PERMIT MODIFICATION APPROVAL

July 15, 2015

CHEVRON APPALACHIA, LLC
POST OFFICE BOX 611
MOON TOWNSHIP, PA 15108

Re: Permit Modification Approval for API Number 5101801, Well #: TAYLOR C 2H

Modify Casing

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.
June 24, 2015

West Virginia D.E.P.
Office of Oil & Gas
601 57th Street SE
Charleston, WV 25304-2345

RE: Taylor C 1H – 9H
Casing Modification Change

Dear Ms. Hankins,

Please accept this as our formal request for a modification to the Well Work Permit Application (WW-6B) for the Taylor C 1H – 9H Casing & Tubing Program. If you have any questions, please contact me at (724) 564-3781 or kristenbrooks@chevron.com.

Sincerely,

Kristen Brooks
Permit Coordinator
Chevron Appalachia, LLC

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

1) Well Operator:  
Chevron Appalachia, LLC  
Operator ID: 49449935  
Marshall  
County  
Clay  
District  
Glen Easton, WV  
Quadrangle

2) Operator's Well Number:  2H  
Well Pad Name:  Taylor C

3) Farm Name/Surface Owner:  Williams Ohio Valley Midstream LLC  
Public Road Access:  CR 17 Fork Ridge Rd

4) Elevation, current ground:  1257'  
Elevation, proposed post-construction:  1236'

5) Well Type:  
(a) Gas  
X Oil  
Underground Storage

(b) If Gas:  
Shallow  
X Deep

Horizontal  
X

6) Existing Pad:  Yes or No  
No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus, 6533', 49' - 0.64 psi/ft

8) Proposed Total Vertical Depth:  6555'

9) Formation at Total Vertical Depth:  Marcellus

10) Proposed Total Measured Depth:  14,354'

11) Proposed Horizontal Leg Length:  7167'

12) Approximate Fresh Water Strata Depths:  470' GL

13) Method to Determine Fresh Water Depths:  1 mi radius offset wells, freshwater wells, and freshwater base level

14) Approximate Saltwater Depths:  1276', 1880'-2370' KB: Francis 1V offset well

15) Approximate Coal Seam Depths:  800' GL

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

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

(a) If Yes, provide Mine Info:  
Name: Ireland Mine

Depth:  800' GL

Seam:  Pittsburgh No. 8'

Owner:  CONSOL Energy

Received  
Office of Oil & Gas  
JUN 26 2015  

Page 1 of 3  
07/17/2015
### CASING AND TUBING PROGRAM

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Size (in)</th>
<th>New or Used</th>
<th>Grade</th>
<th>Weight per ft. (lb/ft)</th>
<th>FOOTAGE: For Drilling (ft)</th>
<th>INTERVALS: Left in Well (ft)</th>
<th>CEMENT: Fill-up (Cu. Ft.)/CTS</th>
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![Signature](6/23/15)

### TYPE

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<th>Size (in)</th>
<th>Wellbore Diameter (in)</th>
<th>Wall Thickness (in)</th>
<th>Burst Pressure (psi)</th>
<th>Anticipated Max. Internal Pressure (psi)</th>
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<th>Cement Yield (cu. ft./k)</th>
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Received
Office of Oil & Gas
JUN 26 2015
19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill 17-1/2" hole to 600 then run and cement 13-3/8" casing to surface covering the fresh water. Drill 12.25" hole to 2,330' then run and cement to surface 9 5/8" casing, covering the Big Injun. Drill 8 1/2" hole to KOP at 5,478'. Drill 8 1/2" curve and lateral to 14,354' MD and 6,555 TVD. Run 5 1/2" production casing and cement back to surface.

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

Chevron will utilizing plug and perf method with 38 stages using 8,572 bbl of fluid and 315,000 lbm of sand per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 22.01

22) Area to be disturbed for well pad only, less access road (acres): 4.66

23) Describe centralizer placement for each casing string:

There will be a bow spring centralizer every two jts on the Water string and intermediate. The production string will have two centralizer every jt in the lateral and curve, then one every jt from KOP to surface.

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

For the Water String the blend will contain class A cement, 3% CaCl2, and flake. The intermediate will contain class A cement, 10% CaCl2, Salt, and flake. The Production cement will have a lead and tail cement. The lead will contain class A cement, KCl, dispersant, suspension agent, and retarder. The tail will contain class A cement, Calcium Carbonate, KCl, dispersant, de-foamer, suspension agent, and friction reducer.

25) Proposed borehole conditioning procedures:

Well will be circulated a minimum of 3 bottoms up once casing point has been reached on all hole sections and until uniform mud properties are achieved.

*Note: Attach additional sheets as needed.