



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

September 11, 2015

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

Re: Permit Modification Approval for API Number 6101705, Well #: MIP SW

Modified Casing Diameters

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

Promoting a healthy environment.

WW - 2B
(Rev. 8/10)

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
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Operator ID County District Quadrangle

2) Operator's Well Number: MIP SW 3) Elevation: 1,072.91'

4) Well Type: (a) Oil _____ or Gas X
(b) If Gas: Production _____ / Underground Storage _____
Deep _____ / Shallow X

5) Proposed Target Formation(s): Onondaga Proposed Target Depth: 7,672'

6) Proposed Total Depth: 7,672' Feet Formation at Proposed Total Depth: Onondaga

7) Approximate fresh water strata depths: 50', 450'

8) Approximate salt water depths: 1,600'

9) Approximate coal seam depths: 200', 225'

10) Approximate void depths, (coal, Karst, other): N/A

11) Does land contain coal seams tributary to active mine? No

12) Describe proposed well work and fracturing methods in detail (attach additional sheets if needed)

The MIP SW will be drilled to a depth of 7,672 ft. for the purposes of acquiring various geologic and engineering data and to be used for scientific observation. This well will not be perforated or produced.

13) **CASING AND TUBING PROGRAM**

MDK 9/10/2015

TYPE	SPECIFICATIONS			FOOTAGE INTERVALS		CEMENT
	Size	Grade	Weight per ft	For Drilling	Left in Well	Fill -up (Cu. Ft.)
Conductor	24"	NA	52.78	60'	60'	GTS
Fresh Water	13 3/8"	J-55	54.5	530'	500'	CTS
Coal						
Intermediate	7"	J-55	23	1,830'	1,800'	CTS
Production	4 1/2"	J-55	11.6	7,672'	7,642'	920 Cu. Ft.
Tubing			RECEIVED Office of Oil and Gas			
Liners						

Packers: Kind: _____
Sizes: _____
Depths Set _____

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SEP 10 5

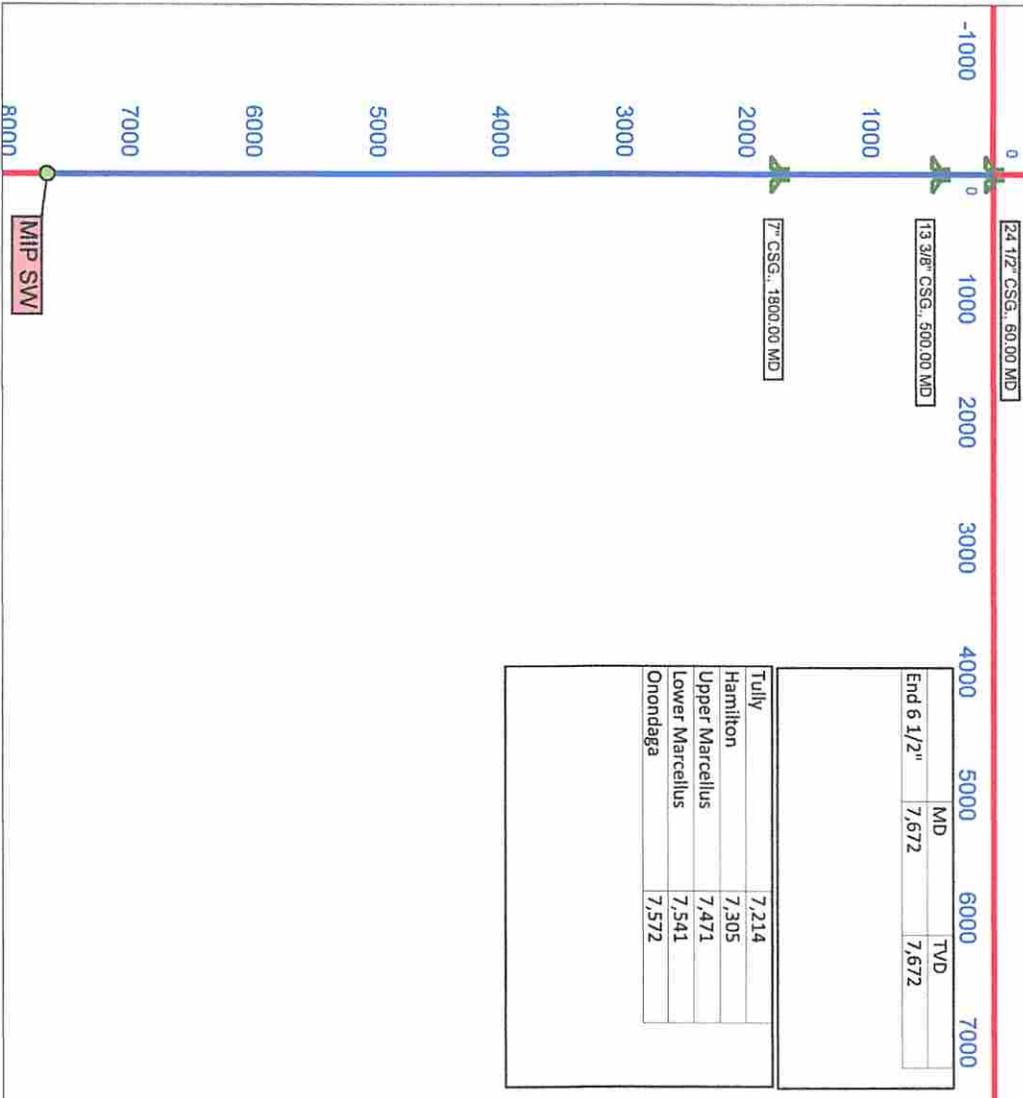
WV Department of
Environmental Protection



