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

	BROOKE		
Quad BETHANY Pad Na	ne ALAN H. DEGA	ARMO BRK PAD Field/Pool Nan	ne PANHANDLE FIELD WET
Farm name ALAN & MARY KAY DEGARMO		Well Number	ALAN H. DEGARMO BRK 1
Operator (as registered with the OOG) SWN PR	ODUCTION CO	OMPANY, LLC	
Address PO BOX 12359	City SPRING	State TX	Zip 77391-2359
Top hole Northing 4.4.  Landing Point of Curve Northing 4.4.  Bottom Hole Northing 4.4.  Elevation (ft) 1204 GL Type  Permit Type Deviated Horizontal  Type of Operation Convert Deepen IV.  Well Type Brine Disposal CBM Gas	of Well New Horizontal 6A  Orill Plug B  Oil Secondary  Historial Produced   Fresh Water	□ Vertical Depth Ty  Back □ Redrilling □ Rew  Recovery □ Solution Mining	eport
Oate completion activities began02/14/20 Verbal plugging (Y/N) N Date permission Please note: Operator is required to submit a plugg Freshwater depth(s) ft212 Foalt water depth(s) ft428 Foal depth(s) ft271	on granted ing application w Open Void(	N/A Granted by	N/A
s coal being mined in area (Y/N)	N	_	2000
Reviewed			Reviewed by: 07/20/2

WERE TRACERS USED Yes No

Rev. 8/23/13 API 47-009 -Farm name\_ALAN & MARY KAY DEGARMO Well number\_ALAN H. DEGARMO BRK 1H 00193 **CASING** Hole Did cement circulate (Y/N) Casing New or Grade **Rasket** Depth(s) STRINGS Size Size Depth Used wt/ft Provide details below\* Conductor 26 20 126 **NEW** J-55/94# Surface **Y. 15 BBLS** 17.5 13.375 373 NEW J-55/54.50# 264.4' & 245' Coal SEE SURFACE Intermediate I 12.25 Y, 10 BBLS 9.625 1686 NEW J-55/36# Intermediate 2 Intermediate 3 Production 8.75/8.50 Υ 5.5 13267 NEW HCP-110/20# Tubing 2.375 6665 NEW N P-110/4.7# Packer type and depth set Comment Details Packer Element - 257.8', Packer Element below - 261' CEMENT woc Class/Type Number Slurry Yield Volume Cement DATA of Cement of Sacks (ft 3/sks) wt (ppg) (£3) Top (MD) (hrs) Conductor GROUT TO SURFACE **CLASS A** SURFACE 24 Surface CLASS A 247/297 15.60 1.20/1.19 296.4/353.43 **SURFACE** 8 Coal SEE SURFACE Intermediate 1 CLASS A 963 15.60 1.20 1155.6 SURFACE 8 Intermediate 2 Intermediate 3 Production **CLASS A** 2443 15.60 1.19 2907.17 **SURFACE** 24 Tubing Drillers TD (ft) 13267 Loggers TD (ft) 13267 Deepest formation penetrated MARCELLUS Plug back to (ft) NA Plug back procedure N/A RECEIVED Office of Oil and Gas Kick off depth (ft) 5080 Check all wireline logs run acaliper = density deviated/directional □ induction neutron **■** resistivity B gamma ray **■** temperature **□sonic** Environmental Protection Well cored □ Yes ■ No. Conventional Sidewall Were cuttings collected ☐ Yes 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

TYPE OF TRACER(S) USED

API 47- 009 - 00193 Farm name ALAN & MARY KAY DEGARMO Well number ALAN H. DEGARMO BRK 1H

#### PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE	ATTACHMEN			
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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)
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Please insert additional pages as applicable.

#### ALAN H DEGARMO BRK 1H

ALAN H DEGARINO BRK 1H							
STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG			
1	2/14/2018	12,958	13,140	42			
2	2/15/2018	12,698	12,895	42			
3	2/16/2018	12,438	12,635	42			
4	2/16/2018	12,178	12,375	42			
5	2/17/2018	11,915	12,115	42			
6	2/17/2018	11,658	11,855	42			
7	2/18/2018	11,398	11,595	42			
8	2/18/2018	11,138	11,335	42			
9	2/18/2018	10,878	11,075	42			
10	2/18/2018	10,618	10,815	42			
11	2/19/2018	10,358	10,555	42			
12	2/19/2018	10,098	10,295	42			
13	2/19/2018	9,838	10,035	42			
14	2/20/2018	9,578	9,775	42			
15	2/20/2018	9,318	9,515	42			
16	2/20/2018	9,061	9,255	42			
17	2/20/2018	8,798	8,995	42			
18	2/20/2018	8,538	8,735	42			
19	2/20/2018	8,278	8,475	42			
20	2/21/2018	8,018	8,215	42			
21	3/30/2018	7,758	7,955	42			
22	3/30/2018	7,498	7,695	42			
23	3/30/2018			- 10.0			
24	2/21/2018	6,978	7,175	42			
25	2/21/2018	6,718	6,915	42			

