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

API 47 - 051 - 01748
County Marshall
District Washington
Quad Moundsville
Pad Name Hart
Field/Pool Name
Farm Name Hart, John J. & Renee
Operator (as registered with the OOG) Chevron Appalachia, LLC
Address 800 Mountain View Drive
City Smithfield
State PA
Zip 15478

As Drilled location NAD 83/UTM
Top hole Northing
Landing Point of Curve Northing
Bottom Hole Northing
Elevation (ft) 1329' GL

Type of Well □ New □ Existing
Type of Report □ Interim □ Final

Permit Type □ Deviated □ Horizontal □ Horizontal 6A □ Vertical
Type of Operation □ Convert □ Deepen □ Drill □ Plug Back □ Redrilling □ Rework □ Stimulate
Type of Completion □ Brine Disposal □ CBM □ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other □
Type of Completion Fluids Produced □ Brine □ Gas □ NGL □ Oil □ Other

Drilled with □ Cable □ Rotary
Drilling Media Surface hole □ Air □ Mud □ Fresh Water
Production hole □ Air □ Mud □ Fresh Water □ Brine

Date permit issued 6/16/2014
Date drilling commenced 9/30/2014
Date drilling ceased 6/10/2015
Date completion activities began
Date completion activities ceased
Verbal plugging (Y/N) Y
Date permission granted 6/5/2015
Granted by Jim Nicholson

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft
Salt water depth(s) ft
Coal depth(s) ft
Is coal being mined in area (Y/N)

RECEIVED
Office of Oil and Gas
JUL 09 2015
WV Department of Environmental Protection
Reviewed by:
10/23/2015
### CASING STRINGS

<table>
<thead>
<tr>
<th>Hole Size</th>
<th>Casing Size</th>
<th>Depth</th>
<th>New or Used</th>
<th>Grade wt/lft</th>
<th>Basket Depth(s)</th>
<th>Did cement circulate (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductor</td>
<td>36&quot;</td>
<td>30&quot;</td>
<td>40'</td>
<td>New</td>
<td>X-42; 118.76#</td>
<td></td>
</tr>
<tr>
<td>Surface</td>
<td>26&quot;</td>
<td>20&quot;</td>
<td>318'</td>
<td>New</td>
<td>J-55; 94#</td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>17 1/2&quot;</td>
<td>13 3/8&quot;</td>
<td>917'</td>
<td>New</td>
<td>J-55; 54.50#</td>
<td></td>
</tr>
<tr>
<td>Intermediate 1</td>
<td>12 1/4&quot;</td>
<td>9 5/8&quot;</td>
<td>2219'</td>
<td>New</td>
<td>L-80; 60#</td>
<td></td>
</tr>
<tr>
<td>Intermediate 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>8 1/2&quot;</td>
<td>5 1/2&quot;</td>
<td>3546'</td>
<td>New</td>
<td>P-110; 20#</td>
<td></td>
</tr>
<tr>
<td>Tubing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Packer type and depth set**

**Comment Details**

### CEMENT DATA

<table>
<thead>
<tr>
<th>Class/Type of Cement</th>
<th>Number of Sacks</th>
<th>Slurry wt (ppg)</th>
<th>Yield (bbl/sack)</th>
<th>Volume (bbl)</th>
<th>Cement Top (MD)</th>
<th>WOC (hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductor</td>
<td>Bulk</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface</td>
<td>Class A</td>
<td>637</td>
<td>15.60</td>
<td>1.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>Class A</td>
<td>843</td>
<td>15.60</td>
<td>1.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate 1</td>
<td></td>
<td>759</td>
<td>15.60</td>
<td>1.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate 2</td>
<td></td>
<td>52 BBL</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tubing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Drillers TD (ft)**

**Loggers TD (ft)**

**Deepest formation penetrated**

**Plug back procedure**

**Kick off depth (ft)**

**Check all wireline logs run**

- [ ] caliper
- [ ] density
- [ ] deviated/directional
- [ ] induction
- [ ] neutron
- [ ] resistivity
- [ ] gamma ray
- [ ] temperature
- [ ] sonic

**Well cored**

- [ ] Yes
- [x] No

**Conventional**

- [ ] No

**Sidewall**

- [ ] Yes

**Were cuttings collected**

- [ ] Yes
- [ ] No

**DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING**

---

**RECEIVED**

Office of Oil and Gas

**WAS WELL COMPLETED AS SHOT HOLE**

- [ ] Yes
- [x] No

**DETAILS**

---

**WAS WELL COMPLETED OPEN HOLE?**

- [ ] Yes
- [ ] No

**DETAILS**

---

**WERE TRACERS USED**

- [x] Yes
- [ ] No

**TYPE OF TRACER(S) USED**

---

**WV Department of Environmental Protection**

10/23/2015
API 47-051-01748  |  Farm name: Hart, John J. & Renee  |  Well number: 2H

