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

July 10, 2015

NORTHEAST NATURAL ENERGY LLC
707 VIRGINIA STREET EAST
CHARLESTO, WV 25301

Re: Permit Modification Approval for API Number 6101707, Well #: MIP 3H

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

Raines, Cindy J

From: Hollie Medley <hmedley@nne-llc.com>
Sent: Friday, July 10, 2015 12:13 PM
To: Raines, Cindy J
Cc: Brett Loflin
Subject: MIP 3H (47-061-01707) - Modification Request
Attachments: MIP 3H - WW-6B - Permit Application - DEEP WELL - 2015-7-9.pdf; MIP 3H - Site Safety Plan - Additional Pages - 2015-7-10.pdf; MIP 3H - Schematic - 2015-7-9.pdf; MIP 3H - Final Plat - Deep - 2015-7-10.pdf

Cindy,

Northeast Natural Energy LLC would like to request that its current MIP 3H Permit (47-061-01707) be modified from a shallow well to a deep well for logging purposes. This "deep" pilot hole will be plugged back with solid cement prior to the drilling of the horizontal portion of the well in the Marcellus formation.

Gayne has requested that NNE add a comment to its Site Safety Plan stating that the formation pressures will not exceed the pressure ratings of the BOP's being installed. This comment has been added and is attached for your records.

The nearest deep well permitted was NNE's MIP SW. This well has not yet been drilled and a modification has been requested to revised the current permit (47-061-01705) from "deep" to a shallow depth at 6,500'.

Please find attached a revised WW-6B, Additional Pages for the existing Site Safety Plan, a revised schematic and an updated Plat.

Please let me know if you have any questions.

Thanks,

Hollie M. Medley
Regulatory Coordinator
Northeast Natural Energy LLC
48 Donley Street, Suite 601
Morgantown, WV 26501
304.241.5752 Ext. 7108
northeastnaturalenergy.com

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Oil and Gas Conservation Commission
601 57th Street, SE Charleston, WV 25304
(304)926-0499, Ext 1656

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

July 10, 2015

Department of Environmental Protection
Office of Oil and Gas
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-061-01707

COMPANY: Northeast Natural Energy

FARM: Enroute Properties, LLC MIP Unit #3

COUNTY: Monongalia DISTRICT: Grant QUAD: Morgantown South

The deep well review of the application for the above company is **approved to drill to ~~ORISKANY~~** Helderberg (cr) **-- MARCELLUS completion.** If operator wishes to drill deeper than the HELDERBERG, additional approval must be obtained from the OGCC.

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners;

2. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells, well name, and the name and address of the operator; none

3. Provided a plat showing that the proposed location is a distance of 400 feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Cindy Raines

Cindy Raines
Executive Assistant

SURFACE HOLE DEC. LONG: 79.976335
SURVEYED LONG: 79° 58' 34.8"

5070'

