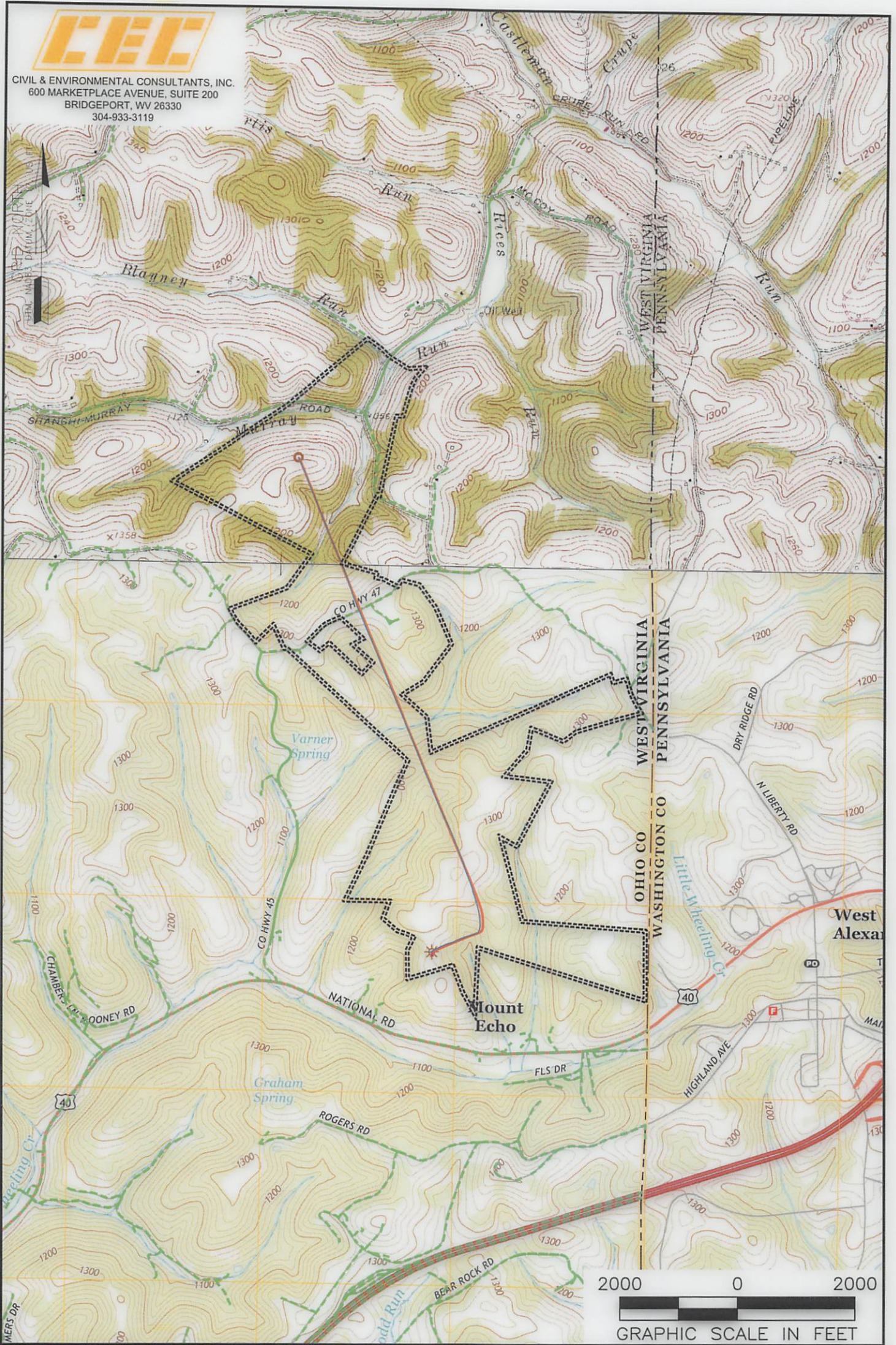
WELL BORE TABLE FOR SURFACE OWNERS			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	William I. Rodgers & Douglas Wayne Rodgers (S/R)	3-L12-1	143.09
2	TUNNEL RIDGE, LLC (S) LOIS MILLER (R) ALICE ANDERSON (R)	3-L12-4.6	60.00
3	JEFFREY S. & DANA R. OCH	3-L12-2.1	44.145
4	THELMA A. MILLER LIFE ESTATE (S/R) CARL E. MILLER JR., REMAINDERMAN (S/R)	3-L9-15	54.91
5	WILLIAM H. BALL & LARRY G. BALL	3-L9-11	44.69
6	WILLIAM E. NOBLE	3-L9-14	47.28
7	CHARLES P. & D E SMITH	3-L9-10	3.622
8	CHARLES P. & D E SMITH	3-L9-14.1	0.450
9	LARRY G. BALL	3-L8-42	51.77
10	ROBERT F. & N C REASS	3-L9-1	173.9

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	SUSAN J. HARDMAN	3-L8-37	2.34
H	BERNARD T. & PATRICIA ADAMS	3-L8-37.1	1.314
I	DAVID ELWOOD DAVIS	3-L8-35	161.00
J	JODY LEE SHILLING	3-L8-10	40.1
K	ROBERT C. JONES	3-L8-11	168.6125
L	GEORGE E. PORTER III	3-L8-9.5	7.502
M	MARGARET ANN PORTER	3-L8-9.2	2.261
N	LESLIE K. REEDY	3-L8-9.4	14.65
O	GLENN A. DILLE	3-L8-9.7	105.0
P	DELMER K. & V G LOEW	3-L6-19	139.49375
Q	RODNEY G. & JESSICA J. PLANTS	3-L9-2.2	1.2
R	RODNEY G. & JESSICA J. PLANTS	3-L9-2.3	0.45
S	RODNEY G. & JESSICA J. PLANTS	3-L9-2	112.08
T	MICHAEL H. FISHER	3-L9-6.6	29.065
U	WM H & D M BALL	9-L9-6.3	2.0051
V	WM H & D M BALL	3-L9-8	0.5
W	WM H & D M BALL	3-L9-6.2	0.2362
X	DANIEL LEE & DIANE L. HENRY	3-L9-6.5	30.278
Y	THELMA A. MILLER	3-L9-15.4	62.25
Z	THELMA A. MILLER	3-L9-15.3	42.38
AA	CARL E. III & J E MILLER	3-L9-15.2	1.00
BB	BERNIE & EVERETT METZ	3-L9-17	20.377
CC	KEVIN R. & J A WURTZBACHER	3-L9-17.3	1.09
DD	WILLIAM R. & JEAN W. WURTZBACHER	3-L9-17.1	4.252
EE	RAYMOND M. & H E MILLER	3-L12-2	81.355
FF	HILDA E. MILLER	230-007-00-00-0012-00	6.935
GG	JACK M. & J DILLIE	3-L12-4.1	9.63
HH	WILLIAM H & E P BALL	3-L8-40	1.15
II	PATRICK & PAMELA LEONARD	3-L8-38	5.0
JJ	PATRICK & PAMELA LEONARD	3-L9-9	2.055

REVISIONS:	COMPANY:		
	OPERATOR'S	WILLIAM RODGERS OHI	
	WELL #:	5H	
	DISTRICT:	COUNTY:	STATE:
	LIBERTY	OHIO	WV
			DATE: 02-14-2018
			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.
4. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- LPL* LANDING POINT LOCATION
- FLOOD PLAIN
- 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 # SERIAL #
 5H XXXX

DISTRICT;
 LIBERTY