

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

API 47-085-10109FH6A County Ritchie District Clay
Quad Ellenboro 7.5' Pad Name PEN20HS Field/Pool Name Pennsboro
Farm Name COKELEY, LAWRENCE & ANGELA Well Number PEN20BHS - Fracture
Operator (as registered with the OOG) CNX Gas Company LLC
Address P.O. Box 1248 City Jane Lew State WV Zip 26378

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top Hole Northing 4,353,191.02 m Easting 497,737.14 m
Landing Point of Curve Northing 4,353,457.23 m Easting 498,390.52 m
Bottom Hole Northing 4,351,547.41 m Easting 500,036.89 m

Elevation (ft) 1081' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other
Drilled with Cable Rotary

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Drilled Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Synthetic Oil Based.

Date Permit Issued 03/13/2017 Date drilling commenced 10/14/2014 Date drilling ceased 11/29/2014
Date completion activities began 06/26/2017 Date completion activities ceased 2017/07/06
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 398' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Noted for Offsets Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: AS

Reviewed

02/16/2018

API 47-085-10109FH6A Farm name COKELEY, LAWRENCE & ANGELA Well number PEN20BHS - Fracture

| CASING STRINGS | Hole Size | Casing Size | Depth | New or Used | Grade wt/ft | Basket Depth(s) | Did cement Circulate (Y/N) * Provide details to the right * |
|---------------------------|-----------|-------------|----------|-------------|-----------------------|-----------------|--|
| Conductor | 26" | 20" | 40' | New | DH-36 | | |
| Surface | 17 1/2" | 13 3/8" | 575' | New | J-55 | | Y |
| Coal | | | | | | | |
| Intermediate 1 | 12 3/8" | 9 5/8" | 5446' | New | HCK-55 | | Y |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | 8 3/4" | 5 1/2" | 15240' | New | P-110 | | N |
| Tubing | 5 1/2" | 2 3/8" | 7095.10' | New | P-110 4.7# / 7095.10' | | |
| Packer Type and Depth Set | | None | | | | | |

Comment Details *approved cement variance of 2% accelerator (S001) 0.2% Antifoam (D046) 0.125 lb/sk Polyester Flake (D130).

| CEMENT DATA | Class/Type of Cement | Number of Sacks | Slurry wt (ppg) | Yield (ft 3/sks) | Volume (ft 3) | Cement Top (MD) | WOC (hrs) |
|----------------|--------------------------------|--------------------|-----------------|------------------|---------------|-----------------|-----------|
| Conductor | | | | | | | |
| Surface | Type 1 / Class A | | 15.60 | 1.20 | | 0' | 8 |
| Coal | | | | | | | |
| Intermediate 1 | Type 1 (Lead) / Class A (Tail) | 980 sks / 300 sks | 15.60 | 1.92 / 1.19 | 2238.6 | 458' | 8 |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | Type 1 (Lead) / Class A (Tail) | 669 sks / 1864 sks | 14.8 | 1.63 / 1.38 | 3662.79 | 1044' | 8 |
| Tubing | | | | | | | |

Drillers TD (ft) 6261' Loggers TD (ft) 6233'
 Deepest formation penetrated: Marcellus Plug back to (ft) _____
 Plug back procedure: _____

Kick Off Depth (ft) 5353'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well Cored Yes No Conventional Sidewall Were Cuttings Collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
Conductor - No centralizers used. Fresh Water - 5 centralizers used. Intermediate - 68 centralizers used (Bow spring centralizers on first two joints then every third joint to 100' from surface). Production - 252 centralizers used (rigid bow spring every joint to KOP, rigid bow spring every third joint from KOP to top of cement).

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS Plug And Perforation Shot Hole