### PERFORATION RECORD

<table>
<thead>
<tr>
<th>Stage No</th>
<th>Perforation date</th>
<th>Perforated from MD ft</th>
<th>Perforated to MD ft</th>
<th>Number of Perforations</th>
<th>Formation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please insert additional pages as applicable.

### STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

<table>
<thead>
<tr>
<th>Stage No</th>
<th>Stimulations Date</th>
<th>Ave Pump Rate (BPM)</th>
<th>Ave Treatment Pressure (PSI)</th>
<th>Max Breakdown Pressure (PSI)</th>
<th>ISIP (PSI)</th>
<th>Amount of Proppant (lbs)</th>
<th>Amount of Water (bbls)</th>
<th>Amount of Nitrogen / other (units)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please insert additional pages as applicable.

RECEIVED
Office of Oil and Gas
JUL 09 2015

WV Department of Environmental Protection

10/23/2015
<table>
<thead>
<tr>
<th>Formation</th>
<th>Top Depth in FT</th>
<th>Bottom Depth in FT</th>
<th>Type of Fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dunkard Group Sand</td>
<td>840</td>
<td>850</td>
<td>Coal (not void)</td>
</tr>
<tr>
<td>Pittsburgh Coal</td>
<td>1516</td>
<td>1699</td>
<td>SEE ATTACHED</td>
</tr>
<tr>
<td>Salt Sand</td>
<td>1813</td>
<td>1905</td>
<td>SEE ATTACHED</td>
</tr>
<tr>
<td>Big Lime</td>
<td>1905</td>
<td>2158</td>
<td>SEE ATTACHED</td>
</tr>
<tr>
<td>Weir Sand</td>
<td>2298</td>
<td>2315</td>
<td>SEE ATTACHED</td>
</tr>
<tr>
<td>Berea Sand</td>
<td>2505</td>
<td>2516</td>
<td>SEE ATTACHED</td>
</tr>
<tr>
<td>Gordon Sands</td>
<td>2748</td>
<td>2928</td>
<td>SEE ATTACHED</td>
</tr>
<tr>
<td>Spocchley Sand</td>
<td>3413</td>
<td>3432</td>
<td>SEE ATTACHED</td>
</tr>
</tbody>
</table>

Please insert additional pages as applicable.

Drilling Contractor SEE ATTACHED
Logging Company
Cementing Company SEE ATTACHED
Stimulating Company

WV Department of Environmental Protection
RECEIVED
Office of Oil and Gas
JUL 0 9 2015

10/23/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information
Attach copy of FRACFOCUS Registry
# CEMENTING CONTRACTORS

<table>
<thead>
<tr>
<th>Name</th>
<th>Name</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schlumberger Technology Corp</td>
<td>Baker Hughes</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td>Address</td>
<td>Address</td>
</tr>
<tr>
<td>Two Robinson Plaza, Suite 200</td>
<td>5373 West Alabama, Suite 300</td>
<td></td>
</tr>
<tr>
<td>City - State - Zip</td>
<td>City - State - Zip</td>
<td>City - State - Zip</td>
</tr>
<tr>
<td>Pittsburgh, PA 15205</td>
<td>Houston, TX 77056</td>
<td></td>
</tr>
<tr>
<td>Driller</td>
<td>Name</td>
<td>Address</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Rocky Mountain Drilling</td>
<td>Highlands Drilling LLC</td>
<td>900 Virginia Street East</td>
</tr>
<tr>
<td>185 North Vernal Avenue, Suite 2</td>
<td>Nabors Drilling USA</td>
<td>10100 NW 10th street</td>
</tr>
<tr>
<td>Lithology Formation</td>
<td>Describe Rock type and record quantity and type of fluid (fresh water, brine, oil, gas, H2S, Etc.)</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Burgoon (Big Injun)</td>
<td>SS:ltgy-gy,wh,clr,cons,trans,lcmt,mg-fg,slang-ang,sbrnd,arg,msph,non calc,tr flor, no cut, no odr, w/SLTST:mgy-ltgy,frm-hrd,vfg,sbrnd,tcmt,non calc</td>
<td></td>
</tr>
<tr>
<td>Gordon Sands</td>
<td>Mudlogging unit lost power, then High gas shows beginning @ 2846', causing site Muster, no samples (no pwr/mustered), 15# mud kill wt</td>
<td></td>
</tr>
<tr>
<td>Speechley Sand</td>
<td>SS:ltgy-gy,wh,clr,trans,cons,lcmt,mg-fg,slang-ang,arg,msph,wsrt,non calc,tr flor, fnt cut, strong odor,w/arg SLTST; 267u gas show @ 3460'</td>
<td></td>
</tr>
</tbody>
</table>
Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: Hart 2H Pilot
Well Id: 
Location: Marshal Co. WV
License Number: 47-5101748
Spud Date: 10/28/14
Region: Drilling Completed: 11/1/14
Surface Coordinates: 
Bottom Hole
Coordinates: 
Ground Elevation (ft): 1,324'  
Logged Interval (ft): 50'  
To: TD  
Formation: Marcellus  
K.B. Elevation (ft): 1,339'  
Total Depth (ft): 960'  
Type of Drilling Fluid: Air

