

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 514567

API: 47 - 103 - 02941

Submission: Initial Amended

Notes: -Revised Plat
-Revised "As Drilled" Coordinates
-with Flowback

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WV Department of
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10/28/2016

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

API 47-103-02941 County WETZEL District GRANT
Quad BIG RUN Pad Name BIG367 Field/Pool Name _____
Farm name DENCIL HENTHORN ET AL Well Number 514567
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,378,626.457 Easting 536,097.746
Landing Point of Curve Northing 4,378,306.49 Easting 535,831.90
Bottom Hole Northing 4,375,724.924 Easting 536,711.192

Elevation (ft) 1443 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)
SBM 13.3 ppg – powdered hydrocarbon resin, calcium carbonate, ground almond hulls, barium sulfate, calcium chloride, lecithin liquid, organophilic clay,
partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 11/12/2013 Date drilling commenced 3/18/2014 Date drilling ceased 7/22/2014
Date completion activities began 12/19/2015 Date completion activities ceased 1/4/2016
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 708' Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 2171' Void(s) encountered (Y/N) depths _____
Coal depth(s) ft 516', 730', 834', 885', 1022', 1193', 1683' Cavern(s) encountered (Y/N) depths _____

Is coal being mined in _____

APPROVED

NAME: Dencil M. Hight
DATE: 9-23-16

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Reviewed by: DJK
WV Department of Environmental Protection
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API 47-103 - 02941

Farm name DENCIL HENTHORN ET AL

Well number 514567

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"	26"	40'	NEW	A-500	NONE	Y
Surface	17-1/2"	13-3/8"	960'	NEW	J-55	350'	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	2904'	NEW	A-500	NONE	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	17,410'	NEW	P-110	NONE	N
Tubing							
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	49	15.6	1.18	58	0	8
Surface	Class A	820	15.6	1.19	976	0	8
Coal							
Intermediate 1	Class A	1075	15.6	1.18	1269	0	8
Intermediate 2							
Intermediate 3	Class A/Class H	755/1200	14.2/15.2	1.26/1.97	3315	2973	
Production							
Tubing							

Drillers TD (ft) 17,430'

Loggers TD (ft) N/A

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure _____

Kick off depth (ft) 5907'

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 _____

Conductor- N/A

Surface-Bowspring centralizer on shoe track and every 150' to surface

Intermediate-Bowspring centralizer on shoe track and every 150' to surface

Production- Composite bodied centralizers on every joint from TD up to 4,525'

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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API 47- 103 - 02941

Farm name DENCIL HENTHORN ET AL

Well number 514567

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					Please See Attached

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)
						Please	See	Attached

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Please insert additional pages as applicable.

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API 47- 103 - 02941 Farm name DENCIL HENTHORN ET AL Well number _____

PRODUCING FORMATION(S) DEPTHS
MARCELLUS 7,566.00 TVD 8,135.00 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1,120 psi Bottom Hole N/A psi DURATION OF TEST 206.00 hrs

OPEN FLOW Gas Oil NGL Water GAS MEASURED BY
13,142 mcfpd N/A bpd 0.0 bpd 1,261 bpd 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		

Please insert additional pages as applicable.

Drilling Contractor Savanna Drilling
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company Hoss Co. Services LLC
Address 614 Trotters Lane City Charleston State WV Zip 25312

Cementing Company Nabors Completion & Production Services Co.
Address PO BOX 975682 City Dallas State TX Zip 75397-5682

Stimulating Company C&J Energy Services
Address 3990 Rogerdale Road City Houston State TX Zip 77042

Please insert additional pages as applicable.

Completed by Jim Helmick Telephone (412) 395-5518 **JUL 28 2016**
Signature  Title VP Completions Date 7/27/2016