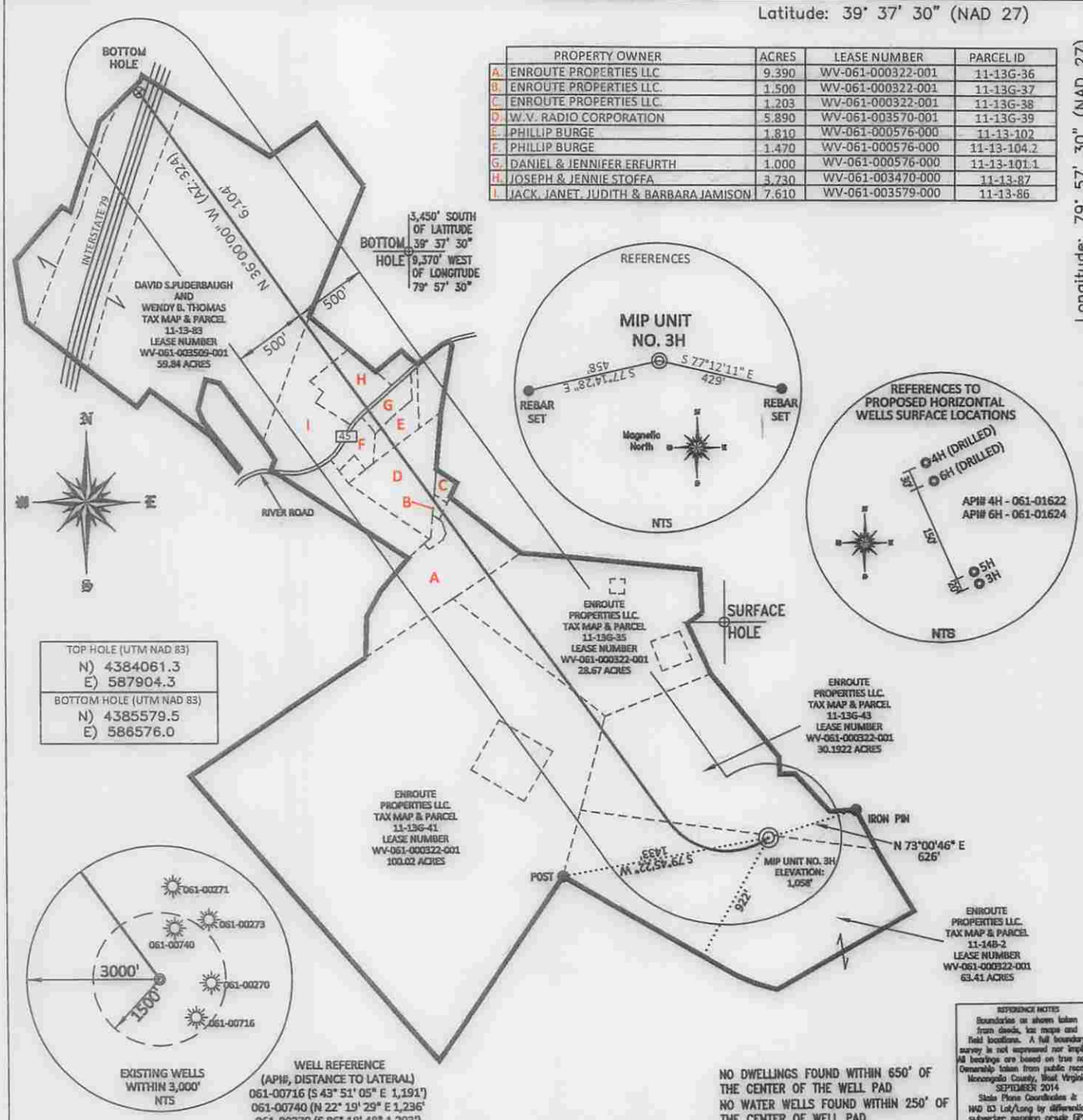
Latitude: 39° 37' 30" (NAD 27)

Longitude: 79° 57' 30" (NAD 27)

8490'

SURFACE HOLE DEC. LAT: 39.601701
SURVEYED LAT: 39° 36' 06.1"

	PROPERTY OWNER	ACRES	LEASE NUMBER	PARCEL ID
A.	ENROUTE PROPERTIES LLC	9.390	WV-061-000322-001	11-13G-36
B.	ENROUTE PROPERTIES LLC.	1.500	WV-061-000322-001	11-13G-37
C.	ENROUTE PROPERTIES LLC.	1.203	WV-061-000322-001	11-13G-38
D.	W.V. RADIO CORPORATION	5.890	WV-061-003570-001	11-13G-39
E.	PHILLIP BURGE	1.810	WV-061-000576-000	11-13-102
F.	PHILLIP BURGE	1.470	WV-061-000576-000	11-13-104.2
G.	DANIEL & JENNIFER ERFURTH	1.000	WV-061-000576-000	11-13-101.1
H.	JOSEPH & JENNIE STOFFA	3.730	WV-061-003470-000	11-13-87
I.	JACK, JANET, JUDITH & BARBARA JAMISON	7.610	WV-061-003579-000	11-13-86



FILE #: NNE004
DRAWING #: 2443
SCALE: 1"=1000'
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: _____

L.L.S. #2124 : Ernest J. Benchek III

ERNEST J. BENCHEK III
LICENSED
No. 2124
STATE OF WEST VIRGINIA
PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: JUNE 1, 2015

OPERATOR'S WELL #: MIP UNIT NO. 3H

API WELL #: 47 (STATE) 61 (COUNTY) 01707 NOD (PERMIT)

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

AS-BUILT

WATERSHED: UPPER MONONGAHELA

ELEVATION : 1,058'

COUNTY/DISTRICT: MONONGALIA/GRANT

QUADRANGLE: MORGANTOWN SOUTH

SURFACE OWNER: ENROUTE PROPERTIES LLC.