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MAY 1 6 2018

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ALAN H DEGARMO BRK 1H ATTACHMENT 2 STIM REPORT

	STIM REPORT								
AGE 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/othe	
1	2/15/2018	97	7,855	8,950	4,293	504,020	10,201		
2	2/15/2018	99	8,188	8,649	4,291	496,580	7,492		
3	2/16/2018	100	7,564	8,315	4,395	501,680	7,901		
4	2/17/2018	98	7,858	9,084	4,195	496,820	7,752		
5	2/17/2018	96	7,655	8,646	4,522	505,020	8,706		
6	2/17/2018	98	7,684	8,757	4,413	501,660	7,070		
7	2/18/2018	99	7,597	8,304	4,204	506,980	7,217		
8	2/18/2018	99	7,618	8,714	4,020	492,040	7,390		
9	2/18/2018	98	7,720	9,013	4,276	511,000	8,258		
10	2/19/2018	96	7,126	7,914	4,191	497,900	7,763		
11	2/19/2018	99	7,727	8,631	4,143	490,920	7,632		
12	2/19/2018	98	7,560	8,687	4,238	492,180	7,766		
13	2/20/2018	100	7,490	8,116	4,318	497,020	7,024		
14	2/20/2018	100	7,252	7,581	4,332	497,400	7,208		
15	2/20/2018	100	7,456	8,491	4,051	500,180	7,446		
16	2/20/2018	98	7,252	8,181	4,068	502,280	7,187		
17	2/20/2018	100	7,051	7,960	4,028	507,880	7,318		
18	2/20/2018	100	6,911	7,374	4,418	496,240	6,054		
19	2/21/2018	100	6,654	7,774	4,503	502,340	6,252		
20	2/21/2018	100	6,543	7,025	4,096	500,320	6,222		
21	2/21/2018	99	6,915	9,184	3,944	510,640	7,277		
22	2/21/2018	100	6,664	7,251	3,873	506,820	7,084		
23	2/21/2018	100	6,683	7,171	4,092	494,860	6,904		
24	2/21/2018	100	6,415	7,253	4,272	498,020	6,984		
25	2/22/2018	99				504,340			

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MAY 1 6 2018

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Well Name:

Alan H Degarmo BRK 1H

47009001930000

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	212.00	212.00	
Top of Salt Water	428.00	428.00	NA	NA	
Pittsburgh Coal	271.00	271.00	NA	NA	
Pottsville (ss)	420.00	420.00	499.00	499.00	
Mauch Chunk (shale)	501.00	501.00	1279.00	1279.00	
Raven Cliff (ss)	755.00	755.00	951.00	951.00	
Maxton (ss)	1144.00	1144.00	1205.00	1205.00	
Greenbriar (Is)	1279.00	1279.00	1458.00	1458.00	
Big Injun (ss)	1458.00	1458.00	1601.00	1601.00	
Berea (siltstone)	1948.00	1948.00	1999.00	1999.00	
Rhinestreet (shale)	5625.00	5381.00	5852.00	5578.00	
Cashaqua (shale)	5852.00	5578.00	5916.00	5630.00	
Middlesex (shale)	5916.00	5630.00	5995.00	5690.00	
Burket (shale)	5995.00	5690.00	6015.00	5705.00	
Tully (Is)	6015.00	5705.00	6098.00	5762.00	
Mahantango (shale)	6098.00	5762.00	6305.00	5874.00	
Marcellus (shale)	6305.00	5874.00	NA	NA	GAS



