



west virginia department of environmental protection

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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Friday, October 28, 2022
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

CNX GAS COMPANY LLC
1000 HORIZON VUE DR.
CANONSBURG, PA 15370

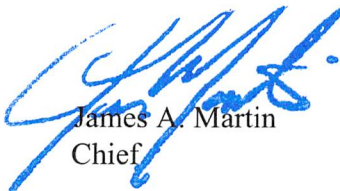
Re: Permit Modification Approval for WDTN19CHSM
47-061-01902-00-00

**Perform sidetrack and re-drill lateral to originally planned Bottom Hole Location.
No updated leases are needed**

CNX GAS COMPANY LLC

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.

If there are any questions, please feel free to contact me at (304) 926- 0450.



James A. Martin
Chief

Operator's Well Number: WDTN19CHSM
Farm Name: CNX GAS COMPANY LLC
U.S. WELL NUMBER: 47-061-01902-00-00
Horizontal 6A New Drill
Date Modification Issued: 10/28/2022

Promoting a healthy environment.

10/28/2022

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

1) Well Operator: CNX Gas Company LLC 494458046 Monongalia Batelle Wadestown
Operator ID County District Quadrangle

2) Operator's Well Number: WDTN19CHSM Well Pad Name: WDTN19

3) Farm Name/Surface Owner: CNX Gas Company LLC Public Road Access: Wise Run Road/CR6

4) Elevation, current ground: 1264.30 Elevation, proposed post-construction: 1264.30

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 Expected Pressure(s):
Target formation is Marcellus Shale @ 7880' - 7930'TVD, 50' thick, expected formation pressure ~4600 psi

8) Proposed Total Vertical Depth: 7905' TVD at TD, depending on formation dip

9) Formation at Total Vertical Depth: Marcellus Shale (will not penetrate Onondaga)

10) Proposed Total Measured Depth: 23,710' MD at TD

11) Proposed Horizontal Leg Length: 14,334'

12) Approximate Fresh Water Strata Depths: 125', 584', 845', 933', 938'

13) Method to Determine Fresh Water Depths: Offset well Information

14) Approximate Saltwater Depths: 2,419', 2,509', 3,139'

15) Approximate Coal Seam Depths: 708'-711', 966'-972', 1029-1031, 1054'-1059', 1060'-1068'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

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: see mine map

Depth: _____

Seam: _____

Owner: _____

RECEIVED
Office of Oil and Gas

OCT 27 2022

WV Department of
Environmental Protection

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	L/S	<94.0	75	46	96 / CTS
Fresh Water	13.375	New	J-55	54.5	1,135	1,106	960 / CTS
Coal	13.375	New	J-55	54.5	1,135	1,106	960 / CTS
Intermediate	9.625	New	J-55	36	2,960	2,931	1,025 / CTS
Production	5.5	New	P-110	23	22,899	22,870	4,735 / TOC @ 1,550'
Tubing	2.375	New	J-55	4.7	Above assumes RF = 29'	TBD	N/A
Liners	NA						

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	30	0.375	N/A	N/A	Type 1	1.18
Fresh Water	13.375	17.5	0.380	2,730	<500	Class A	1.19
Coal	13.375	17.5	0.380	2,730	<500	Class A	1.19
Intermediate	9.625	12.25	0.352	3,520	<2,815	Class A	1.19
Production	5.5	8.75 x 8.5	0.415	16,490	~11,000	Class A or H	1.10
Tubing	2.375	N/A	0.190	7,700	N/A	N/A	N/A
Liners							

PACKERS

Kind:	N/A			
Sizes:				
Depths Set:				

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

Utilize conductor rig to set 20" conductor into solid rock and cement back to surface. MIRU drilling rig. Air drill 17-1/2" hole. Run and cement 13-3/8" fresh water casing. Note that there are no known mineable coal seams in this area. Air drill 12-1/4" hole. Run and cement 9-5/8" intermediate casing. Air drill 8-3/4" production hole to curve KOP (this section is typically directionally drilled with a slant/tangent profile for anti-collision and for lateral spacing). Displace hole with 12.0-12.8 ppg SOBM. Drill 8-1/2" curve from KOP to landing point. Continue drilling 8-1/2" lateral to TD (geosteer this section to remain in Marcellus target window). Perform clean-up cycle to condition well. Run and cement 5-1/2" production casing. Suspend well and skid to next well or RDMO drilling rig.