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1	1	708	708
SAND/SHALE	1	1	516	516
COAL	516	516	528	528
SAND/SHALE	528	528	730	730
FAIRVIEW COAL	730	730	734	734
SAND/SHALE	734	734	834	834
WAYNESBURG COAL	834	834	836	836
SAND/SHALE	836	836	885	885
COAL	885	885	896	896
SAND/SHALE	896	896	1,022.00	1,022.00
MAPLETOWN COAL	1,022.00	1,022.00	1,025.00	1,025.00
SAND/SHALE	1,025.00	1,025.00	1,193.00	1,193.00
PITTSBURGH COAL	1,193.00	1,193.00	1,199.00	1,199.00
SAND/SHALE	1,199.00	1,199.00	1,683.00	1,683.00
COAL	1,683.00	1,683.00	1,687.00	1,687.00
SAND/SHALE	1,687.00	1,687.00	2,255.00	2,254.90
MAXTON	2,255.00	2,254.90	2,410.00	2,409.90
BIG LIME	2,410.00	2,409.90	2,512.00	2,511.80
BIG INJUN	2,512.00	2,511.80	2,806.00	2,805.70
WEIR	2,806.00	2,805.70	2,956.00	2,955.60
GANTZ	2,956.00	2,955.60	3,006.00	3,005.60
50F	3,006.00	3,005.60	3,100.00	3,099.60
30F	3,100.00	3,099.60	3,224.00	3,223.60
GORDON	3,224.00	3,223.60	3,317.00	3,316.60
4TH	3,317.00	3,316.60	3,472.00	3,471.50
BAYARD	3,472.00	3,471.50	3,838.00	3,837.50
WARREN	3,838.00	3,837.50	4,052.00	4,051.50
SPEECHLEY	4,052.00	4,051.50	4,402.00	4,401.40
BALLTOWN A	4,402.00	4,401.40	4,837.00	4,836.40
RILEY	4,837.00	4,836.40	5,514.00	5,513.40
BENSON	5,514.00	5,513.40	5,908.00	5,907.40
ALEXANDER	5,908.00	5,907.40	5,935.00	5,934.40
ELKS	5,935.00	5,934.40	7,426.00	7,148.90
SONYEA	7,426.00	7,148.90	7,616.00	7,287.70
MIDDLESEX	7,616.00	7,287.70	7,682.00	7,333.90
GENESSEE	7,682.00	7,333.90	7,821.00	7,423.30
GENESEO	7,821.00	7,423.30	7,865.00	7,448.60
TULLY	7,865.00	7,448.60	7,905.00	7,469.80
HAMILTON	7,905.00	7,469.80	8,135.00	7,566.00
MARCELLUS	8,135.00	7,566.00	17,430.00	7,683.40

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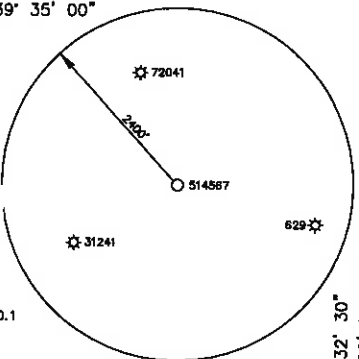
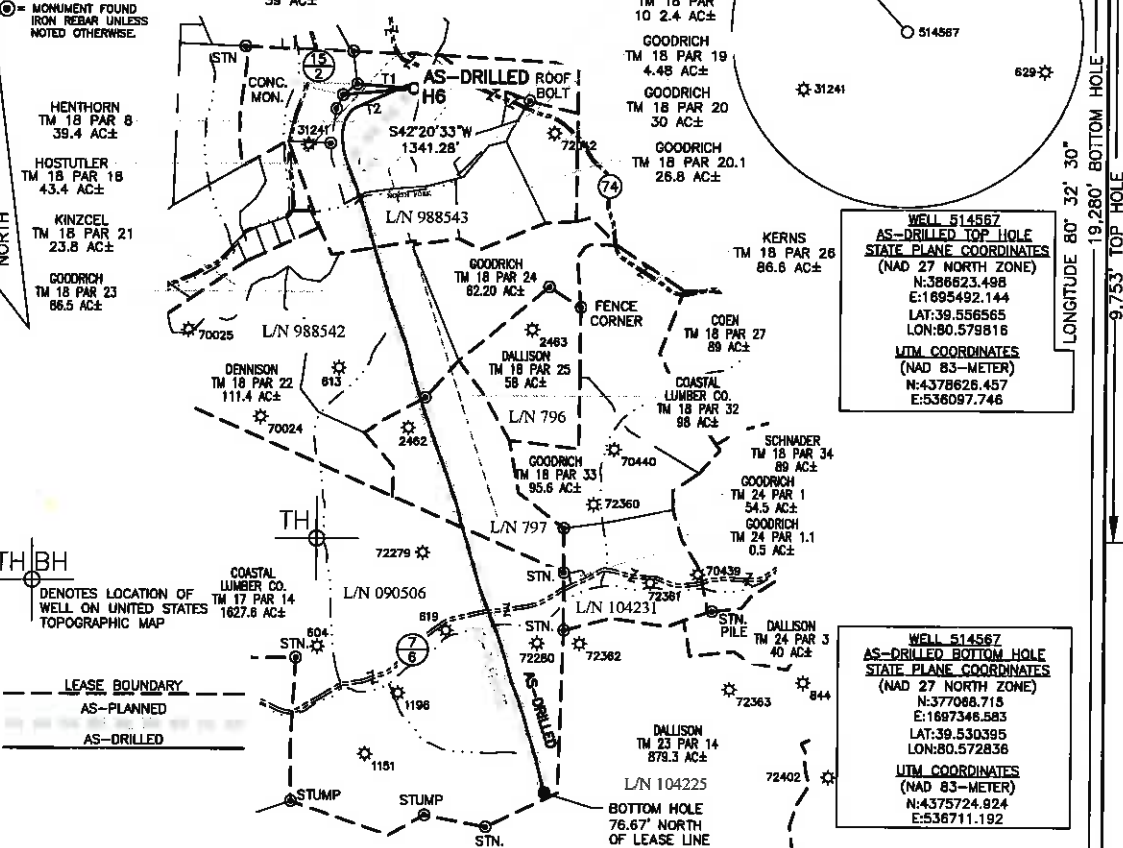
10/28/2016