ACREAGE: 63.41 +/-

OIL & GAS ROYALTY OWNER: ENROUTE PROPERTIES LLC.

ACREAGE: 316.115 +/-

LEASE NUMBERS: _____

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 - Oriskany

ESTIMATED DEPTH: TVD: 7,528' TMD: 14,085'

WELL OPERATOR : NORTHEAST NATURAL ENERGY

DESIGNATED AGENT : JOHN ADAMS

ADDRESS: 707 VIRGINIA STREET – SUITE 1400

ADDRESS: 707 VIRGINIA STREET – SUITE 1400

CITY: CHARLESTON STATE: WV ZIP CODE: 25301

CITY: CHARLESTON STATE: WV ZIP CODE: 25301

4706101707MOD

WW-6A1

Operator's Well No. MIP 3H

NNE Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page	Tax Map & Parcel
WV-061-000322-001	Enroute Properties, LLC	Northeast Natural Energy LLC	0.125 or greater	1420/577	14B-2; 13G-43,35,41,36,37,38
WV-061-003570-001	WV Radio Corporation	Northeast Natural Energy LLC	.125 or greater	1521/233	13G-39
WV-061-000576-000	Morgantown Industrial Park Associates, L.P.	Northeast Natural Energy LLC	0.125 or greater	1420/571	11-13G-104.2,102,101.1
WV-061-003470-000	STOFFA, JENNIE	Northeast Natural Energy LLC	0.125 or greater	1514/12	13-87
WV-061-003579-000	JAMISON, BARBARA	Northeast Natural Energy LLC	.125 or greater	1522/765	13-86
WV-061-003509-001	MOORE, CHARLES	Northeast Natural Energy LLC	0.125 or greater	1517/65	13-83

*See Attachment

Received
Office of Oil & Gas
JUN 09 2015

1622 pb

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A BOP EQUIPMENT – DRILLING PHASE

From the shoe of the intermediate casing string (9-5/8") to KOP, the well will continue to be drilled on air. For this section, at a minimum, an 11" 3,000 PSI annular-type BOP will be utilized as a means of well control. Installation of this equipment will be dependent upon two different conditions…

- Should the top-hole drilling rig have a substructure large enough to sit upon a cellar, an 11" 5,000 PSI API flanged casing head will be welded onto the top of the intermediate casing string (9-5/8") below grade after it has been set and cement has cured for a minimum of 8 hours. It is upon this casing head that the annular-type BOP will be bolted and torqued to specification as a means of well control for the section.
- Should the top-hole drilling rig have a substructure too small to sit upon a cellar, the intermediate casing string (9-5/8") will be landed at surface and a screw-on or weld flange annular-type BOP will be used as a means of well control for the section. Under this scenario, a cellar will be installed around the wellbore after the top-hole rig is released from the pad. Once installed, an 11" 5,000 PSI API flanged casing head will then be welded onto the top of the intermediate casing string (9-5/8") below grade.

For the remainder of the drilling of the well on fluid; at a minimum and from bottom to top; an 11" 5,000 PSI kill spool, an 11" 5,000 PSI blind ram-type BOP, an 11" 5,000 PSI pipe ram-type BOP, and an 11" 5,000 PSI annular-type BOP will be bolted and torqued to specification upon the 11" 5,000 PSI casing head.

Based on previous drilling experience in the area, unstimulated reservoir pressures will not exceed the pressure ratings of the BOP's installed.

B PROCEDURE AND SCHEDULE FOR TESTING BOP

For the bottom and horizontal wellbore drilling phase, function testing of BOP equipment shall occur upon initial installation, weekly, and after each trip. Pressure testing of all BOP equipment shall occur upon initial installation and every twenty-one (21) days thereafter, should the well not be completed within that time. Annular preventers are to be tested to seventy percent (70%) of the rated capacity and ram preventers should be tested to eighty percent (80%) of the rated capacity according to the following procedure;

- The WV DEP Regional Oil and Gas Inspector will be notified 24 hrs. in advance of the pressure testing of all BOP equipment.

