

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

API 47-051-01733 County Marshall District Webster  
Quad Majorsville Pad Name WEB22 Field/Pool Name NA  
Farm name Tim M. Turley and Tammy JF Well Number WEB 22 DHS  
Operator (as registered with the OOG) Noble Energy, Inc.  
Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4419603.5 Easting 541032.6  
Landing Point of Curve Northing 4419249.8 Easting 540607.8  
Bottom Hole Northing 4421123.5 Easting 539260.2

Elevation (ft) 1339.18 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)  
Synthetic Oil Based

Date permit issued 2/10/2014 Date drilling commenced 2/20/2014 Date drilling ceased 8/1/2014  
Date completion activities began 12/5/2014 Date completion activities ceased 2/14/2015  
Verbal plugging (Y/N) N Date permission granted NA Granted by NA

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

Freshwater depth(s) ft 212', 295' Open mine(s) (Y/N) depths Near Bailey Mine - approx. 770'  
Salt water depth(s) ft None noted for Offsets Void(s) encountered (Y/N) depths none  
Coal depth(s) ft 761' to 771' Pittsburgh Cavern(s) encountered (Y/N) depths none  
Is coal being mined in area (Y/N) N

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Office of Oil and Gas  
WV Dept. of Environmental Protection  
Reviewed by: W.S. 6/10/15  
06/12/2015

WR-35  
Rev. 8/23/13

API 47-051 - 01733

Farm name Tim M. Turley and Tammy JF Well number WEB 22 DHS

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	36	30	40	N	X-70		Y
Surface	24	20	425.0	N	J-55 94#		Y
Coal							Y
Intermediate 1	17 1/2	13 3/8	1250.5	N	J-55 54.5#		Y
Intermediate 2	12 1/4	9 5/8	3411.0	N	J-55 36#		Y
Intermediate 3							Y
Production	8 3/4	5 1/2	15129.9	N	P-110 20#		Y
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor							8
Surface	GEL SPACER	695	15.6	1.22	847.69	0	
Coal						0	8
Intermediate 1	Class A	1052	15.8	1.16	1220.32	0	8
Intermediate 2	Class A	1138	15.8	1.19	1354.22	0	
Intermediate 3							8
Production	Lead ECONOCEM - Tail Class H	Lead 1020 Tail 1870	Lead 14.2 Tail 15.0	Lead 1.32 Tail 1.30	Lead 1346.4 Tail 2431.0	1550.0	
Tubing							

Drillers TD (ft) 15,144 Loggers TD (ft) 15,120  
 Deepest formation penetrated Marcellus Plug back to (ft) Not a Pilot Hole  
 Plug back procedure N/A

Kick off depth (ft) 7288

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 - No centralizers used. Fresh Water/Surface-  
Surface - 2 centralizers used, one every third joint with 2 Baskets Intermediate - 11 centralizers - Intermediate 2 - 26 centralizers on every joint to KOP, on every third joint from KOP to 100' from surface.  
Production - 246 centralizers - rigid bow spring every third joint from KOP to TOC, rigid bow spring every joint to KOP.

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WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_  
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WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

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 WV Dept. of Environmental Protection