EQT WELL NO. 514567

10,752' TOP HOLE
8,783 BOTTOM HOLE
LATITUDE 39° 35' 00"

NOTES:
-PLAT ORIENTATION, CORNERS, AND WELL REFERENCES ARE BASED UPON THE GRID NORTH MERIDIAN FOR THE WV STATE PLANE COORDINATE SYSTEM, NORTH ZONE NAD 27. WELL LOCATION REFERENCE TIES ARE BASED UPON THE MAGNETIC MERIDIAN.
-THERE ARE NO (0) WATER WELL(S) LOCATED WITHIN 250' OF WELL H6.
-THERE ARE NO (0) STRUCTURE(S) LOCATED WITHIN 625' OF WELL H6.

⊙ = MONUMENT FOUND
IRON REBAR UNLESS NOTED OTHERWISE.



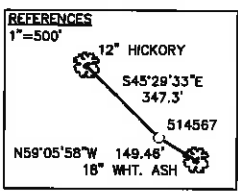
**WELL 514567
AS-DRILLED TOP HOLE
STATE PLANE COORDINATES
(NAD 27 NORTH ZONE)**
N:388623.498
E:1695492.144
LAT:39.58565
LON:80.579816

**UTM COORDINATES
(NAD 83-METER)**
N:4378626.457
E:536097.746

**WELL 514567
AS-DRILLED BOTTOM HOLE
STATE PLANE COORDINATES
(NAD 27 NORTH ZONE)**
N:377088.715
E:1687346.583
LAT:39.530395
LON:80.572836

**UTM COORDINATES
(NAD 83-METER)**
N:4375724.924
E:536711.192

LINE	BEARING	DIST.
T1	S85°50'48"E	771.53'
T2	N84°43'12"E	984.20'



PRELIMINARY

AS-DRILLED PLAT

KENNETH P. MORAN P.S. 1333
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 THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

FILE NO. 030-2259	STATE OF WEST VIRGINIA DIVISION OF ENVIRONMENTAL PROTECTION OFFICE OF OIL & GAS	DATE AUGUST 6, 2014
SCALE: 1"=2000'	BH	OPERATOR'S WELL NO. 514567
MINIMUM DEGREE OF ACCURACY: 1 in 2500		API WELL NO.
PROVEN SOURCE OF ELEVATION: OPUS SURVEY GRADE GPS		47 - 103 - 02941 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL (IF "GAS"), PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION: EG: 1,475.1' PROP: 1,442.90' WATER SHED: NORTH FORK OF FISHING CREEK

DISTRICT: GRANT COUNTY: WETZEL

QUADRANGLE: BIG RUN ACREAGE: 39.4 AC±

SURFACE OWNER: DENCIL HENTHORN ET AL LEASE ACREAGE: 1,894.9 AC±

OIL & GAS ROYALTY OWNER: SHIBEN ESTATE, INC., CNX GAS CO., LLC LEASE NO. 787/0690506

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PERFORATE NEW FORMATION PLUG OFF OLD FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____

PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____

TARGET FORMATION: MARCELLUS SHALE ESTIMATED DEPTH: 7,683 TVD / 17,430 MD

WELL OPERATOR: EQT PRODUCTION DESIGNATED AGENT: REX C. RAY
ADDRESS: 115 PROFESSIONAL PLACE ADDRESS: 115 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330 BRIDGEPORT, WV 26330



USER: kpoath LAYOUT: 514567-AD NORTH PLOT DATE/TIME: 8/6/2014 - 10:41am CAD FILE: R:\030-2259 EQT BIG367 Well Pad and Access Rd\Survey\AS-DRILLED\030-2259 BIG 367-514567-AD.dwg

514567 47-103-02941-0000 - Stimulated Stages

Stage Number	Stimulation 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)
Initiation Sleeve	12/19/2015	0	0	0	0	0	0	0
1	12/19/2015	69	8,738	8,952	4,521	199,500.00	6,251	0
2	12/19/2015	80.2	8,716	8,928	4,963	187,100.00	5,964	0
3	12/20/2015	79.6	8,707	8,942	4,904	199,400.00	5,802	0
4	12/20/2015	84.3	8,815	8,980	4,874	202,500.00	5,904	0
5	12/20/2015	82.6	8,800	8,955	5,678	199,000.00	5,646	0
6	12/20/2015	86.5	8,805	8,959	5,386	199,600.00	5,773	0
7	12/20/2015	86.4	8,729	8,957	5,583	200,000.00	5,587	0
8	12/21/2015	77.5	8,562	8,934	5,398	200,600.00	6,527	0
9	12/21/2015	86.6	8,805	8,965	5,118	201,500.00	5,806	0
10	12/21/2015	89.9	8,817	8,957	5,451	203,900.00	5,517	0
11	12/22/2015	82.3	8,768	8,975	5,318	200,000.00	5,564	0
12	12/22/2015	82.5	8,685	8,912	5,451	207,200.00	5,493	0
13	12/22/2015	85.4	8,789	8,954	5,344	204,100.00	5,577	0
14	12/22/2015	87.8	8,806	8,997	5,608	200,000.00	5,448	0
15	12/22/2015	85.4	8,762	8,919	5,045	202,100.00	5,491	0
16	12/22/2015	87.7	8,745	8,907	5,217	201,800.00	5,511	0
17	12/22/2015	87.6	8,737	8,923	5,361	199,000.00	5,410	0
18	12/23/2015	88.3	8,786	8,929	5,742	200,800.00	5,406	0
19	12/26/2015	84.6	8,747	9,139	5,955	199,300.00	5,822	0
20	12/26/2015	90.4	8,795	8,898	5,635	198,300.00	5,363	0
21	12/27/2015	93	8,703	8,870	5,477	203,200.00	6,544	0
22	12/27/2015	90.6	8,750	8,927	5,649	201,100.00	5,497	0
23	12/27/2015	90.2	8,718	8,896	5,964	200,600.00	5,487	0
24	12/28/2015	93.6	8,745	8,927	5,857	199,800.00	5,502	0