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Deep Well Additional Requirements

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WW-6B
(9/13)

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

1) Well Operator: Northeast Natural Energy LLC | 494498281 | Monongalia | Grant | Morgantown South
Operator ID | County | District | Quadrangle

2) Operator's Well Number: MIP 3H Well Pad Name: MIP

3) Farm Name/Surface Owner: Enrout Properties, LLC Public Road Access: CR 19/19; Industrial Park Rd

4) Elevation, current ground: 1,058' Elevation, proposed post-construction: 1,058'

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):
Pilot: Helderburg 8,000', Horizontal: Marcellus 7,528' ; 103' , 3,270 psi

8) Proposed Total Vertical Depth: Pilot: 8,000' ; Horizontal: 7,528'

9) Formation at Total Vertical Depth: Pilot: Helderburg; Horizontal: Marcellus

10) Proposed Total Measured Depth: 14,085'

11) Proposed Horizontal Leg Length: 6,104'

12) Approximate Fresh Water Strata Depths: 50' , 450'

13) Method to Determine Fresh Water Depths: Driller's Log from Offset Wells

14) Approximate Saltwater Depths: 1,600'

15) Approximate Coal Seam Depths: 200' , 225'

16) Approximate Depth to Possible Void (coal mine, karst, other): N/A

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: _____

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(9/13)

18) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	New	STD	78.67	40'	40'	GTS
Fresh Water	13 3/8"	New	J-55	54.5	530'	500'	CTS
Coal							
Intermediate	9 5/8"	New	J-55	40	1,830'	1,800'	CTS
Production	5 1/2"	New	P-110	20	14,085'	14,055'	3,364 cu. ft.
Tubing	2 3/8"	New	J-55	4.7		7,800'	NA
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	.375	499	Grout	NA
Fresh Water	13 3/8"	17 1/2"	.38"	2,760	Class A	1.23
Coal						
Intermediate	9 5/8"	12 1/4"	.395"	3,950	Class A	1.3
Production	5 1/2"	8 3/4"	.361"	12,530	50:50 Poz	1.21
Tubing	2 3/8"	NA	.190"	7,700	NA	NA
Liners						

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PACKERS

Kind:			
Sizes:			
Depths Set:			

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(9/13)

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drilling and completion of a horizontal Marcellus well. The well will be drilled on air to an approximate depth of 6,500' TVD/MD. A pilot hole will then be drilled on synthetic based mud to an approximate depth of 8,000' and plugged back with solid cement to the KOP at approximately 6,500' TVD. The well will then be horizontally drilled on synthetic based mud from the KOP to approximately 7,528' TVD / 14,085' MD along a 324 degree azimuth.

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20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Multi-stage / high-rate slickwater fracture treatment using various size sands as proppant. First stage will be initiated via pressurization against a burst disc ran in the production casing string or perforated with coiled tubing. Subsequent stages will be perforated with pumped down guns ran on wireline. Individual stages will be isolated with composite frac plugs. Maximum pump rate during any stage will be 110 BPM with a maximum allowable surface pressure of 9,500 PSI. Composite bridge plugs will be set at the end of the last stage to isolate the treated formation.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): N/A - Existing Pad

22) Area to be disturbed for well pad only, less access road (acres): N/A - Existing Pad

23) Describe centralizer placement for each casing string:

Surface and intermediate casing strings will have bow spring centralizers placed every third joint (~120') from shoe joint to surface. Production casing will have rigid body centralizers placed at a minimum every fourth joint (~160') from TD to surface.

24) Describe all cement additives associated with each cement type:

Surface string cement will be a Class A + Max 3% bwoc Calcium Chloride Fresh Water blend. Intermediate string cement will be a Class A Cement + Max 3% bwoc Calcium Chloride + Fresh Water. Production string cement will be (50:50) Poz (Fly Ash):Type I Cement with a gas migration additive.

25) Proposed borehole conditioning procedures:

Surface string will use a 25.0 bbls Gel Pill + LCM + 25 lbs Cello Flake + 20 lbs/bbl Bentonite @ 8.4 ppg & 10 bbls fresh water spacer prior to cement. Intermediate string will use a 25.0 bbls Gel Pill + LCM + 25 lbs Cello Flake + 20 lbs/bbl Bentonite @ 8.4 ppg & 10 bbls fresh water spacer prior to cement. Production string will use a 50.0 bbls SealBond 25 + 1 gal/bbl US-40 + 275 lbs/bbl Barite + 1 gal/bbl SS-2 Spacer @ 13.5 ppg prior to cement.

