



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

January 26, 2015

PDC MOUNTAINEER LLC
POST OFFICE BOX 26
BRIDGEPORT, WV 26330

Re: Permit Modification Approval for API Number 9101287 , Well #: COALTRAIN NO. 20HM
Extend Lateral

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

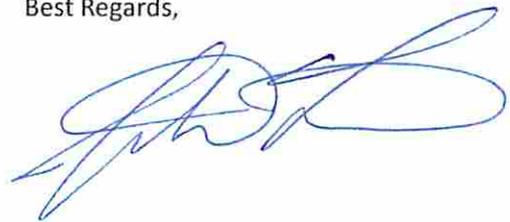
January 15, 2015

Mr. James Martin
Chief – Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304

Dear Mr. Martin,

We are requesting a modification to our Coaltrain #20H permit, API #47-091-01287. The current permit has a TMD of 15,450 ft, we would like to extend it to 18,037'. It changes the lateral length from 6,872' to 8,989'. When the permit was originally applied for, the drilling rig could not efficiently drill 18,000' TMD, our current rig is capable of efficiently drilling this distance. Also, this modification would allow us to more effectively drill our leasehold position, without stranding acreage and formation, while preventing waste. We hope that you consider this modification and appreciate your time in reviewing our request.

Best Regards,



Jonathan Farmer
SVP of Marcellus Operations

Received
Office of Oil & Gas
JAN 21 2015

WW-6B
(10/14)

API NO. 47- 091 - 01287
OPERATOR WELL NO. 20HM
Well Pad Name: Coaltrain

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: PDC Mountaineer, LLC 494494839 Taylor Courthouse Grafton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: 20HM Well Pad Name: Coaltrain

3) Farm Name/Surface Owner: Patriot Mining Corp. Public Road Access: Co Rt. 11 Wendall Road

4) Elevation, current ground: 1268' Elevation, proposed post-construction: 1268'

5) Well Type (a) Gas Oil _____ Underground Storage _____
Other _____

(b) If Gas Shallow Deep _____
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Marcellus Shale, Depth Approx. 7,700', Thickness approx. 100', 4615PSI

8) Proposed Total Vertical Depth: 7,675'

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 18,037'

11) Proposed Horizontal Leg Length: 9,124'

12) Approximate Fresh Water Strata Depths: 163', 387'

13) Method to Determine Fresh Water Depths: Well Records

14) Approximate Saltwater Depths: None

15) Approximate Coal Seam Depths: 688', 754', 855', 1088'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated working on an old strip bench.

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

Received
Office of Oil & Gas
JAN 21 2015

WW-6B
(10/14)

4709101287 MOD
API NO. 47-091 - 01287
OPERATOR WELL NO. 20HM
Well Pad Name: Coaltrain

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	80'	80'	CCTS
Fresh Water	13 3/8"	New	H-40	48#	450'	450'	CCTS
Coal							
Intermediate	9 5/8"	New	J-55	36#	2,800'	2,800'	CCTS
Production	5 1/2"	New	P-110	20#	18,037'	18,037'	3,726 SX
Tubing							
Liners							

MSH
1/26/15

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	.756	1500	300 psi	1	1.06
Fresh Water	13 3/8"	17 1/2"	.66	1730	300 psi	1	1.36
Coal							
Intermediate	9 5/8"	12 1/4"	.704	3520	1500 psi	1	1.38
Production	5 1/2"	8.5" / 8.75"	.722	12640	9500 psi	H	1.18
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

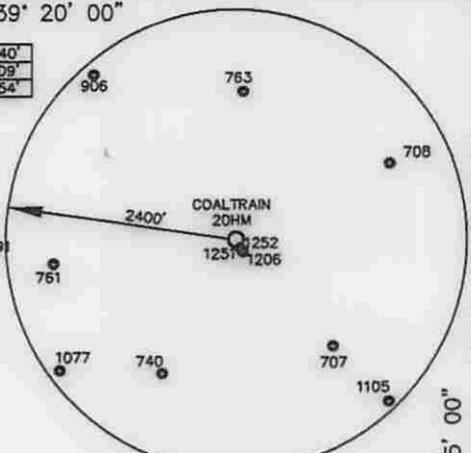
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Office of Oil & Gas
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PDC MOUNTAINEER, LLC. WELL NO. COALTRAIN 20HM