25	12/28/2015	91.3	8,711	8,853	5,151	200,400.00	5,655	0
26	12/28/2015	88	8,694	8,870	5,657	198,500.00	5,497	0
27	12/28/2015	87.9	8,635	8,793	5,684	199,600.00	5,426	0
28	12/28/2015	92.1	8,751	8,928	5,632	200,900.00	5,378	0
29	12/29/2015	93.5	8,753	8,954	5,626	200,900.00	5,262	0
30	12/29/2015	90.8	8,636	8,840	5,614	199,700.00	5,436	0
31	12/29/2015	93.6	8,637	8,772	5,316	199,100.00	5,487	0
32	12/29/2015	96.2	8,621	8,788	5,430	199,300.00	5,555	0
33	12/30/2015	94.7	8,723	8,893	5,436	200,800.00	5,756	0
34	12/30/2015	100.3	8,641	8,858	5,441	204,400.00	5,457	0
35	12/30/2015	95.6	8,721	8,888	5,617	201,100.00	5,629	0
36	12/31/2015	96.6	8,564	8,945	5,657	205,700.00	5,210	0
37	12/31/2015	97.8	8,507	8,758	5,530	204,900.00	5,340	0
38	12/31/2015	100.4	8,545	8,796	5,415	201,900.00	5,418	0
39	12/31/2015	90.9	8,692	8,928	5,553	198,200.00	5,258	0
40	12/31/2015	100.6	8,613	8,885	5,702	200,600.00	5,154	0
41	12/31/2015	100.5	8,432	8,933	5,806	201,200.00	5,108	0
42	1/1/2016	100.5	8,536	8,990	5,711	201,300.00	5,252	0
43	1/1/2016	100.4	8,474	8,671	5,362	199,600.00	5,397	0
44	1/1/2016	98	8,592	8,824	5,443	199,700.00	5,111	0
45	1/1/2016	100.1	8,507	8,940	5,695	206,500.00	5,171	0
46	1/1/2016	100.1	8,327	8,647	5,644	201,200.00	4,893	0
47	1/1/2016	100.4	8,411	8,649	5,601	200,500.00	4,666	0
48	1/2/2016	100.5	8,475	8,661	5,543	200,100.00	4,960	0
49	1/2/2016	96.9	8,471	8,809	5,599	199,100.00	5,033	0
50	1/2/2016	99.5	8,440	8,767	5,434	200,600.00	5,026	0
51	1/2/2016	96.8	8,429	8,924	5,804	202,000.00	4,923	0
52	1/2/2016	98.4	8,647	8,895	5,801	200,600.00	5,067	0
53	1/2/2016	100.7	8,341	8,668	5,571	201,500.00	4,922	0
54	1/3/2016	100.8	8,131	8,390	5,616	201,400.00	5,209	0
55	1/3/2016	99.7	8,018	8,376	5,598	202,900.00	6,755	0
56	1/3/2016	100.4	8,170	8,365	5,660	198,900.00	5,042	0
57	1/3/2016	100.6	8,081	8,641	5,749	200,300.00	5,136	0
58	1/3/2016	100.5	8,186	8,486	5,679	201,000.00	5,113	0
59	1/3/2016	100.2	8,235	8,524	5,811	201,400.00	5,224	0
60	1/4/2016	100.6	8,040	8,594	5,721	200,600.00	4,962	0
61	1/4/2016	99.2	8,167	8,619	5,422	202,000.00	5,031	0