WAS WELL COMPLETED OPEN HOLE Yes No DETAILS _____

WERE TRACERS USE Yes No TYPES OF TRACER(S) USED _____

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PERFORATION RECORD

| Stage No. | Perforation date | Perforated from MD ft. | Perforated to MD ft. | Number Of Perforations | Formation(s) |
|-----------|------------------|------------------------|----------------------|------------------------|--------------|
| 1 | 6/26/2017 | 14954 | 15103 | 40 | Marcellus |
| 2 | 6/26/2017 | 14761 | 14920 | 40 | Marcellus |
| 3 | 6/26/2017 | 14563 | 14722 | 40 | Marcellus |
| 4 | 6/27/2017 | 14365 | 14524 | 40 | Marcellus |
| 5 | 6/28/2017 | 14167 | 14326 | 40 | Marcellus |
| 6 | 6/28/2017 | 13781 | 13940 | 40 | Marcellus |
| 7 | 6/28/2017 | 13583 | 13742 | 40 | Marcellus |
| 8 | 6/28/2017 | 13403 | 13544 | 40 | Marcellus |
| 9 | 6/29/2017 | 13071 | 13230 | 40 | Marcellus |
| 10 | 6/29/2017 | 12710 | 12799 | 40 | Marcellus |
| 11 | 6/29/2017 | 12512 | 12671 | 40 | Marcellus |
| 12 | 6/29/2017 | 12314 | 12473 | 40 | Marcellus |
| 13 | 6/30/2017 | 12116 | 12275 | 40 | Marcellus |
| 14 | 6/30/2017 | 11918 | 12077 | 40 | Marcellus |
| 15 | 6/30/2017 | 11720 | 11879 | 40 | Marcellus |
| 16 | 6/30/2017 | 11522 | 11681 | 40 | Marcellus |
| 17 | 7/1/2017 | 11324 | 11483 | 40 | Marcellus |
| 18 | 7/1/2017 | 11126 | 11285 | 40 | Marcellus |
| 19 | 7/1/2017 | 10928 | 11087 | 40 | Marcellus |
| 20 | 7/1/2017 | 10732 | 10889 | 40 | Marcellus |
| 21 | 7/2/2017 | 10536 | 10693 | 40 | Marcellus |
| 22 | 7/2/2017 | 10340 | 10497 | 40 | Marcellus |
| 23 | 7/2/2017 | 10144 | 10301 | 40 | Marcellus |
| 24 | 7/2/2017 | 9948 | 10105 | 40 | Marcellus |
| 25 | 7/3/2017 | 9752 | 9909 | 40 | Marcellus |
| 26 | 7/3/2017 | 9556 | 9713 | 40 | Marcellus |
| 27 | 7/3/2017 | 9360 | 9517 | 40 | Marcellus |
| 28 | 7/3/2017 | 9164 | 9321 | 40 | Marcellus |
| 29 | 7/4/2017 | 8968 | 9125 | 40 | Marcellus |
| 30 | 7/4/2017 | 8772 | 8929 | 40 | Marcellus |
| 31 | 7/4/2017 | 8576 | 8733 | 40 | Marcellus |
| 32 | 7/4/2017 | 8380 | 8537 | 40 | Marcellus |
| 33 | 7/5/2017 | 8184 | 8341 | 40 | Marcellus |
| 34 | 7/5/2017 | 7988 | 8145 | 40 | Marcellus |
| 35 | 7/5/2017 | 7792 | 7949 | 40 | Marcellus |
| 36 | 7/5/2017 | 7596 | 7753 | 40 | Marcellus |
| 37 | 7/5/2017 | 7400 | 7557 | 40 | Marcellus |
| 38 | 7/6/2017 | 7204 | 7361 | 40 | Marcellus |

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STIMULATION INFORMATION PER STAGE