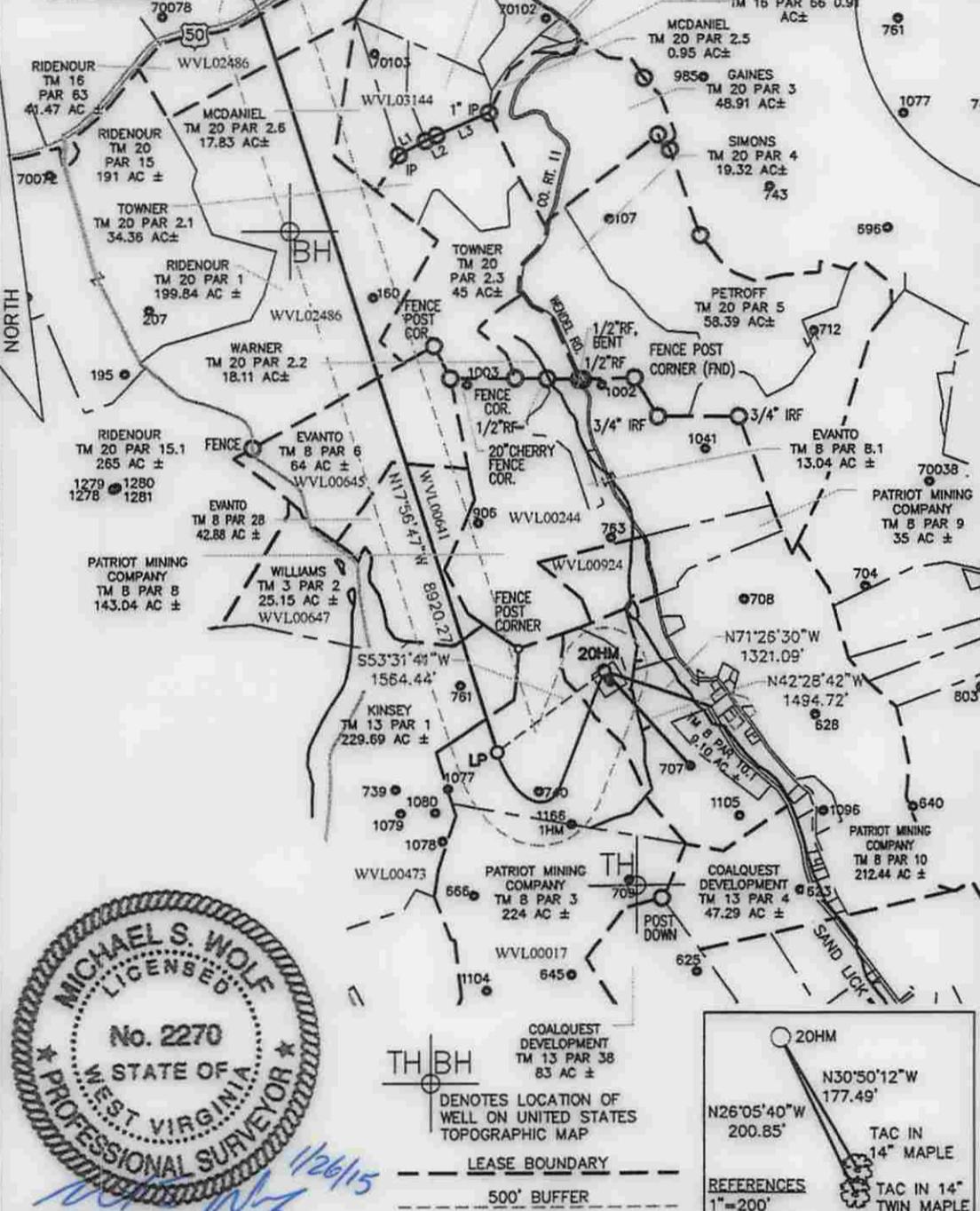
11,795' BOTTOM HOLE
LATITUDE 39° 20' 00"

NOTES:
-PLAT ORIENTATION, CORNERS, AND WELL REFERENCES ARE BASED UPON THE GRID NORTH MERIDIAN FOR THE WV STATE PLANE COORDINATE SYSTEM, NORTH ZONE NAD 83. WELL LOCATION REFERENCE TIES ARE BASED UPON THE MAGNETIC MERIDIAN.
-THERE ARE NO (O) WATER WELL(S) LOCATED WITHIN 250' OF WELL 20HM.
-THERE ARE NO (D) DWELLINGS OR AGRICULTURAL BUILDINGS WITHIN 625 FEET OF WELL 23HM
O = MONUMENT FOUND IRON REBAR UNLESS NOTED OTHERWISE.