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*Note: Attach additional sheets as needed.

northeast NATURAL ENERGY

Job Number:
Company: Northeast Natural Energy
Lease/Well: MIP 3H
Location: MIP
Rig Name: Patterson 254
State/County: WV/ Mon
Country: US
API Number:

Elevation (To MSL): 1060.00 ft
RKB: 18.00 ft
Projection System: US State Plane 1983
Projection Group: West Virginia Northern Zone
Projection Datum: GRS80
Magnetic Declination: -9.02
Grid Convergence: -0.30366 W
Date: Wednesday, July 08, 2015

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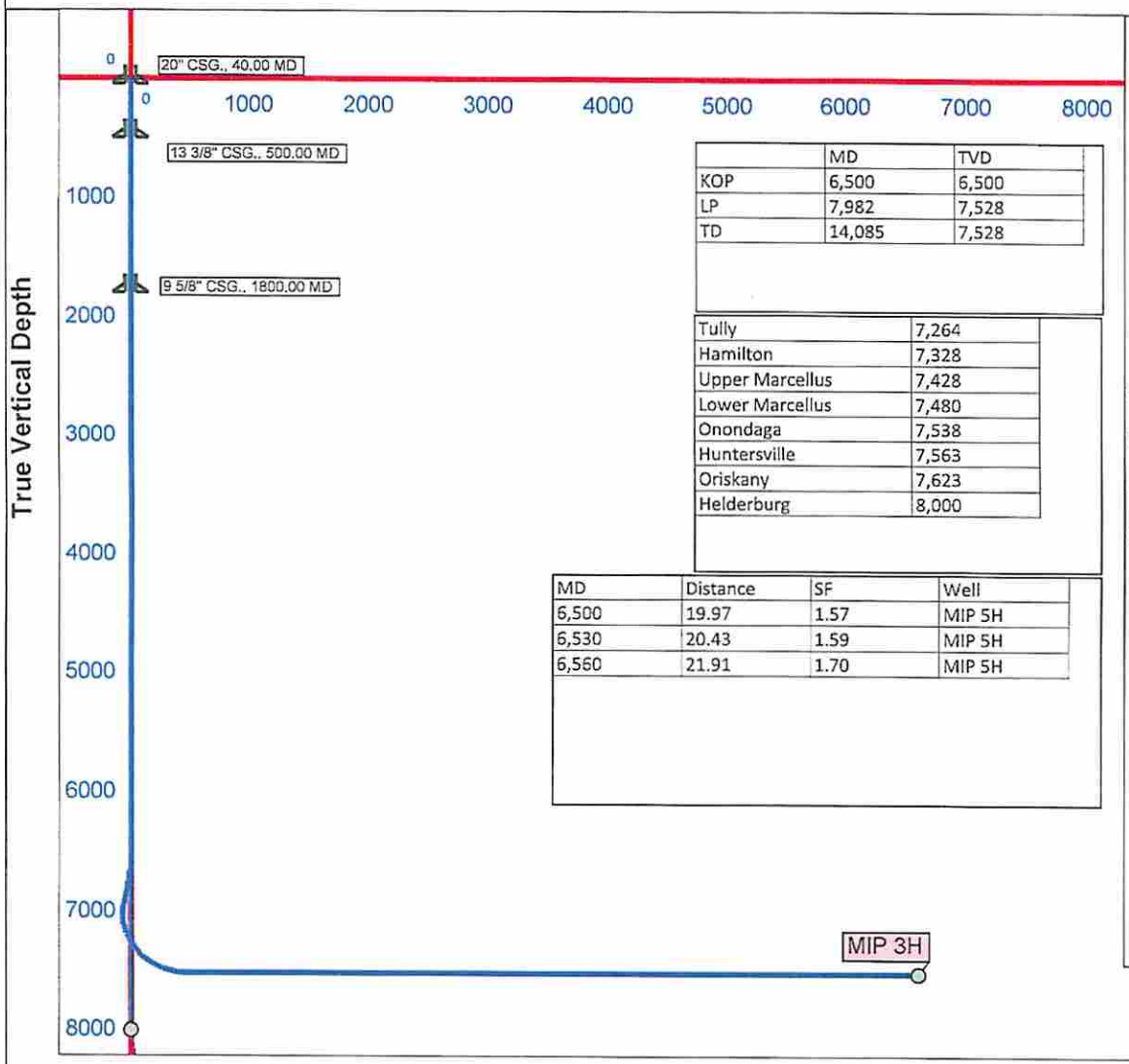
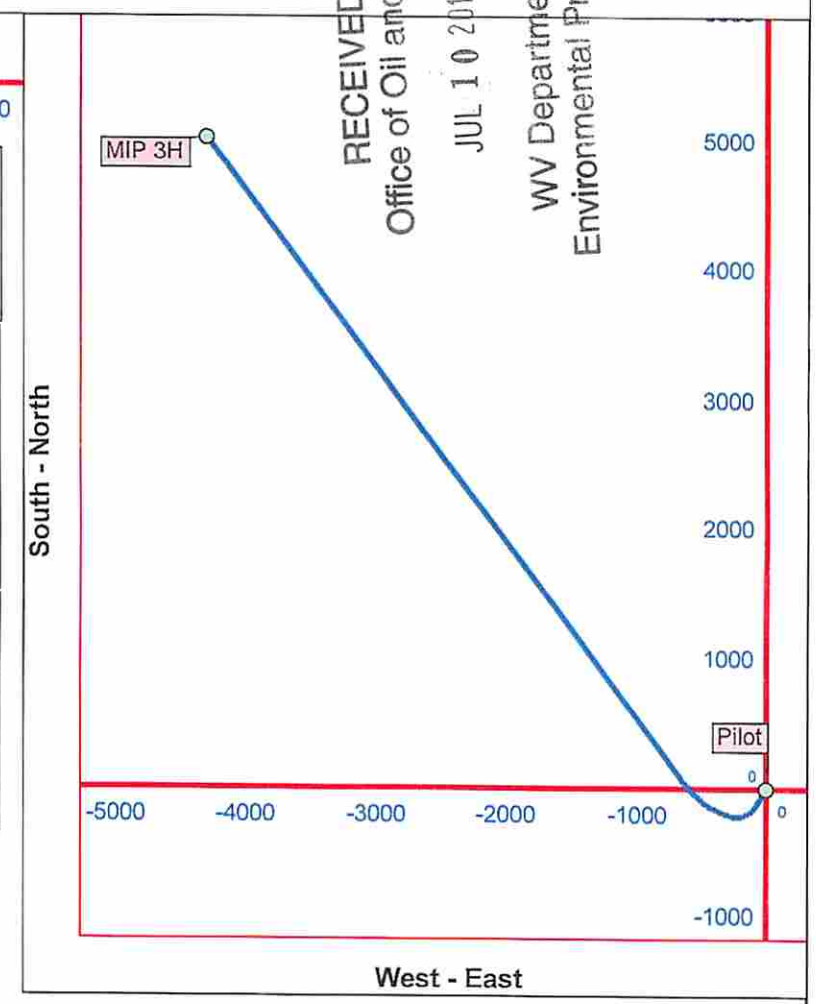