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| Stage No. | Stimulations Date | Avg Pump Rate (BPM) | Avg Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbls) | Nitrogen / other (gals) |
|-----------|-------------------|---------------------|------------------------------|------------------------------|------------|--------------------------|------------------------|-------------------------|
| 1 | 6/26/2017 | 76.8 | 8463 | NA | 3547 | 400244 | 8729 | 7377 |
| 2 | 6/26/2017 | 81.8 | 7925 | 3254 | 3998 | 399755 | 8605 | 4528 |
| 3 | 6/27/2017 | 81.4 | 8219 | 2064 | 4056 | 401827 | 9426 | 7655 |
| 4 | 6/27/2017 | 82.8 | 7755 | 4768 | 3781 | 401113 | 8628 | 3591 |
| 5 | 6/28/2017 | 88.5 | 7921 | NA | 3988 | 400010 | 8602 | 4476 |
| 6 | 6/28/2017 | 86.8 | 7212 | 4049 | 3734 | 400867 | 7963 | 3429 |
| 7 | 6/28/2017 | 87.2 | 7247 | 3908 | 3591 | 400353 | 7493 | 3275 |
| 8 | 6/28/2017 | 87.7 | 7739 | 5357 | 3719 | 400466 | 6785 | 3254 |
| 9 | 6/29/2017 | 88.2 | 7668 | 5659 | 3663 | 400875 | 7494 | 3279 |
| 10 | 6/29/2017 | 88.8 | 7061 | 4593 | 3542 | 400874 | 7046 | 3255 |
| 11 | 6/29/2017 | 90.4 | 7015 | 4339 | 3833 | 401286 | 6243 | 3282 |
| 12 | 6/30/2017 | 88.9 | 7039 | 3728 | 6321 | 361657 | 5733 | 3214 |
| 13 | 6/30/2017 | 88.9 | 7506 | 5737 | 3461 | 402044 | 6934 | 3275 |
| 14 | 6/30/2017 | 92.9 | 7761 | 5007 | 3434 | 401471 | 6774 | 3254 |
| 15 | 6/30/2017 | 94.0 | 7275 | 4229 | 3712 | 400987 | 6833 | 3301 |
| 16 | 7/1/2017 | 94.2 | 7130 | 3740 | 3838 | 401332 | 6643 | 3237 |
| 17 | 7/1/2017 | 93.9 | 7169 | 4149 | 4160 | 401605 | 6732 | 3240 |
| 18 | 7/1/2017 | 94.1 | 7169 | 3270 | 3848 | 400948 | 6589 | 3233 |
| 19 | 7/1/2017 | 91.9 | 7428 | 5366 | 3400 | 401113 | 6668 | 3231 |
| 20 | 7/2/2017 | 92.5 | 7217 | 5354 | 3573 | 401034 | 6284 | 3236 |
| 21 | 7/2/2017 | 94.5 | 6899 | 3966 | 3728 | 400835 | 6271 | 3207 |
| 22 | 7/2/2017 | 94.3 | 6831 | 4394 | 3816 | 401989 | 6651 | 3285 |
| 23 | 7/2/2017 | 90.0 | 7511 | 5813 | 3441 | 402055 | 6785 | 3296 |
| 24 | 7/2/2017 | 93.8 | 6754 | 3637 | 3714 | 400253 | 6588 | 3192 |
| 25 | 7/3/2017 | 90.8 | 6846 | 5500 | 3411 | 401046 | 5951 | 3191 |
| 26 | 7/3/2017 | 94.9 | 6845 | 3167 | 3911 | 400477 | 6589 | 3217 |
| 27 | 7/3/2017 | 95.0 | 6679 | 4522 | 3329 | 400233 | 6464 | 3243 |
| 28 | 7/3/2017 | 91.3 | 6537 | 2632 | 3555 | 403283 | 6003 | 3218 |
| 29 | 7/4/2017 | 91.0 | 7045 | 5585 | 3320 | 400470 | 6637 | 3214 |
| 30 | 7/4/2017 | 94.4 | 6641 | 4395 | 3572 | 400406 | 6532 | 3221 |
| 31 | 7/4/2017 | 94.2 | 6404 | 3414 | 3854 | 399864 | 6523 | 3222 |
| 32 | 7/4/2017 | 92.5 | 7378 | 5726 | 3465 | 400967 | 7135 | 3266 |
| 33 | 7/5/2017 | 96.2 | 7043 | 4695 | 3600 | 400602 | 5847 | 3195 |
| 34 | 7/5/2017 | 96.2 | 6481 | 2965 | 3790 | 400560 | 5810 | 3211 |
| 35 | 7/5/2017 | 94.9 | 6342 | 3691 | 3606 | 400835 | 6016 | 3222 |
| 36 | 7/5/2017 | 94.0 | 6593 | 4357 | 3572 | 400168 | 5873 | 3221 |
| 37 | 7/5/2017 | 94.4 | 7197 | 4911 | 3176 | 400966 | 5740 | 3229 |
| 38 | 7/6/2017 | 95.2 | 6689 | 5410 | 3857 | 401322 | 5497 | 3196 |