PERFORATION RECORD

API: 47-051-01733

Farm name: TIM M. TURLEY AND TAMMY JENKINS

Well Name: WEB-22 D

Stage No.	Perf Date	Top Perf	Bottom Perf	# of Perfs	Formation
1 Injection Test	12/5/2014	-	-	-	Marcellus
1	12/5/2014	14,773	14,976	54	Marcellus
2	12/6/2014	14,470	14,673	54	Marcellus
3	12/7/2014	14,167	14,370	54	Marcellus
4	12/7/2014	13,864	14,067	54	Marcellus
5	12/8/2014	13,561	13,764	54	Marcellus
6	12/8/2014	13,258	13,461	54	Marcellus
7	12/9/2014	12,955	13,158	54	Marcellus
8	12/9/2014	12,652	12,855	54	Marcellus
9	12/10/2014	12,349	12,552	54	Marcellus
10	12/10/2014	12,046	12,249	54	Marcellus
11	12/10/2014	11,743	11,946	54	Marcellus
12	12/11/2014	11,440	11,643	54	Marcellus
13	12/11/2014	11,137	11,340	54	Marcellus
14	12/12/2014	10,834	11,037	54	Marcellus
14B Reperf	12/12/2014	10,854	10,916	48	Marcellus
15	12/13/2014	10,531	10,734	54	Marcellus
16	12/13/2014	10,228	10,431	54	Marcellus
17	12/14/2014	9,925	10,128	54	Marcellus
18	12/15/2014	9,622	9,825	54	Marcellus
19	12/15/2014	9,319	9,522	54	Marcellus
20	12/15/2014	9,016	9,219	54	Marcellus
21	12/16/2014	8,713	8,916	54	Marcellus
22A	12/16/2014	8,410	8,613	54	Marcellus
Inj test 1	12/17/2014	-	-	-	Marcellus
Inj Test 2	12/19/2014	-	-	-	Marcellus
Inj Test 3	12/20/2014	-	-	-	Marcellus
Inj Test 4	12/27/2014	-	-	-	Marcellus
22B (Reperf-1)	12/26/2014	8,380	8,540	48	Marcellus
22C (Reperf-2)	12/26/2014	8,320	8,382	36	Marcellus
22D (22nd Attempt)	12/27/2014	-	-	-	Marcellus
Inj Test 5	12/27/2014	-	-	-	Marcellus
22E( 3rd Attempt)	12/28/2014	-	-	-	Marcellus
23	12/28/2014	8,056	8,233	54	Marcellus
24	12/29/2014	7,788	7,965	54	Marcellus
25	12/29/2014	7,522	7,699	54	Marcellus
26	12/29/2014	7,306	7,436	50	Marcellus

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STIMULATION INFORMATION PER STAGE

API: 47-051-01733

Farm name: TIM M. TURLEY AND TAMMY JENKINS Well Name: WEB-22 D

Stage No.	Stim Date	Avg Rate (bpm)	ATP (psi)	Max BD Pressure	ISIP (psi)	Proppant (lbs)	Water (BBLs)	Amount of N <sup>2</sup> / other
1 Injection Test	12/5/2014	-	-	-	-	-	325.38	
1	12/5/2014	89	8,066	5,349	4,103	597,704	14,514.38	
2	12/6/2014	83	8,489	6,881	4,352	593,765	12,578.38	
3	12/7/2014	75	7,794	6,167	4,312	600,615	27,061.76	
4	12/7/2014	84	7,822	5,953	4,595	603,112	15,349.38	
5	12/8/2014	86	7,985	6,242	4,209	600,549	13,344.38	
6	12/8/2014	86	7,979	6,312	4,749	600,916	11,886.38	
7	12/9/2014	86	7,961	5,936	4,448	602,052	11,293.38	
8	12/9/2014	88	7,976	5,861	4,526	601,032	11,100.38	
9	12/10/2014	89	7,663	5,693	4,897	600,212	11,578.38	
10	12/10/2014	90	7,811	5,586	4,840	601,095	11,262.38	
11	12/10/2014	89	7,638	6,069	4,576	600,213	11,230.38	
12	12/11/2014	89	7,709	6,101	4,758	600,360	11,275.38	
13	12/11/2014	89	7,716	6,344	4,851	600,118	11,639.38	
14	12/12/2014	72	7,569	5,923	4,633	287,199	11,008.76	
14B Reperf	12/12/2014	70	8,068	-	4,528	312,899	13,602.76	
15	12/13/2014	90	7,678	5,547	4,554	601,063	12,488.38	
16	12/13/2014	88	7,580	5,698	4,612	600,130	13,303.38	
17	12/14/2014	89	7,539	5,737	4,663	600,465	12,318.38	
18	12/15/2014	87	7,412	6,638	4,841	600,412	11,309.38	
19	12/15/2014	89	7,473	6,342	4,800	601,923	11,342.38	
20	12/15/2014	88	7,543	6,331	4,792	601,231	12,379.38	
21	12/16/2014	86	7,597	5,849	4,993	553,888	13,697.38	
22A	12/16/2014	89	7,507	6,322	7,211	445,674	10,855.76	
Inj test 1	12/17/2014	-	-	-	-	-	288.00	
Inj Test 2	12/19/2014	-	-	-	-	-	74.38	
Inj Test 3	12/20/2014	-	-	-	-	-	46.38	
Inj Test 4	12/27/2014	-	-	-	-	-	325.00	
22B (Reperf-1)	12/26/2014	55	7,947	-	5,351	4,410	1,632.38	
22C (Reperf-2)	12/26/2014	65	8,388	-	5,478	1,145	2,704.38	
22D (22nd Attempt)	12/27/2014	66	8,102	-	5,868	56,459	4,579.00	
Inj Test 5	12/27/2014	-	-	-	-	-	461.57	
22E( 3rd Attempt)	12/28/2014	59	8,087	-	5,095	94,501	6,100.00	
23	12/28/2014	82	7,327	5,840	4,487	597,779	16,192.38	
24	12/29/2014	90	7,229	6,280	4,971	600,562	12,249.38	
25	12/29/2014	90	7,143	6,150	4,171	600,100	10,745.38	
26	12/29/2014	90	7,211	5,765	4,365	600,508	10,534.38	