	MD	TVD
KOP	6,500	6,500
LP	7,982	7,528
TD	14,085	7,528

Tully	7,264
Hamilton	7,328
Upper Marcellus	7,428
Lower Marcellus	7,480
Onondaga	7,538
Huntersville	7,563
Oriskany	7,623
Helderburg	8,000

MD	Distance	SF	Well
6,500	19.97	1.57	MIP 5H
6,530	20.43	1.59	MIP 5H
6,560	21.91	1.70	MIP 5H



Vertical Section (1000 Ft/Div) VSP: 323.00°

Performance Drilling Technology, Inc. - HawkEye™ ©2014

A – ANTICIPATED DEPTHS

Freshwater	50' , 450'
Saltwater	1,600'
Oil and Gas	1,621' – 2,910' 7,428' – 7,538'
Hydrogen Sulfide	N/A*
Thief Zones	N/A*
High Pressure	N/A*
High Volume	N/A*

B – CASING AND CEMENTING PROGRAM

Type	Size	New or Used	Grade	Weight Per Foot	Footage: For Drilling	Intervals: Left in Well	Cement: Fill-Up (Cu. Ft.)
Conductor	20"	New	STD	78.67	40'	40'	GTS
Freshwater	13 3/8"	New	J-55	54.5	530'	500'	CTS
Coal							
Intermediate	9 5/8"	New	J-55	40	1,830'	1,800'	CTS
Production	5 ½"	New	P-110	20	14,085'	14,055'	3,364 cu. ft

*This well will be drilled into the Helderburg formation and will be plugged back to the KOP with solid cement.

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