Company: Chevron
Address: 

MUDLOGGING PERSONNEL
Waylon McNutt
Thomas Walmer

GAMMA
RECEIVED
Office of Oil and Gas
ABBREVIATIONS
WV Department of Environmental Protection

10/23/2015
Drillers est. TD 960' MD @ 4:28 AM
11/1/14

Thank you for using Stratagraph NE Inc.

10/23/2015
Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: Hart 3H
Location: Marshall Co WV
License Number: 47-5101749
Spud Date: 12-15-14
Surface Coordinates: 39° 54' 48.865 N
80° 39' 17.502 W
Bottom Hole Coordinates:

Ground Elevation (ft): 1324'  
K.B. Elevation (ft): 1354'
Logged Interval (ft): 850  
To: TD Int.  
Total Depth (ft): 2200+/-
Formation: Marcellus
Type of Drilling Fluid: SBM

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

MUDLOGGING PERSONNEL

Jason Antill
Craig Cole

GAMMA

Gamma:
0-400 No Color
400-800 Lime Green
800-1600 Purple

*Note: Gamma will wrap at 400, then color will be added to the right of ROP column.

ABBREVIATIONS

WOB - Weight on Bit
RPM - Rotation/Min.
PSI - Pressure
CO - Circulated Out
CF - Check Flow
NR - No Returns
LAT - Logged after trip

DTG - Down-time Gas
BG - Background Gas
CG - Connection Gas
TG - Trip Gas
SG - Survey Gas
TT - Trap Test
TIH - Trip In Hole
TOOH - Trip Out Of Hole
<table>
<thead>
<tr>
<th>Drilling Parameters</th>
<th>Surveys</th>
<th>Drill Curve</th>
<th>Lithology</th>
<th>Gas Curve</th>
<th>Geological Descriptions</th>
<th>Photos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indication 120°</td>
<td>MD 656.86 T/D 656.66 Az 292.89' Htc 0.03°</td>
<td>Pre-Spud 12-16-14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BHA/11</td>
<td>Smith 12.25''</td>
<td>12/16/14 12:00 pm</td>
<td></td>
<td></td>
<td>Calibrate Gas Detector and Chromatograph</td>
<td></td>
</tr>
<tr>
<td>MD/176</td>
<td>Set:J7681</td>
<td>Stratagraph on location rigged up, waiting to rack</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUD DATA</td>
<td>IN 8.9/104</td>
<td>back pipe &amp; pick up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WOB-18</td>
<td>RPM-20</td>
<td>12/19/14 1:15 am</td>
<td></td>
<td></td>
<td>Gas Detector Online/H2S Capability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PSI-1170</td>
<td>Begin drilling cement plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100% Cement</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100% Cement</td>
<td></td>
</tr>
</tbody>
</table>

10/23/2015
Well Name: Hart 3H/2H
Location: Marshall Co WV
License Number: 47-5101749
Spud Date: 12-15-14
Surface Coordinates: 39° 54' 48.865 N
80° 39' 17.502 W
Bottom Hole Coordinates:
Ground Elevation (ft): 1324'
Logged Interval (ft): 850 to TD Int.
Formation: Marcellus
Type of Drilling Fluid: SBM
Region: Moundsville
Drilling Completed:

MUDLOGGING PERSONNEL
Jason Antill
Craig Cole

GAMMA
Gamma:
0-400 No Color
400-800 Lime Green
800-1600 Purple
*Note: Gamma will wrap at 400, then color will be added to the right of ROP column.

