WR-35
Rev (9-11)

Preliminary Report
State of West Virginia
Department of Environmental Protection
Office of Oil and Gas
Well Operator's Report of Well Work

DATE: 1-7-2014
API #: 47-069-00160 R

Farm name: Chad Glauser OHI 3H  Operator Well No.: 834945

LOCATION: Elevation: 1,240'  Quadrangle: Valley Grove

District: Triadelphia  County: Ohio
Latitude: 3,960' Feet South of 40 Deg. 02 Min. 30 Sec.
Longitude 4,330' Feet West of 80 Deg. 35 Min. 00 Sec.

Company: Chesapeake Appalachia, L.L.C.

| Address: P.O. Box 18496 | Casing & Tubing | Used in drilling | Left in well | Cement fill up Cu. Ft. |
|---|---|---|---|---|
| Oklahoma City, OK 73154-0496 | 20" | 118' | 118' | 342 Cu. Ft. |
| Agent: Eric Gillespie | 13 3/8" | 746' | 746' | 814 Cu. Ft. |
| Inspector: Gayne J. Knitowski/Bill Hendershot | 9 5/8" | 2,141' | 2,141' | 830 Cu. Ft. |
| Date Permit Issued: 3-13-2013 | 5 1/2" | 15,109' | 15,109' | 3,671 Cu. Ft. |
| Date Well Work Commenced: 6-15-2013 | | | | |
| Date Well Work Completed: 10-28-2013 | | | | |
| Verbal Plugging: | | | | |
| Date Permission granted on: | | | | |
| Rotary ☑ Cable ☐ Rig ☐ | | | | |
| Total Vertical Depth (ft): 6,431' | | | | |
| Total Measured Depth (ft): 15,111' | | | | |
| Fresh Water Depth (ft.): 576' | | | | |
| Salt Water Depth (ft.): 1,135' | | | | |
| Is coal being mined in area (N/Y)? Y | | | | |
| Coal Depths (ft.): 650' | | | | |
| Void(s) encountered (N/Y) Depth(s) N | | | | |

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)
Producing formation Marcellus  Pay zone depth (ft) 6,720-14,952
Gas: Initial open flow ____ MCF/d Oil: Initial open flow ____ Bbl/d
Final open flow 2,292* MCF/d Final open flow 128 Bbl/d
Time of open flow between initial and final tests 120 Hours
Static rock Pressure 4,128* psig (surface pressure) after 120 Hours *Calculated

Second producing formation ____ Pay zone depth (ft) ____
Gas: Initial open flow ____ MCF/d Oil: Initial open flow ____ Bbl/d
Final open flow ____ MCF/d Final open flow ____ Bbl/d
Time of open flow between initial and final tests ____ Hours
Static rock Pressure ____ psig (surface pressure) after ____ Hours

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Marlene Williams
Signature

1-7-2014
Date

Twilight (329) 6-6

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Were core samples taken? Yes_____ No N Were cuttings caught during drilling? Yes Y No_____

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list GRMWD from 5819-15111'

**NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.**

Perforated Intervals, Fracturing, or Stimulating:

See attachment

Plug Back Details Including Plug Type and Depth(s):

Formations Encountered: Top Depth / Bottom Depth
Surface:

See attachment

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## PERFORATION RECORD ATTACHMENT