### Hydraulic Fracturing Fluid Product Component Information Disclosure

2/15/2018	Job Start Date:
2/22/2018	Job End Date:
West Virginia	State:
Brooke	County:
47-009-00197-00-00	API Number:
Southwestern Energy	Operator Name:
Alan H DeGarmo BRK 1H	Well Name and Number:
40.24642047	Latitude:
-80.57228869	Longitude:
NAD83	Datum:
NO	Federal Well:
g Q NO	Indian Well:
5,864 7,715,901 MAY 1.6 WV Depart	True Vertical Depth:
7,715,901	Total Base Water Volume (gal):
5,864 7,715,901 RECEIVED RECEIVED Garant Gar	Total Base Non Water Volume:







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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	82.76660	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	1.02157	

BIOC11219A	Nalco Champion	Biocide					
				Listed Below			
HAI-150E	Halliburton	Corrosion Inhibitor					
				Listed Below			
SCAL16486A	Nalco Champion	Scale Inhibitor					
				Listed Below			
FDP-S1176-15	Halliburton	Friction Reducer					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
		WV Der	Office of	Listed Below			
HYDROCHLORI C ACID	Halliburton	Solvent Protection	ATED and				
		t of tection	Gas	Listed Below			
Items above are Tra	ade Names with the	exception of Base Wa	ater , Items below are the ind	7	400 00000	40 45505	_00
			Crystalline silica, quartz	14808-60-7	100.00000	16.15595	
			Hydrochloric acid	7647-01-0	15.00000	0.14708	

	Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02053	
	Polyacrylate	Proprietary	30.00000	0.02053	
	Menthanol	67-56-1	60.00000	0.01374	
	Benzyl-(C12-C16 Alkyl)- Dimethyl-Ammonium	68424-85-1	30.00000	0.00687	
	Sodium chloride	7647-14-5	5.00000	0.00342	
	Sobitan, mono-9- octadececenoate, (Z)	1338-43-8	5.00000	0.00342	
	9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-,(Z)	93-83-4	5.00000	0.00342	
	Ammonium chloride	12125-02-9	5.00000	0.00342	
	Castor oil, ethoxylated	61791-12-6	5.00000	0.00342	
	Glutaraldehyde	111-30-8	10.00000	0.00229	
	Ethlylene Glycol	107-21-1	30.00000	0.00160	
	Amine Triphosphate	Proprietary	30.00000	0.00160	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
	Non-hazardous food substance	Proprietary	100.00000	0.00029	

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)



<sup>\*</sup> Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%
\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line



WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS										
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES							
	ALAN H. DEGARMO & MARY KAY DEGARMO LIFE ESTATE KATHRYN A. DEGARMO AND PATRICK A. DEGARMO REMAINDER	3-833-20	140.97							
TRACT	SURFACE OWNER	TAX PARCEL	ACRES							
1	CHRISTY A. CYBULSKI	3-B33-10	87.12							

	ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
Α	CHARLES STEWART	3-B33-55.1	1.01
В	JEFFERY L. MARTINDILL	3-B33-9	1.6
C	RICHARD C. & BONNIE OLENICK	3-B33-8	1.4
D	EDWARD FRANK MARKER III & TERESA ANN MARKER	3-B33-11	1.68
E	JOHN WILLIAM & HELEN DARLENE MCGOWAN	3-B33-15	2.49
F	JOHN WILLIAM & HELEN DARLENE MCGOWAN	3-B33-16	2.5
G	ROBERT ANTILL, JR & CYNTHIA ANTILL	3-B33-17.2	1.0530
Н	JOANN MYERS LIFE ESTATE & JAMES W. MYERS REMAINDER	3-B33-19	2.40
	THOMAS M. & DEBORAH J. OLDAKER	3-B33-1	2.39
J	MICHEAL W. SOMON	3-B27-25	3.12
K	LARRY B. & SHELLY D. ARACICH	3-B27-23	5.01
L	ZACCHEUS PROPERTIES	3-B27-20	0.459
М	KATHRYN DEGARMO	3-B33-20.1	2.5
N	MARY ANN CHARLTON & DAVID M. EDWARDS	3-B33-21	1.5329
0	PARTICK DEGARMO	3-B33-20.2	1.53

## **AS-DRILLED**

07/20/2018

REVISIONS:	COMPANY:	SWN Production Company, LLC	SN Production C	Maria National Natio
	OPERATOR'S WELL #:	ALAN H DEGARMO BRK		DATE: 04-18-2018
		1H	1H	
	DISTRICT: BUFFALO	COUNTY: BROOKE	STATE: WV	SCALE: N/A DRAWING NO: 164-764 WELL LOCATION PLAT 2