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| LITHOLOGY / FORMATION | TOP | BOTTOM | TOP | BOTTOM | DESCRIBE ROCK TYPE AND RECORD QUANTITY TYPE OF FLUID (FRESHWATER,BRINE,GAS,H2S, ETC) |
|--------------------------|-------------|-------------|-------------|-------------|--|
| | DEPTH IN FT | DEPTH IN FT | DEPTH IN FT | DEPTH IN FT | |
| | TVD | TVD | MD | MD | |
| SHALE/SANDSTONE | 0 | 1222 | | | |
| SANDSTONE | 1222 | 1346 | | | |
| SHALE/SANDSTONE | 1346 | 1506 | | | |
| SANDSTONE | 1506 | 1548 | | | |
| SHALE/SANDSTONE | 1548 | 1650 | | | |
| MAXTON SAND | 1650 | 1733 | | | |
| SHALE/SANDSTONE | 1733 | 1856 | | | |
| BIG LIME | 1856 | 1911 | | | |
| BIG INJUN | 1911 | 2046 | | | |
| PRICE | 2046 | 2318 | | | |
| WEIR | 2318 | 2357 | | | |
| SHALE | 2357 | 2637 | | | |
| GORDON | 2637 | 2654 | | | |
| SHALE/SANDSTONE | 2654 | 2834 | | | |
| 5TH SAND | 2834 | 2846 | | | |
| SHALE | 2846 | 2989 | | | |
| SANDSTONE | 2989 | 3003 | | | |
| SHALE/SANDSTONE | 3003 | 3411 | | | |
| BENSON | 4838 | 4900 | | | |
| SHALE | 4900 | 5060 | | | |
| ALEXANDER | 5060 | 5128 | | | |
| SHALE | 5128 | 5638 | | | |
| RHINESTREET | 5638 | 5964 | | | |
| CASHAQUA | 5964 | 6056 | | | |
| MIDDLESEX SHALE | 6056 | 6085 | | | |
| WEST RIVER | 6085 | 6129 | | | |
| BURKETT | 6129 | 6172 | | | |
| TULLY LIMESTONE | 6172 | 6173 | | | |
| HAMILTON SHALE | 6173 | 6174 | | | |
| MARCELLUS | 6174 | 6233 | | | |
| ONONDAGA | 6233 | | | | |

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NOBLE ENERGY



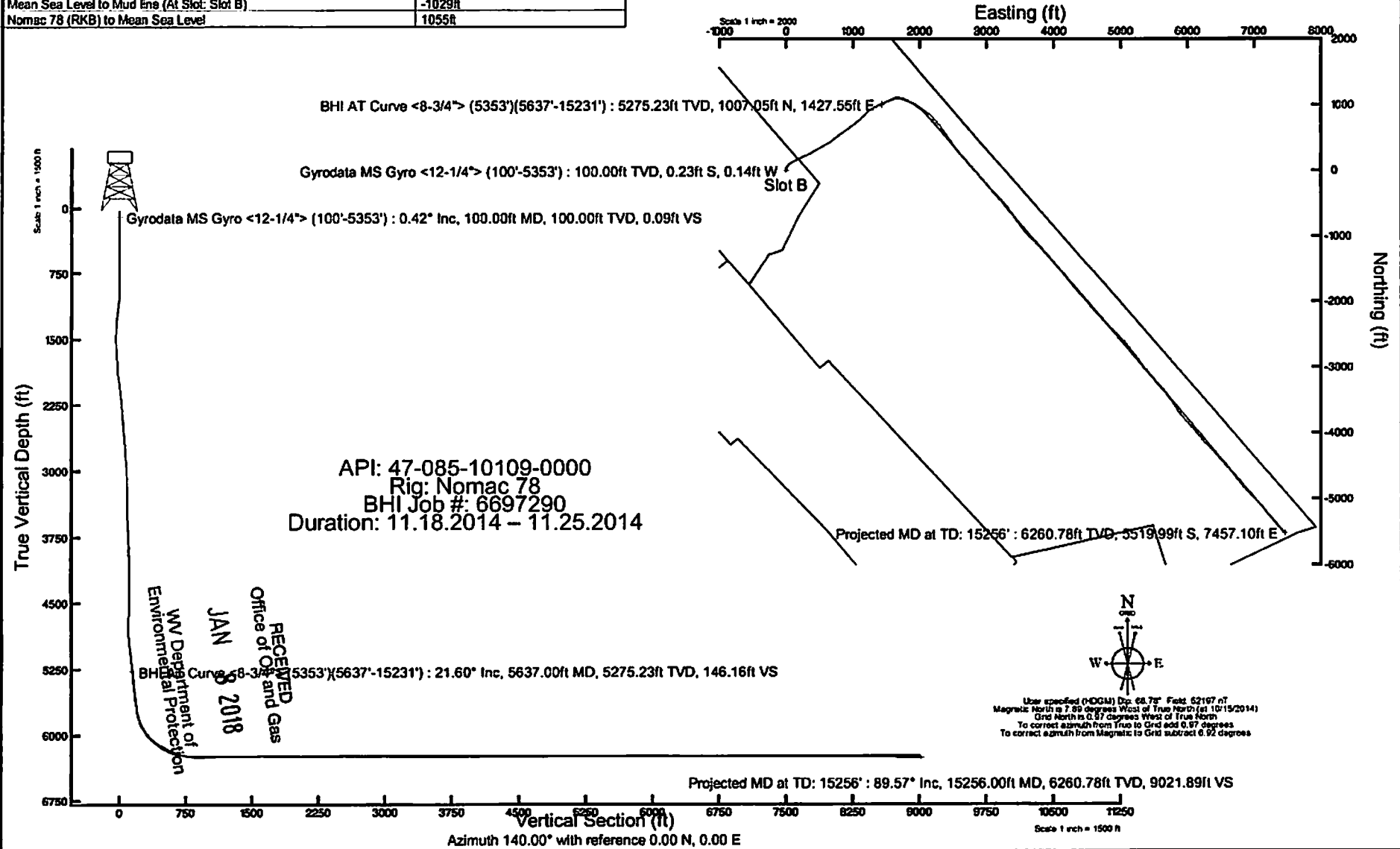
Location: Ritchie County, WV
 Field: Ritchie
 Facility: PEN-20 Pad