**Well Number and Name: 834945 Chad Glauser OHI 3H**

| PERFORATION RECORD | | | STIMULATION RECORD | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Interval Perforated | | | | | *Fluid* | | *Propping Agent* | | Average |
| Date | From | To | Date | Interval Treated | | Type | Amount | Type | Amount | Injection |
| 9/21/2013 | 14,743 | 14,952 | 9/22/2013 | 14,743 | 14,952 | Slk wtr | 7,672 | Sand | 374,960 | 77 |
| 9/21/2013 | 14,484 | 14,693 | 9/22/2013 | 14,484 | 14,693 | Slk wtr | 7,230 | Sand | 378,780 | 75 |
| 9/22/2013 | 14,226 | 14,434 | 9/22/2013 | 14,226 | 14,434 | Slk wtr | 7,354 | Sand | 374,380 | 74 |
| 9/23/2013 | 13,967 | 14,175 | 9/23/2013 | 13,967 | 14,175 | Slk wtr | 7,279 | Sand | 374,660 | 80 |
| 9/23/2013 | 13,710 | 13,913 | 9/23/2013 | 13,710 | 13,913 | Slk wtr | 7,251 | Sand | 374,720 | 80 |
| 9/23/2013 | 13,455 | 13,658 | 9/23/2013 | 13,455 | 13,658 | Slk wtr | 7,073 | Sand | 374,240 | 80 |
| 9/23/2013 | 13,190 | 13,399 | 9/23/2013 | 13,190 | 13,399 | Slk wtr | 7,148 | Sand | 377,600 | 77 |
| 9/23/2013 | 12,932 | 13,140 | 9/24/2013 | 12,932 | 13,140 | Slk wtr | 7,310 | Sand | 374,680 | 79 |
| 9/24/2013 | 12,673 | 12,881 | 9/24/2013 | 12,673 | 12,881 | Slk wtr | 7,175 | Sand | 373,500 | 80 |
| 9/24/2013 | 12,414 | 12,622 | 9/24/2013 | 12,414 | 12,622 | Slk wtr | 7,106 | Sand | 374,880 | 77 |
| 9/24/2013 | 12,155 | 12,363 | 9/24/2013 | 12,155 | 12,363 | Slk wtr | 7,698 | Sand | 371,440 | 77 |
| 9/24/2013 | 11,896 | 12,105 | 9/25/2013 | 11,896 | 12,105 | Slk wtr | 8,401 | Sand | 376,300 | 80 |
| 9/25/2013 | 11,637 | 11,846 | 9/25/2013 | 11,637 | 11,846 | Slk wtr | 6,962 | Sand | 374,480 | 78 |
| 9/25/2013 | 11,430 | 11,587 | 9/25/2013 | 11,430 | 11,587 | Slk wtr | 7,567 | Sand | 355,920 | 73.6 |
| 9/25/2013 | 11,124 | 11,324 | 9/25/2013 | 11,124 | 11,324 | Slk wtr | 7,052 | Sand | 375,920 | 79.7 |
| 9/25/2013 | 10,861 | 11,069 | 9/25/2013 | 10,861 | 11,587 | Slk wtr | 7,100 | Sand | 374,120 | 77.6 |
| 9/26/2013 | 10,602 | 10,811 | 9/26/2013 | 10,602 | 10,811 | Slk wtr | 7,053 | Sand | 374,020 | 79 |
| 9/26/2013 | 10,343 | 10,552 | 9/26/2013 | 10,343 | 10,552 | Slk wtr | 6,944 | Sand | 374,940 | 79 |
| 9/26/2013 | 10,085 | 10,293 | 9/26/2013 | 10,085 | 10,293 | Slk wtr | 7,107 | Sand | 377,060 | 77 |
| 9/26/2013 | 9,826 | 10,034 | 9/26/2013 | 9,826 | 10,034 | Slk wtr | 7,089 | Sand | 374,280 | 76.9 |
| 9/27/2013 | 9,567 | 9,775 | 9/26/2013 | 9,567 | 9,775 | Slk wtr | 7,049 | Sand | 381,480 | 76.5 |
| 9/27/2013 | 9,308 | 9,517 | 9/26/2013 | 9,308 | 9,517 | Slk wtr | 6,958 | Sand | 378,440 | 76 |
| 9/27/2013 | 9,049 | 9,258 | 9/27/2013 | 9,049 | 9,258 | Slk wtr | 7,052 | Sand | 378,500 | 80 |
| 9/27/2013 | 8,791 | 8,995 | 9/27/2013 | 8,791 | 8,995 | Slk wtr | 7,530 | Sand | 374,760 | 76 |
| 9/27/2013 | 8,536 | 8,738 | 9/27/2013 | 8,536 | 8,738 | Slk wtr | 6,823 | Sand | 375,400 | 77.2 |
| 9/27/2013 | 8,270 | 8,481 | 9/27/2013 | 8,270 | 8,481 | Slk wtr | 7,072 | Sand | 373,920 | 78.6 |
| 9/28/2013 | 8,014 | 8,222 | 9/27/2013 | 8,014 | 8,222 | Slk wtr | 6,982 | Sand | 375,040 | 79.7 |
| 9/28/2013 | 7,755 | 7,964 | 9/28/2013 | 7,755 | 7,964 | Slk wtr | 6,940 | Sand | 376,160 | 80 |
| 9/28/2013 | 7,496 | 7,705 | 9/28/2013 | 7,496 | 7,705 | Slk wtr | 6,892 | Sand | 373,400 | 79 |
| 9/28/2013 | 7,238 | 7,446 | 9/28/2013 | 7,238 | 7,446 | Slk wtr | 6,603 | Sand | 346,120 | 77.8 |
| 9/29/2013 | 6,979 | 7,187 | 9/28/2013 | 6,979 | 7,187 | Slk wtr | 7,506 | Sand | 330,420 | 71.4 |
| 9/29/2013 | 6,720 | 6,928 | 9/28/2013 | 6,720 | 6,928 | Slk wtr | 6,887 | Sand | 378,660 | 80 |