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

Run CBL to ~60 degrees in the curve and back to surface to determine production casing TOC. Test production casing and toe prep well. MIRU stimulation/hydraulic fracturing equipment. Fracture well by pumping required number of stages utilizing plug-and-perf method. Max anticipated treating pressure is ~11,000 psi and max anticipated treating pump rate is ~100 bpm. Number of stages and stage spacing to be finalized after drilling. After last stimulation stage, drill out frac plugs and clean-out well to PBTD. Flow back and clean-up well. Tie well into production. Run tubing when required.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 21.0

22) Area to be disturbed for well pad only, less access road (acres): 12.6

23) Describe centralizer placement for each casing string:

Fresh water string: centralize shoe joint and every other joint to surface - utilize bow spring centralizers. Intermediate string: centralize shoe joint and every 3rd joint to surface - utilize bow spring centralizers. Production string: centralize every joint from shoe to TOC - utilize single piece/rigid bow centralizers. Actual centralizer placement may be changed based on hole conditions.

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

Fresh water/coal string: Class A cement with 1%-3% CaCl₂ and 1/4 pps cello-flake/LCM. Intermediate string: Class A cement with 0%-2% CaCl₂ and 1/4 pps cello-flake/LCM. Production string: Class A or H cement or Class H: Poz blend with dry blend and/or liquid additives including retarder, suspension agent, gas block, defoamer, fluid loss control, extender, dispersant, anti-settling agent. Actual cement blends may vary slightly depending upon cementing service company utilized.

25) Proposed borehole conditioning procedures:

Air sections are typically vertical holes - will ensure the hole is clean at section TD prior to TOOH to run casing (may require mist and/or soap to clean the hole). For the production hole - once at TD, circulate at max flowrate with max rotation until the shakers clean-up (typically requires multiple bottoms-up). For the production casing - once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.

*Note: Attach additional sheets as needed.



DRILLING WELL PLAN
WDTN-19C-HSM (Marcellus HZ)
Marcellus Shale Horizontal
Monongalia County, WV

		WDTN-19C-HSM SHL		N 435702.0472, E 1764883.50445 (NAD27)	
Ground Elevation	1264' GL Elevation	WDTN-19C-HSM LP		N 4338827.81, E 1762798.13 (NAD27)	
Azimuth	325°	WDTN-19C-HSM BHL		N 422154.9048, E 1771111.7377 (NAD27)	

WELLBORE DIAGRAM	HOLE	CASING	GEOLOGY	Tops (RKB)		MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
				MD	MD					
	24"	20" L/S	Soil and Rock Conductor	129	129	AIR	To Surface	N/A	N/A	Stabilize surface fill/soil
	17-1/2"	13-3/8" 54.5# J-55 BTC	DFGW		208	AIR / FW Mist	15.8 ppg Class A + 1% to 3% CaCl2 + 1/4 pps Flake 20% OH Excess Yield = 1.19 TOC @ surface	Centralize every 3rd joint from shoe to surface Bow spring centralizers	Ensure the hole is clean at section TD	Set through fresh water zones Set through coal zones Cemented to surface 13-3/8" shoe NOT to be set deeper than ground level
			Waynesburg Coal		708					
			Pittsburgh Coal (Solid)		1,060					
			FW/Coal Casing	1,231	1,231					
	12-1/4"	9-5/8" 36.0# J-55 LTC	Upper Freeport Coal		1,644	AIR / Soap	15.8 ppg Class A + 0% to 2% CaCl2 + 1/4 pps Flake 20% OH Excess Yield = 1.19 TOC @ surface	Centralize every 3rd joint from shoe to surface Bow spring centralizers	Soap the hole as needed and ensure the hole is clean at section TD	Set through potential salt water zones Cemented to surface Casing to be set ~200'-250' below the Big Injun base
			Lower Freeport Coal		1,685					
			Middle Kittanning Coal		1,808					
			Big Lime		2,419					
			Keener Sand		2,479					
			Big Injun Sand		2,509					
			Price Formation		2,690					
			Intermediate Casing	3,004	3,004					
	8-3/4" Tangent	5-1/2" 20.0# P-110 VAR	50 Foot		3,079	AIR	15.0 ppg Class A 50:50 Poz with additives (retarder, suspension agent, gas block, defoamer, fluid loss, extender, etc.) 10% OH Excess Yield = 1.07 TOC @ >= 200' above 9-5/8" shoe	Centralize every joint from shoe to KOP -TOC Single-piece/rigid bow centralizers	Once at TD, circulate at max flowrate with max rotation until shakers clean-up (typically requires multiple bottoms-up) Once on bottom with casing circulate a minimum of one hole volume prior to pumping cement	Note: For all strings, actual centralizer placements may be changed due to hole conditions Note: For all strings, actual cement blends may vary slightly depending upon service company utilized
			Gordon		3,139					
			Fifth		3,304					
			Bayard		3,351					
			Elks		5,289					
			Rhinestreet		7,406					
			Cashaqua		7,672					
Burkett				7,788						
Tully				7,815						
Hamilton				7,851						
Marcellus				7,880						
Production Casing			23,710	7,925						
8-1/2" Curve & Lateral					12.0-12.5 ppg SOBMs					