Slot: Slot B
 Well: PEN-20B-HS
 Wellbore: PEN-20B-HS PWB

Location Information

| Facility Name | Grid East (US ft) | Grid North (US ft) | Latitude | Longitude | | |
|--|-------------------|--------------------|-------------------|--------------------|----------------|----------------|
| PEN-20 Pad | 1568205.800 | 305275.580 | 39°19'41.124"N | 81°01'35.306"W | | |
| Slot | Local N (ft) | Local E (ft) | Grid East (US ft) | Grid North (US ft) | Latitude | Longitude |
| Slot B | -13.72 | 14.48 | 1568220.280 | 305261.860 | 39°19'40.991"N | 81°01'35.119"W |
| Nomac 78 (RKB) to Mud line (At Slot: Slot B) | | | 26ft | | | |
| Mean Sea Level to Mud line (At Slot: Slot B) | | | -1029ft | | | |
| Nomac 78 (RKB) to Mean Sea Level | | | 1055ft | | | |

| | |
|--|--|
| Plot reference wellpath is PEN-20B-HS PWP Rev-C.1 | |
| True vertical depths are referenced to Nomac 78 (RKB) | Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet |
| Measured depths are referenced to Nomac 78 (RKB) | North Reference: Grid north |
| Nomac 78 (RKB) to Mean Sea Level: 1055 feet | Scale: True distance |
| Mean Sea Level to Mud line (At Slot: Slot B): -1029 feet | Depths are in feet |
| Coordinates are in feet referenced to Slot | Created by: kroschr on 12/2/2014 |





Actual Wellpath Report

PEN-20B-HS AWP Proj: 15256'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|--------------------|----------|----------------|
| Operator | NOBLE ENERGY | Slot | Slot B |
| Area | Ritchie County, WV | Well | PEN-20B-HS |
| Field | Ritchie | Wellbore | PEN-20B-HS AWB |
| Facility | PEN-20 Pad | | |

| REPORT SETUP INFORMATION | | | |
|--------------------------|---|----------------------|---------------------------------|
| Projection System | NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet | Software System | WellArchitect® 4.0.1 |
| North Reference | Grid | User | Kroschr |
| Scale | 0.999954 | Report Generated | 12/2/2014 at 11:05:33 AM |
| Convergence at slot | 0.97° West | Database/Source file | WA_NorthEast/PEN-20B-HS_AWB.xml |

| WELLPATH LOCATION | | | | | | |
|-----------------------|-------------------|----------|------------------|-----------------|------------------------|----------------|
| | Local coordinates | | Grid coordinates | | Geographic coordinates | |
| | North[ft] | East[ft] | Easting[US ft] | Northing[US ft] | Latitude | Longitude |
| Slot Location | -13.72 | 14.48 | 1568220.28 | 305261.86 | 39°19'40.991"N | 81°01'35.119"W |
| Facility Reference Pt | | | 1568205.80 | 305275.58 | 39°19'41.124"N | 81°01'35.306"W |
| Field Reference Pt | | | 0.00 | 0.00 | 38°17'12.460"N | 86°28'23.077"W |