10/28/2016

514567 47-103-02941-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	9/18/2015	17,408	17,410	10	MARCELLUS
1	12/19/2015	17,259	17,382	40	MARCELLUS
2	12/19/2015	17,114	17,236	40	MARCELLUS
3	12/19/2015	16,964	17,084	40	MARCELLUS
4	12/20/2015	16,814	16,936	40	MARCELLUS
5	12/20/2015	16,664	16,786	40	MARCELLUS
6	12/20/2015	16,514	16,636	40	MARCELLUS
7	12/20/2015	16,364	16,484	40	MARCELLUS
8	12/20/2015	16,214	16,334	40	MARCELLUS
9	12/21/2015	16,064	16,184	40	MARCELLUS
10	12/21/2015	15,914	16,036	40	MARCELLUS
11	12/21/2015	15,764	15,886	40	MARCELLUS
12	12/22/2015	15,614	15,736	40	MARCELLUS
13	12/22/2015	15,464	15,586	40	MARCELLUS
14	12/22/2015	15,314	15,436	40	MARCELLUS
15	12/22/2015	15,164	15,286	40	MARCELLUS
16	12/22/2015	15,014	15,136	40	MARCELLUS
17	12/22/2015	14,864	14,986	40	MARCELLUS
18	12/23/2015	14,714	14,836	40	MARCELLUS
19	12/23/2015	14,564	14,686	40	MARCELLUS
20	12/26/2015	14,414	14,532	40	MARCELLUS
21	12/27/2015	14,264	14,386	40	MARCELLUS
22	12/27/2015	14,114	14,236	40	MARCELLUS
23	12/27/2015	13,968	14,086	40	MARCELLUS
24	12/28/2015	13,814	13,936	40	MARCELLUS
25	12/28/2015	13,664	13,786	40	MARCELLUS
26	12/28/2015	13,514	13,633	40	MARCELLUS
27	12/28/2015	13,364	13,484	40	MARCELLUS
28	12/28/2015	13,214	13,336	40	MARCELLUS
29	12/28/2015	13,064	13,186	40	MARCELLUS
30	12/29/2015	12,912	13,036	40	MARCELLUS
31	12/29/2015	12,764	12,886	40	MARCELLUS
32	12/29/2015	12,614	12,736	40	MARCELLUS
33	12/29/2015	12,464	12,586	40	MARCELLUS
34	12/30/2015	12,314	12,436	40	MARCELLUS
35	12/30/2015	12,164	12,286	40	MARCELLUS
36	12/31/2015	12,014	12,136	40	MARCELLUS
37	12/31/2015	11,864	11,986	40	MARCELLUS
38	12/31/2015	11,714	11,836	40	MARCELLUS
39	12/31/2015	11,564	11,686	40	MARCELLUS
40	12/31/2015	11,414	11,536	40	MARCELLUS
41	12/31/2015	11,264	11,386	40	MARCELLUS
42	1/1/2016	11,114	11,236	40	MARCELLUS
43	1/1/2016	10,964	11,086	40	MARCELLUS
44	1/1/2016	10,814	10,936	40	MARCELLUS
45	1/1/2016	10,664	10,786	40	MARCELLUS
46	1/1/2016	10,514	10,636	40	MARCELLUS
47	1/1/2016	10,364	10,480	40	MARCELLUS
48	1/2/2016	10,214	10,336	40	MARCELLUS
49	1/2/2016	10,064	10,186	40	MARCELLUS
50	1/2/2016	9,914	10,036	40	MARCELLUS
51	1/2/2016	9,764	9,884	40	MARCELLUS
52	1/2/2016	9,614	9,736	40	MARCELLUS
53	1/2/2016	9,464	9,586	40	MARCELLUS
54	1/3/2016	9,314	9,436	40	MARCELLUS
55	1/3/2016	9,164	9,286	40	MARCELLUS
56	1/3/2016	9,014	9,136	40	MARCELLUS
57	1/3/2016	8,864	8,986	40	MARCELLUS
58	1/3/2016	8,714	8,830	40	MARCELLUS
59	1/3/2016	8,564	8,686	40	MARCELLUS
60	1/4/2016	8,414	8,536	40	MARCELLUS
61	1/4/2016	8,268	8,386	40	MARCELLUS

10/28/2016

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	12/19/2015
Job End Date	1/4/2016
State	West Virginia
County	Wetzel
API Number	47-103-02941-00-00
Operator Name	EQT Production
Well Name and Number	514567
Longitude	-80.58000200
Latitude	39.55648200
Datum	NAD83
Federal/Tribal Well	NO
True Vertical Depth	7,566
Total Base Water Volume (gal)	13,936,062
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	C and J Energy Services	Carrier/Base Fluid	Water	7732-18-5	100.00000	90.09233	None
Sand (Proppant)	C and J Energy Services	Proppant					
MC MX 437-5	Multi-Chem Group	Calcium Nitrate Solution	Silica Substrate	14808-60-7	100.00000	9.48888	None
FR-18	C and J Energy Services	Anionic Friction Reducer	Calcium Nitrate	10124-37-5	60.00000	0.05730	None
			Distillates (petroleum), Hydrotreated Light	64742-47-8	45.00000	0.03461	None
Hydrochloric Acid (15%)	C and J Energy Services	Acidizing	Ethylene Glycol	107-21-1	10.00000	0.00769	None
SI-6	C and J Energy Services	Scale Inhibitor	Hydrochloric Acid	7647-01-0	15.00000	0.03320	None
			Trade Secret	Proprietary	7.00000	0.00172	None
			Monoethanolamine	2002-24-6	2.00000	0.00049	None
			Hydrochloride				
			Ammonium Chloride	12125-02-9	2.00000	0.00049	None
			Methanol	67-56-1	1.00000	0.00025	None

At-2	C and J Energy Services	Acid corrosion inhibitor					
			Propargyl Alcohol	107-19-7	40.00000	0.00016	None
			Glycol Ethers	111-76-2	40.00000	0.00016	None
			Isopropyl Alcohol	67-63-0	40.00000	0.00016	None
			Ethoxyliated Nonylphenol	68412-54-4	13.00000	0.00005	None
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004	None

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)