ABBREVIATIONS
WOB Weight on Bit
RPM - Rotation/Min.
PSI - Pressure
CO - Circulated Out
CF - Check Flow
NR - No Returns
LAT - Logged after trip
DTG - Down-time Gas
BG - Background Gas
CG - Connection Gas
TG - Trip Gas
SG - Survey Gas
TT - Trap Test
TIH - Trip In Hole
TOOH - Trip Out Of Hole
### Drilling Parameters

<table>
<thead>
<tr>
<th>Drilling Parameters</th>
<th>Surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclination</td>
<td>10°</td>
</tr>
<tr>
<td>MD</td>
<td>855.06</td>
</tr>
<tr>
<td>TVD</td>
<td>855.05</td>
</tr>
<tr>
<td>Az</td>
<td>293.59°</td>
</tr>
<tr>
<td>Inc 0.03°</td>
<td></td>
</tr>
</tbody>
</table>


### Drilling Details

- BHA#1: Smith 12.25"
- MD: 7156
- Ser.: JJ7631

### MUD DATA

- IN: 8.3/104
- WOB: 18
- RPM: 20
- PSI: 1170

### Lithology Details

<table>
<thead>
<tr>
<th>Drill Curve</th>
<th>H₂S/CO₂/O₂</th>
<th>Gas Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROP (min/ft)</td>
<td>H₂S (ppm)</td>
<td>TG (units)</td>
</tr>
<tr>
<td>Gamma (API)</td>
<td>CO₂ (%)</td>
<td>C1 (units)</td>
</tr>
<tr>
<td></td>
<td>O₂ (%)</td>
<td>C2 (units)</td>
</tr>
</tbody>
</table>

### Geological Descriptions

- Calibrate Gas Detector and Chromatograph
- Gas Detector: Online [H₂S]
- Capability: 100% Cement

### Gas/Oil Show

- Gas show
- Oil show

### ISO SAMPLING

- Iso jar-tube

### Stringer Details

- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Salt
- Silt

### Accessories

- Sulphur
- Mrst
- Sltstrg
- Ssstrg

### Rock Types

- Anhy
- Bent
- Brec
- Chl
- Chlty
- Coal

### Notes

- 12/16/14 12:00 pm: Stratigraph on location; rigged up, waiting to rack back pipe & pick up BHA
- 12/19/14 1:15 am: Begin drilling cement plug

### Photos

- 100% Cement
Repositioned Agitator in divertor box

SLST: lggy-gy, occ: v.lggy, rd, hrd, vgg, tcm, arg, sl, calc, w/ interbd SS: lggy-gy, cl, wh, tr rd, cons, cmt, mg, sbang-ang, no calc

SLST: lggy-gy, mgy, occ of wh, tr rd, cons, lcmt, mg-fg, sbang-ang, arg, mshp, mod calc, no flor, mod odor, no cut, w/ arg SLST: lse/embd calc}

SLST: lggy-gy, occ: v.lggy, rd, hrd, vgg, tcm, arg, sl, calc, w/ interbd SS: lggy-gy, cl, wh, tr rd, cons, cmt, mg, sbang-ang, no calc

Lines Partially restricted by ice and moisture

SLST: lggy-gy, mgy, occ of wh, tr rd, cons, lcmt, mg-fg, sbang-ang, arg, mshp, mod calc, no flor, int odor, no cut, w/ arg SLST: lse/embd calc}

SLST: lggy-gy, mgy, occ of wh, tr rd, cons, lcmt, mg-fg, sbang-ang, arg, mshp, mod calc, no flor, int odor, no cut, w/ arg SLST: lse/embd calc}

SLST: lggy-gy, mgy, occ of wh, tr rd, cons, lcmt, mg-fg, sbang-ang, arg, mshp, mod calc, no flor, int odor, no cut, w/ arg SLST: lse/embd calc}

MLD: 3244 TVD 2324 Az 336.35 Inc 2.24

MUD DATA
IN 15.1
OUT 15.1

MUD DATA
OUT 15.0

MUD DATA
OUT 15.0

WOB: 26
RPM: 34
PSI: 3293

WOB: 29
RPM: 34
PSI: 3293

WOB: 24
RPM: 27
PSI: 3337

WOB: 28
RPM: 34
PSI: 2310

10/23/2015
1/11/15 3:30 pm
Drillers Est TD
@ 3600' MD

Thank You for Using
Stratagraph NE Inc.