| WELLPATH DATUM | | | |
|--------------------------|-------------------|---|-------------------|
| Calculation method | Minimum curvature | Nomac 78 (RKB) to Facility Vertical Datum | 1055.00ft |
| Horizontal Reference Pt | Slot | Nomac 78 (RKB) to Mean Sea Level | 1055.00ft |
| Vertical Reference Pt | Nomac 78 (RKB) | Nomac 78 (RKB) to Mud Line at Slot (Slot B) | 26.00ft |
| MD Reference Pt | Nomac 78 (RKB) | Section Origin | N 0.00, E 0.00 ft |
| Field Vertical Reference | Mean Sea Level | Section Azimuth | 140.00° |

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Actual Wellpath Report
 PEN-20B-HS AWP Proj: 15256'
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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|--------------------|----------|----------------|
| Operator | NOBLE ENERGY | Slot | Slot B |
| Area | Ritchie County, WV | Well | PEN-20B-HS |
| Field | Ritchie | Wellbore | PEN-20B-HS AWB |
| Facility | PEN-20 Pad | | |

| WELLPATH DATA (159 stations) † = interpolated/extrapolated station | | | | | | | | | | | | | |
|--|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [°/100ft] |
| 0.00† | 0.000 | 210.800 | 0.00 | 0.00 | 0.00 | 0.00 | 1568220.28 | 305261.86 | 39°19'40.991"N | 81°01'35.119"W | 0.00 | 0.000 | 0.00 |
| 26.00 | 0.000 | 210.800 | 26.00 | 0.00 | 0.00 | 0.00 | 1568220.28 | 305261.86 | 39°19'40.991"N | 81°01'35.119"W | 0.00 | 0.000 | 0.00 |
| 100.00 | 0.420 | 210.800 | 100.00 | 0.09 | -0.23 | -0.14 | 1568220.14 | 305261.63 | 39°19'40.989"N | 81°01'35.121"W | 0.27 | 210.800 | 0.57 |
| 200.00 | 0.150 | 233.580 | 200.00 | 0.20 | -0.63 | -0.43 | 1568219.85 | 305261.23 | 39°19'40.985"N | 81°01'35.125"W | 0.76 | 214.623 | 0.29 |
| 300.00 | 0.110 | 148.110 | 300.00 | 0.29 | -0.78 | -0.49 | 1568219.79 | 305261.08 | 39°19'40.983"N | 81°01'35.125"W | 0.92 | 211.798 | 0.18 |
| 400.00 | 0.170 | 12.980 | 400.00 | 0.29 | -0.72 | -0.40 | 1568219.88 | 305261.14 | 39°19'40.984"N | 81°01'35.124"W | 0.83 | 209.148 | 0.26 |
| 500.00 | 0.150 | 7.860 | 500.00 | 0.12 | -0.45 | -0.35 | 1568219.93 | 305261.41 | 39°19'40.986"N | 81°01'35.124"W | 0.57 | 218.133 | 0.02 |
| 600.00 | 0.280 | 67.060 | 600.00 | 0.10 | -0.22 | -0.11 | 1568220.17 | 305261.64 | 39°19'40.989"N | 81°01'35.121"W | 0.25 | 205.956 | 0.24 |
| 700.00 | 0.340 | 75.300 | 700.00 | 0.30 | -0.05 | 0.40 | 1568220.68 | 305261.81 | 39°19'40.990"N | 81°01'35.114"W | 0.41 | 97.340 | 0.07 |
| 800.00 | 0.430 | 71.480 | 799.99 | 0.56 | 0.14 | 1.05 | 1568221.33 | 305262.00 | 39°19'40.992"N | 81°01'35.106"W | 1.06 | 82.247 | 0.09 |
| 900.00 | 1.440 | 19.890 | 899.98 | 0.07 | 1.44 | 1.83 | 1568222.11 | 305263.30 | 39°19'41.005"N | 81°01'35.096"W | 2.33 | 51.735 | 1.22 |