EQT WELL NO. 514567

LATITUDE 39°35'00"

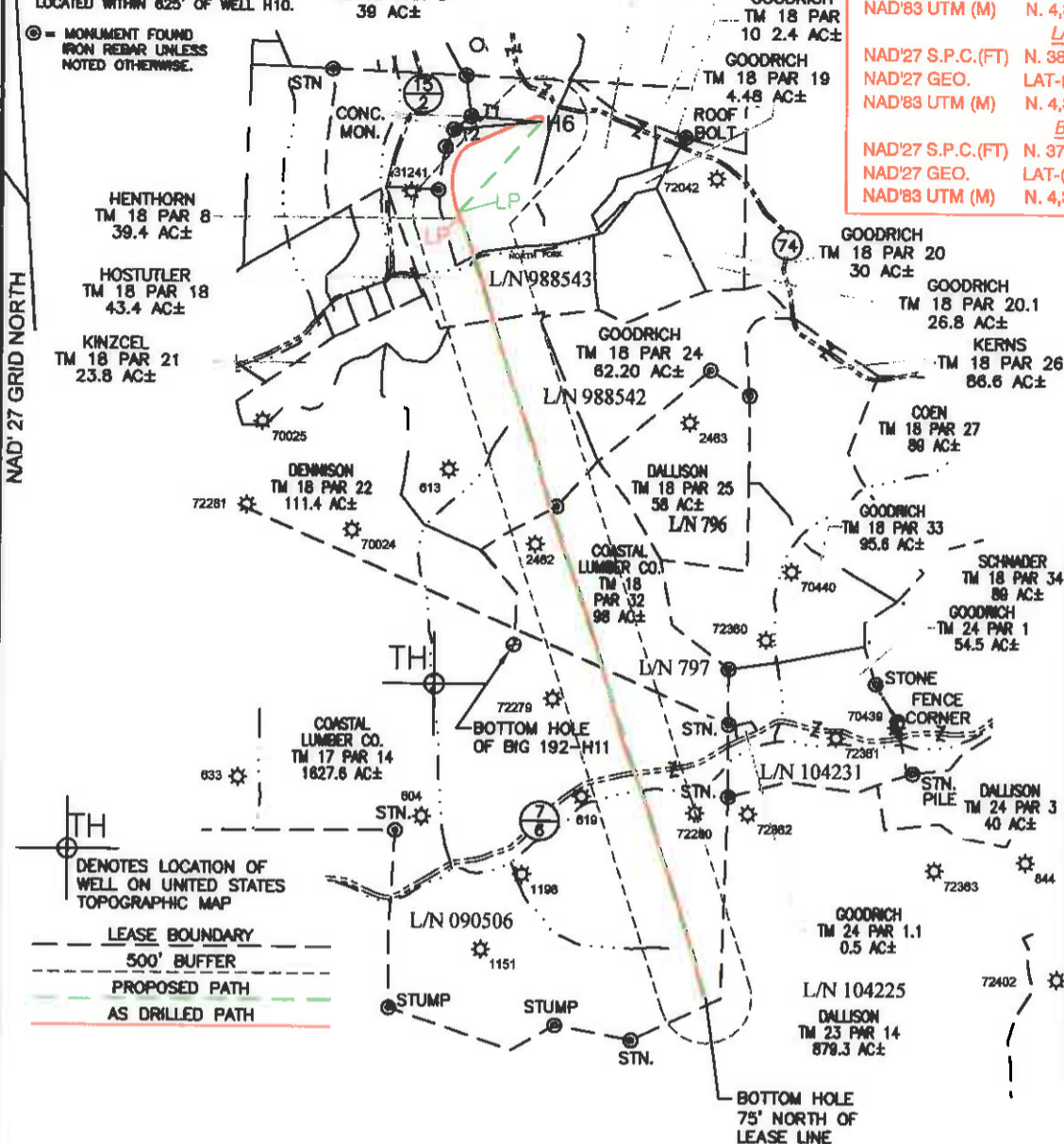
NOTES:

- PLAT ORIENTATION, CORNERS, AND WELL REFERENCES ARE BASED UPON THE GRID NORTH MERIDIAN FOR THE WV STATE PLANE COORDINATE SYSTEM, NORTH ZONE NAD 27. WELL LOCATION REFERENCE TIES ARE BASED UPON THE MAGNETIC MERIDIAN.
- THERE ARE NO (0) WATER WELL(S) LOCATED WITHIN 250' OF WELL H10.
- THERE ARE NO (0) STRUCTURE(S) LOCATED WITHIN 625' OF WELL H10.