**LATERAL SIDETRACK WELLBORE (no vertical pilot hole associated with this well)**

**Maximum TVD of wellbore:** 6431 ft TVD @ 6834 ft MD

| Formation/Lithology | Top Depth, MD (ft) | Top Depth, TVD (ft) | Bottom Depth, MD (ft) | Bottom Depth, TVD (ft) |
|---|---|---|---|---|
| SS | 0 | 0 | 480 | 480 |
| LS/SILT | 480 | 480 | 648 | 648 |
| PITTSBURG COAL | 648 | 648 | 652 | 652 |
| LS | 652 | 652 | 710 | 710 |
| SHALE/SS/SILT | 710 | 710 | 1700 | 1700 |
| BIG LIME (LS) | 1700 | 1700 | 1796 | 1796 |
| BIG INJUN (SS) | 1796 | 1796 | 1974 | 1974 |
| SHALE | 1974 | 1974 | 6272 | 6229 |
| GENESEO (SH) | 6272 | 6229 | 6300 | 6250 |
| TULLY (LS) | 6300 | 6250 | 6347 | 6283 |
| HAMILTON (SH) | 6347 | 6283 | 6571 | 6389 |
| MARCELLUS (SH) | 6571 | 6389 | | |
| TD OF LATERAL | | | 15111 | 6318 |

# Hydraulic Fracturing Fluid Product Component Information Disclosure

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| | |
|---|---|
| Fracture Date: | 9/22/2013 |
| State: | WEST VIRGINIA |
| County: | OHIO |
| API Number: | 4706900160 |
| Operator Name: | CHESAPEAKE APPALACHIA LLC |
| Well Name and Number: | CHAD GLAUSER OHI 3H |
| Longitude: | -80.597511 |
| Latitude: | 40.029785 |
| Long/Lat Projection: | NAD27 |
| Production Type: | GAS |
| True Vertical Depth (TVD): | 6,431 |
| Total Water Volume (gal)*: | 10,047,534 |