RECEIVED
 Office of Oil and Gas
 WV Department of
 Environmental Protection
 OCT 27 2022

LP @ +/- 7905' TVD 8-3/4" x 8-1/2" Hole - Cemented Long String +/- 14334' Lateral TD @ +/- 23710' TVD
 5-1/2" 20.0# P-110 VAR



Sarah Weigand
 Manager – Permitting Services
 Work: 724-485-3244
 E-mail: SarahWeigand@cnx.com

CNX Center
 1000 Horizon Vue Drive
 Canonsburg, PA 15317
 724-485-4000
 cnx.com

CHK# 2140038353
 Amt \$5,000
 Date 10/26/22

October 26, 2022

West Virginia Department of Environmental Protection
 Office of Oil & Gas
 601 57th Street, SE
 Charleston, WV 25304-2345

RECEIVED
 Office of Oil and Gas

OCT 27 2022

WV Department of
 Environmental Protection

RE: WDTN19CHSM- Horizontal Drilling Permit Application

To Whom It May Concern:

CNX Gas Company LLC (CNX) is applying for an expedited permit modification to WDTN19CHS- 47-061-01902 horizontal well permit located in Monongalia County. After drilling to a depth of 21,308'MD in the wellbore the hole packed off during normal operations. While attempting to work the pipe free, we twisted off our drill string at 3,275'. Over the past 11 days we have made numerous fishing attempts but have been unsuccessful getting any of the fish out below 7,398'. Our plan forward is to cement from the top of the fish to 2,800' (roughly 200' inside our 9.625" casing) perform a sidetrack and re-drill this lateral to its original planned BHL.

The casing will be unchanged. Enclosed is a new Well Bore Diagram with all casing depths updated to actuals since they have since been set. The WW6-B, items 8, 10, and 11 have been updated. Also enclosed is a check for the expedited review fee of \$5,000.00.

If any further information or correspondence is required, please contact me at (724) 485-3244 or SarahWeigand@cnx.com.

Sincerely,

Sarah Weigand

Enclosed
 Expedited Modification Fee Check (\$5,000)
 Updated Wellbore Diagram
 Updated WW-6B

10/28/2022



Stansberry, Wade A <wade.a.stansberry@wv.gov>

Expedited Modification Horizontal H6A Well Work Permit API : (47-061-01902)

1 message

Stansberry, Wade A <wade.a.stansberry@wv.gov>

Fri, Oct 28, 2022 at 12:17 PM

To: "Hoon, Raymond" <raymondhoon@cnx.com>, sarahweigand@cnx.com, "Zachwieja, Becky" <beckyzachwieja@cnx.com>, erikawhetstone@cnx.com, John Hardcastle <JohnHardcastle@cnx.com>, Mark Musick <mmusick@assessor.org>, "Greynolds, Kenneth L" <kenneth.l.greynolds@wv.gov>


I have attached a copy of the newly issued well [permit](#) numbers:

47-061-01902 - WDTN19CHSM

These will serve as your copy.

Thank you,

Wade A. Stansberry**Environmental Resource Specialist 3****West Virginia Department of Environmental Protection****Office of Oil & Gas****601 57th St. SE****Charleston, WV 25304****(304) 926-0499 ext. 41115****(304) 926-0452 fax****Wade.A.Stansberry@wv.gov**

 **47-061-01902 - mod.pdf**
2610K**10/28/2022**