● = MONUMENT FOUND IRON REBAR UNLESS NOTED OTHERWISE.

NAD'27 GRID NORTH

LONGITUDE 80°32'30"



AS DRILLED COORDINATES FOR WELL NO. WV 514567
 (S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT) N. 286,623.495 E. 1,695,492.144
 NAD'27 GEO. LAT-(N) 39.556565 LONG-(W) 80.579816
 NAD'83 UTM (M) N. 4,378,626.457 E. 536,097.746

LANDING POINT

NAD'27 S.P.C.(FT) N. 385,588.15 E. 1,694,602.33
 NAD'27 GEO. LAT-(N) 39.553610 LONG-(W) 80.583113
 NAD'83 UTM (M) N. 4,375,306.49 E. 535,831.90

BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 377,068.715 E. 1,697,346.583
 NAD'27 GEO. LAT-(N) 39.530312 LONG-(W) 80.573021
 NAD'83 UTM (M) N. 4,375,724.924 E. 536,711.192

WELL 514567 TOP HOLE STATE PLANE COORDINATES (NAD 27 NORTH ZONE)
 N:286623.495
 E:1695492.144
 LAT:39.556565
 LONG:80.579816

UTM COORDINATES (NAD 83-METER)
 N:4378626.457
 E:536097.746

WELL 514567 LAUNCH POINT STATE PLANE COORDINATES (NAD 27 NORTH ZONE)
 N:385632.147
 E:1694588.771
 LAT:39.553814
 LONG:80.582978

UTM COORDINATES (NAD 83-METER)
 N:4378319.829
 E:535827.548

WELL 514567 BOTTOM HOLE STATE PLANE COORDINATES (NAD 27 NORTH ZONE)
 N:377077.342
 E:1697368.696
 LAT:39.530420
 LONG:80.572758

UTM COORDINATES (NAD 83-METER)
 N:4375727.664
 E:536717.886

LINE	BEARING	DIST.
T1	N85°50'46"E	771.53'
T2	N84°43'12"E	964.20'

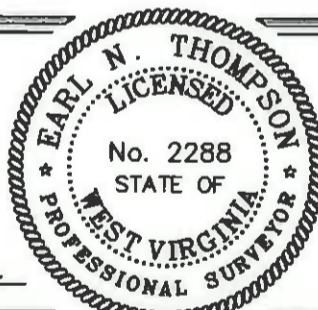
TH DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAP

- LEASE BOUNDARY
- - - 500' BUFFER
- - - PROPOSED PATH
- AS DRILLED PATH

SPECIAL NOTES
 -LEASE AND SURFACE INFO SHOWN HEREON WAS TAKEN FROM PERMIT PLAT FOR AP# 47-103-02941H.
 -AS DRILLED INFORMATION PROVIDED BY EQT.

Professional Energy Consultants
 A DIVISION OF SOUTH LAND SURVEYING, INC.

 SURVEYORS
 ENGINEERS
 ENVIRONMENTAL
 PROJECT MGMT.
 (804) 482-9024 WWW.SLSURVEYS.COM



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 THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 2288 *Earl N. Thompson*

STATES TOPOGRAPHIC MAPS.
 DATE JANUARY 03, 20 14
 REVISED 04/29/16 & 06/13/16
 OPERATORS WELL NO. WV 514567
 API WELL NO. 47 - 103 - 02941H
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 8471BIG367WELLS-R1H1R
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY OPUS (SURVEY GRADE GPS) SCALE 1" = 2000'

STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS

WELL TYPE: OIL GAS INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION EG: 1,475.1' PROP: 1,442.9' WATERSHED NORTH FORK OF FISHING CREEK
 DISTRICT GRANT COUNTY WETZEL QUADRANGLE BIG RUN 7.5'

SURFACE OWNER DENCIL HENTHORN ET AL ACREAGE 39.4±
 ROYALTY OWNER SHIBEN ESTATE, INC., CNX GAS CO., LLC ACREAGE 1,894.9±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH _____

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY
 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

COUNTY NAME PERMIT