**Hydraulic Fracturing Fluid Composition:**

| Trade Name | Supplier | Purpose | Ingredients | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments |
|---|---|---|---|---|---|---|---|
| Fresh Water | CHESAPEAKE ENERGY | Carrier/Base Fluid | Water | 007732-18-5 | 100.00% | 79.10688% | |
| Recycled Produced Water | CHESAPEAKE ENERGY | Carrier/Base Fluid | Water | 007732-18-5 | 100.00% | 8.19032% | |
| | | | | | | | |
| EC6110A | NALCO | Anti-Bacterial Agent | Ethanol | 000064-17-5 | 5.00% | 0.00128% | |
| | | | Glutaraldehyde (Pentanediol) | 000111-30-8 | 60.00% | 0.01535% | |
| | | | Quaternary Ammonium Compounds | NA | 10.00% | 0.00256% | |
| EC6629A | NALCO | Scale Inhibitor | No Hazardous Components | NONE | | 0.00000% | |
| A264, J218, J580, J609, L058, Acid, Hydrochloric 15pct, Northern White Sand, 100 Mesh Sand | SCHLUMBERGER | Breaker, Corrosion Inhibitor, Friction Reducer, Gelling Agent, Iron Control Agent, Acid, Proppant - Natural | Crystalline silica | 14808-60-7 | 98.17103% | 12.48814% | |
| | | | Hydrogen chloride | 7647-01-0 | 1.35032% | 0.17177% | |
| | | | Acrylamide, 2-acrylamido-2- | 38193-60-1 | 0.11495% | 0.01462% | |
| | | | Ammonium sulfate | 7783-20-2 | 0.10864% | 0.01382% | |
| | | | Guar gum | 9000-30-0 | 0.08798% | 0.01119% | |
| | | | Sodium erythorbate | 6381-77-7 | 0.08022% | 0.01020% | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Sodium sulfate | 7757-82-6 | 0.04696% | 0.00597% | |
| | | | Polymer of 2-acrylamido-2- | 136793-29-8 | 0.01232% | 0.00157% | |
| | | | Urea | 57-13-6 | 0.00757% | 0.00096% | |
| | | | Diammonium peroxidisulphate | 7727-54-0 | 0.00506% | 0.00064% | |
| | | | Methanol | 67-56-1 | 0.00417% | 0.00053% | |
| | | | Fatty acids, tall-oil | 61790-12-3 | 0.00306% | 0.00039% | |
| | | | Thiourea, polymer with | 68527-49-1 | 0.00252% | 0.00032% | |
| | | | Non-crystalline silica | 7631-86-9 | 0.00134% | 0.00017% | |
| | | | Alcohols, C14-15, ethoxylated | 68951-67-7 | 0.00117% | 0.00015% | |
| | | | Prop-2-yn-1-ol | 107-19-7 | 0.00078% | 0.00010% | |
| | | | Alkenes, C>10 a- | 64743-02-8 | 0.00052% | 0.00007% | |
| | | | Tetrasodium ethylenediaminetetraacetate | 64-02-8 | 0.00024% | 0.00003% | |
| | | | Dimethyl siloxanes and silicones | 63148-62-9 | 0.00011% | 0.00001% | |
| | | | Siloxanes and Silicones, di-Me, reaction products with silica | 67762-90-7 | 0.00002% | < 0.00001% | |
| | | | Octamethylcyclotetrasiloxane | 556-67-2 | 0.00001% | < 0.00001% | |
| | | | Sodium hydroxide | 1310-73-2 | 0.00001% | < 0.00001% | |
| | | | Decamethyl cyclopentasiloxane | 541-02-6 | 0.00001% | < 0.00001% | |
| | | | Dodecamethylcyclohexasiloxane | 540-97-6 | < 0.00001% | < 0.00001% | |

| Additional Ingredients Not Listed on MSDS | | | | | | | |
|---|---|---|---|---|---|---|---|
| EC6110A, EC6629A | NALCO | Anti-Bacterial Agent, Scale Inhibitor | Methanol (Methyl Alcohol) | 000067-56-1 | | 0.00613% | |
| | | | Proprietary Acrylate Polymer | TRADE SECRET | | 0.00613% | |
| | | | Proprietary Quaternary Ammonium Salt | TRADE SECRET | | 0.00613% | |
| | | | Water | 007732-18-5 | | 0.02478% | |

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

"Additional Ingredients Not Listed on MSDS" component information were obtained directly from the supplier. As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of this information should be directed to the supplier who provided it.