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Formations	Top TVD	Base TVD	Top MD	Base MD	Fluid
Shale	0	780	0	780	
Pittsburgh Coal	780	790	780	790	
Shale and Sandstone	790	1308	790	1308	
Dunkard Sand	1308	1329	1308	1329	
Shale	1329	1470	1329	1470	
Gas Sand	1470	1518	1470	1518	
Shale	1518	1594	1518	1594	
1st Salt Sand	1594	1605	1594	1605	
Shale	1605	1730	1605	1730	
2nd Salt Sand	1730	1778	1730	1778	
Shale	1778	1798	1778	1798	
Maxton Sand	1798	1862	1798	1862	
Shale	1862	1905	1862	5409	
Big Lime	1905	1991	1905	6064	
Big Injun	1991	2147	1991	6637	
Price	2147	2492	2147	7111	
Murrysville	2492	2508	2492	7145	
Shale	2508	2694	2508	7221	
50' Sand	2694	2701	2694	5307	
Shale	2701	2808	2701	5409	
30' Sand	2808	2817	2808	6064	
Shale	2817	2869	2817	6637	
Gordon	2869	2873	2869	7111	
Shale	2873	2969	2873	7145	
Fifth Sand	2969	3008	2969	7221	
Shale	3008	3418	3008	7242	
Speechley Sand	3418	3438	3419	7274	
Shale	3438	4509	3440	7400	
Warren Sand	4509	4514	4521	not encountered	
Shale	4514	5180	4526	not encountered	
Java Shale	5180	5287	5199	not encountered	
Pipe Creek Shale	5287	5388	5307	not encountered	
Angola Shale	5388	6035	5409	6064	
Rhinestreet	6035	6495	6064	6637	
Cashaqua	6495	6603	6637	7111	
Middlesex	6603	6634	7111	7145	
West River	6634	6705	7145	7221	
Burkett	6705	6724	7221	7242	
Tully Limestone	6724	6754	7242	7274	
Hamilton	6754	6871	7274	7400	Gas
Marcellus	6871	6922	7400	not encountered	
Onondaga	6922	6930	not encountered	not encountered	
Huntersville	6930	not encountered	not encountered	not encountered	

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/5/2014
Job End Date:	12/29/2014
State:	West Virginia
County:	Marshall
API Number:	47-051-01733-00-00
Operator Name:	Noble Energy, Inc.
Well Name and Number:	WEB-22D
Longitude:	-80.52004400
Latitude:	39.92278000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,816
Total Base Water Volume (gal):	15,232,488
Total Base Non Water Volume:	0



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## 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	Operator	Carrier	Water	7732-18-5	100.00000	88.50903	
40/70 White	FTSI	proppant	Silica, Quartz	14808-60-7	100.00000	8.63820	
100 Mesh Sand	FTSI	proppant	Silica, Quartz	14808-60-7	100.00000	2.20396	
Hydrochloric Acid (HCl)	FTSI	Acid	Water	7732-18-5	63.00000	0.30582	
			Hydrogen Chloride	7647-01-0	37.00000	0.17961	
FRW-600	FTSI	Friction Reducer	Acrylamide Polymer	Trade Secret	100.00000	0.06766	
			Hydrotreated light distillate	54742-47-8	30.00000	0.02030	
			Ammonium acetate	531-61-8	6.00000	0.00406	
CS-500 SI	FTSI	Scale inhibitor	Water	7732-18-5	55.00000	0.02621	
			Acrylic Polymer	Proprietary	24.00000	0.01144	
			Ethylene glycol	107-21-1	10.00000	0.00477	
			Sodium chloride	7647-14-5	6.00000	0.00286	
			Sodium Polyacrylate	9003-04-7	5.00000	0.00238	