Job Number:
 Company: Northeast Natural Energy
 Lease/Well: MIP SW
 Location: MIP
 Rig Name: Patterson 254
 State/Country: 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: -8.02
 Grid Convergence: -0.30608 W
 Date: Monday, August 17, 2015

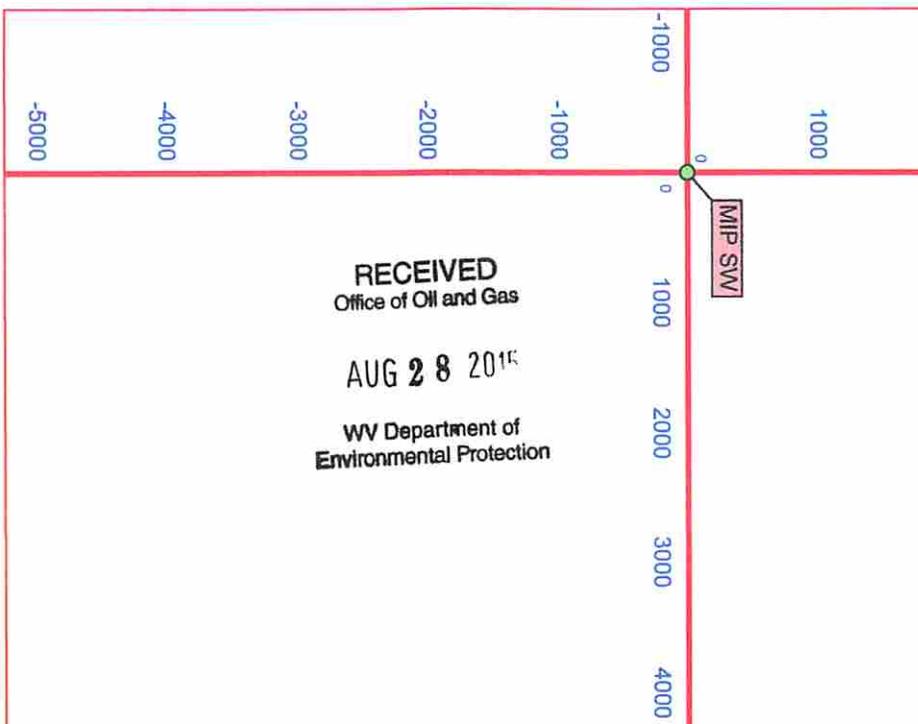
True Vertical Depth



MD	TVD
End 6 1/2"	7,672
	7,672

Tully	7,214
Hamilton	7,305
Upper Marcellus	7,471
Lower Marcellus	7,541
Onondaga	7,572

South - North



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Vertical Section (1000 FVDiv) VSP: 324.65°