L1	N61°43'49"E	356.40'
L2	N64°33'24"E	142.09'
L3	N67°01'21"E	671.54'



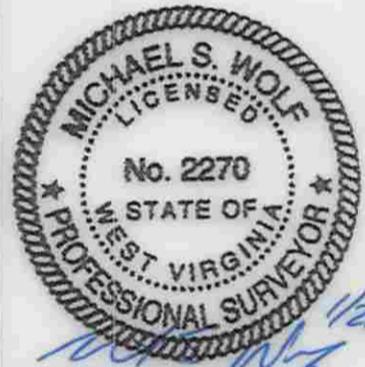
USER: alville
LAYOUT: 20HM
PLOT DATE/TIME: 1/26/2015 - 10:28am
CAD FILE: L:1050-4915 PDC - Asbuilt Coaltrain Well Pad Wendel Rd in Taylor City\Survey\050-4915 CL TRAIN 20HM-21HM.dwg



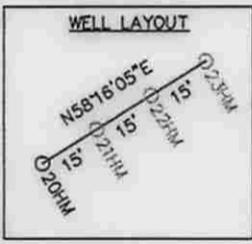
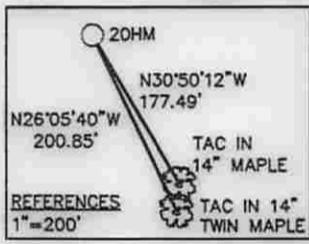
WELL NO. 20HM TOP HOLE
STATE PLANE COORDINATES (NAD 27 NORTH ZONE)
N: 290968.066
E: 1827203.087
LAT: 39°17'50.493"
LON: 80°06'37.365"
UTM COORDINATES (NAD 83-METER)
N: 4350152.904
E: 576710.962

STATE PLANE COORDINATES (NAD 27 NORTH ZONE)
N: 290038.118
E: 1825945.043
LAT: 39°17'41.217"
LON: 80°06'53.288"
UTM COORDINATES (NAD 83-METER)
N: 4349863.197
E: 576332.375

WELL NO. 20HM BOTTOM HOLE
STATE PLANE COORDINATES (NAD 27 NORTH ZONE)
N: 298590.95
E: 1823174.85
LAT: 39°19'05.56"
LON: 80°07'29.28"
UTM COORDINATES (NAD 83-METER)
N: 4352454.899
E: 575445.077



TH BH
DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAP
LEASE BOUNDARY
500' BUFFER



Michael S. Wolf, P.S. 2270

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. 050-4915
SCALE: 1"=2000'
MINIMUM DEGREE OF ACCURACY: 1 in 2500
PROVEN SOURCE OF ELEVATION: OPUS SURVEY GRADE GPS

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

DATE JANUARY 26, 2015
OPERATOR'S WELL NO. COALTRAIN NO. 20HM
API WELL NO.
47 - 091 - 01287 M00
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL (IF "GAS"), PRODUCTION STORAGE DEEP SHALLOW
LOCATION: ELEVATION: 1267.91' WATER SHED: SAND LICK RUN OF SIMPSON CREEK
DISTRICT: COURTHOUSE COUNTY: TAYLOR
QUADRANGLE: GRAFTON 7.5' ACREAGE: 212.44 AC±
SURFACE OWNER: PATRIOT MINING COMPANY, INC. LEASE ACREAGE: 972.85 AC±
OIL & GAS ROYALTY OWNER: GLEN C. LAREW ET AL LEASE NO. WVL00017 WVL00645 WVL00641 WVL00473 WVL02486



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: 7,675' TVD / 18,037' MD

WELL OPERATOR: PDC MOUNTAINEER, LLC DESIGNATED AGENT: STEVE JOHNSON
ADDRESS: 120 GENESIS BOULEVARD BRIDGEPORT, WV 26330 ADDRESS: 120 GENESIS BOULEVARD BRIDGEPORT, WV 26330