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CI-3240	FTSI	Biocide	Water	7732-18-5	55.00000	0.02138	
			Dazomet (Tetrahydro-3, 5-dimethyl-2H-1, 3, 5-thiadiazine-2-thione.	533-74-4	24.00000	0.00933	
HVG-1	FTSI	Water Gelling Agent	Sodium Hydroxide	1310-73-2	23.00000	0.00894	
			Guar Gum	9000-30-0	55.00000	0.00339	
			Petroleum Distillate	64742-47-8	55.00000	0.00339	
			Raffinates (Petroleum), Sorption Process	64741-85-1	50.00000	0.00308	
			Clay	1302-78-9	5.00000	0.00031	
			Surfactant	Proprietary	2.00000	0.00012	
			Clay	14808-60-7	2.00000	0.00012	
			Surfactant	154518-36-2	1.00000	0.00006	
			Surfactant	24938-91-8	1.00000	0.00006	
			Surfactant	9043-30-5	1.00000	0.00006	
FE-100L	FTSI	Iron control	Water	7732-18-5	60.00000	0.00092	
			Citric acid	77-92-9	55.00000	0.00085	
CI-150	FTSI	Acid Corrosion Inhibitor	Organic amine resin salt	Proprietary	30.00000	0.00026	
			Isopropanol	67-63-0	30.00000	0.00026	
			Ethylene Glycol	107-21-1	30.00000	0.00026	
			Quaternary ammonium compound	Proprietary	10.00000	0.00009	
			Alkyene Oxide Block Polymer	Proprietary	10.00000	0.00009	
			Aromatic aldehyde	Proprietary	10.00000	0.00009	
			Dimethylformamide	68-12-2	10.00000	0.00009	
			Water	7732-18-5	5.00000	0.00004	
			Diethylene glycol	111-46-6	1.00000	0.00001	
			Aliphatic alcohol	Proprietary	0.10000	0.00000	
			Fatty Acid	Proprietary	0.10000	0.00000	
			Fatty Acid Salt	Proprietary	0.10000	0.00000	
NE-100	FTSI	Non-emulsifier	Water	7732-18-5	90.00000	0.00039	
			2-Butoxyethanol	111-76-2	10.00000	0.00004	
			2-Propanol	67-63-0	10.00000	0.00004	
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00002	
			Benzene, C10-16 Alkyl Derivatives	68648-87-3	0.04000	0.00000	
			Unsulphonated Matter	Proprietary	0.03000	0.00000	
			Sulfuric Acid	7664-93-9	0.01000	0.00000	
			Sulfur Dioxide	7446-09-5		0.00000	
APB-1	FTSI	Gel breaker					

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	Ammonium Persulfate	7727-54-0	100.00000	0.00021
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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)

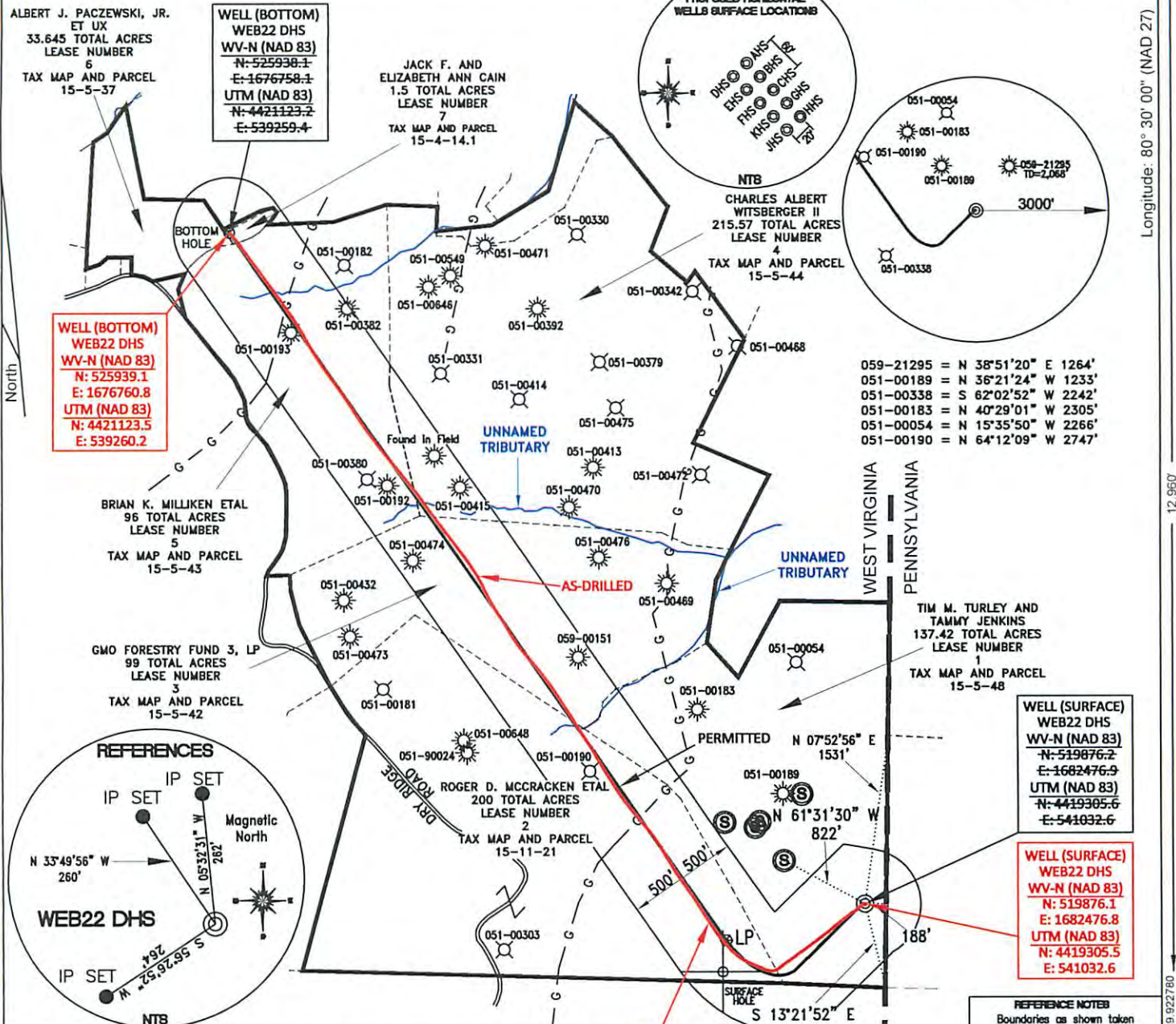
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SURFACE HOLE LOCATION	LANDING POINT LOCATION	BOTTOM HOLE LOCATION
UTM 17-NAD 83 N) 4419305.55 E) 541032.57	UTM 17-NAD 83 N) 4419198.30 E) 540655.84	UTM 17-NAD 83 N) 4421123.16 E) 539259.44
NAD 27, WV NORTH N) 519838.80 E) 1713911.51	NAD 27, WV NORTH N) 519507.57 E) 1712669.34	NAD 27, WV NORTH N) 525900.75 E) 1708192.76

**WELL (LANDING POINT) WEB22 DHS WV-N (NAD 83)**  
N: 519716.5  
E: 1681080.0  
UTM (NAD 83)  
N: 4419249.8  
E: 540607.8

**REFERENCE NOTES**  
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records Ohio County, West Virginia MARCH 2013  
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS  
Drafted by: E.A.M.

FILE #: NOB 001  
DRAWING #: 2169  
SCALE: PLAT - 1"=1400'  
TICK MARK - 1"=2000'  
MINIMUM DEGREE OF ACCURACY: 1/200  
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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 DEPARTMENT OF ENVIRONMENTAL PROTECTION.  
Signed: *[Signature]*  
L.L.S. #2124 : Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25304

Well Type:  Oil  Waste Diposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: WHEELING CREEK  
COUNTY/DISTRICT: MARSHALL / WEBSTER  
SURFACE OWNER: TIM M. TURLEY AND TAMMY JENKINS  
OIL & GAS ROYALTY OWNER: TIM M. TURLEY AND TAMMY JENKINS  
LEASE NUMBERS:

DATE: JANUARY 27, 2015  
OPERATOR'S WELL #: WEB22 DHS AS-DRILLED PLAT  
API WELL #: 47 51 01733  
STATE COUNTY PERMIT

ELEVATION: 1,339.18'  
QUADRANGLE: MAJORSVILLE WV-PA  
ACREAGE: 137.42 +/-  
ACREAGE: 783.26 +/-

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
PLUG OFF FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY):

TARGET FORMATION: MARCELLUS  
WELL OPERATOR: NOBLE ENERGY, INC.  
ADDRESS: 333 TECHNOLOGY DRIVE SUITE 116  
CITY: CANONSBURG STATE: PA ZIP CODE: 15317

ESTIMATED DEPTH: TVD: 6,913' TMD: 15,414'  
DESIGNATED AGENT: STEVEN M. GREEN  
ADDRESS: 500 VIRGINIA STREET EAST  
CITY: CHARLESTON STATE: WV ZIP CODE: 25301

SURFACE HOLE DEC. LAT: 39.9522780 SURVEYED LAT: 39° 55' 22.0"