| 1000.00 | 4.150 | 4.560 | 999.85 | -3.14 | 6.23 | 2.55 | 1568222.82 | 305268.09 | 39°19'41.053"N | 81°01'35.088"W | 6.73 | 22.213 | 2.79 |
| 1100.00 | 7.960 | 10.110 | 1099.28 | -10.16 | 16.66 | 4.05 | 1568224.33 | 305278.52 | 39°19'41.156"N | 81°01'35.071"W | 17.15 | 13.659 | 3.85 |
| 1200.00 | 11.410 | 17.930 | 1197.84 | -19.86 | 32.89 | 8.31 | 1568228.59 | 305294.75 | 39°19'41.317"N | 81°01'35.021"W | 33.93 | 14.180 | 3.68 |
| 1300.00 | 14.440 | 28.270 | 1295.31 | -29.73 | 53.29 | 17.26 | 1568237.54 | 305315.15 | 39°19'41.520"N | 81°01'34.911"W | 56.02 | 17.950 | 3.80 |
| 1400.00 | 16.870 | 38.350 | 1391.61 | -37.28 | 75.66 | 32.18 | 1568252.46 | 305337.52 | 39°19'41.744"N | 81°01'34.726"W | 82.22 | 23.040 | 3.64 |
| 1500.00 | 18.390 | 50.090 | 1486.94 | -40.18 | 97.17 | 53.29 | 1568273.57 | 305359.02 | 39°19'41.960"N | 81°01'34.462"W | 110.82 | 28.741 | 3.86 |
| 1600.00 | 20.600 | 60.100 | 1581.23 | -37.07 | 116.07 | 80.65 | 1568300.93 | 305377.92 | 39°19'42.151"N | 81°01'34.118"W | 141.34 | 34.794 | 4.00 |
| 1700.00 | 23.370 | 61.340 | 1673.95 | -30.09 | 134.35 | 113.31 | 1568333.58 | 305396.21 | 39°19'42.338"N | 81°01'33.707"W | 175.75 | 40.144 | 2.81 |
| 1800.00 | 22.700 | 58.650 | 1765.98 | -23.28 | 153.90 | 147.19 | 1568367.47 | 305415.76 | 39°19'42.536"N | 81°01'33.280"W | 212.96 | 43.723 | 1.25 |
| 1900.00 | 23.010 | 58.070 | 1858.13 | -17.64 | 174.28 | 180.26 | 1568400.53 | 305436.13 | 39°19'42.743"N | 81°01'32.863"W | 250.73 | 45.966 | 0.38 |
| 2000.00 | 26.040 | 64.740 | 1949.11 | -9.31 | 193.99 | 216.71 | 1568436.98 | 305455.84 | 39°19'42.944"N | 81°01'32.404"W | 290.86 | 48.167 | 4.10 |
| 2100.00 | 26.870 | 67.140 | 2038.64 | 2.94 | 212.14 | 257.39 | 1568477.66 | 305473.99 | 39°19'43.130"N | 81°01'31.890"W | 333.54 | 50.505 | 1.35 |
| 2200.00 | 26.330 | 64.670 | 2128.06 | 15.22 | 230.41 | 298.26 | 1568518.53 | 305492.25 | 39°19'43.318"N | 81°01'31.374"W | 376.89 | 52.314 | 1.23 |
| 2300.00 | 25.130 | 61.130 | 2218.15 | 24.93 | 250.15 | 336.90 | 1568557.17 | 305512.00 | 39°19'43.519"N | 81°01'30.887"W | 419.62 | 53.406 | 1.95 |
| 2400.00 | 24.220 | 59.210 | 2309.02 | 32.32 | 270.90 | 373.12 | 1568593.38 | 305532.75 | 39°19'43.731"N | 81°01'30.430"W | 461.09 | 54.019 | 1.21 |
| 2500.00 | 23.420 | 60.010 | 2400.50 | 39.05 | 291.33 | 407.95 | 1568628.21 | 305553.18 | 39°19'43.938"N | 81°01'29.991"W | 501.30 | 54.468 | 0.86 |
| 2600.00 | 22.550 | 60.270 | 2492.56 | 45.93 | 310.78 | 441.82 | 1568662.08 | 305572.62 | 39°19'44.136"N | 81°01'29.565"W | 540.17 | 54.877 | 0.88 |
| 2700.00 | 22.570 | 60.080 | 2584.91 | 52.70 | 329.86 | 475.10 | 1568695.36 | 305591.70 | 39°19'44.330"N | 81°01'29.145"W | 578.38 | 55.228 | 0.08 |
| 2800.00 | 23.510 | 61.650 | 2676.93 | 60.09 | 348.90 | 509.29 | 1568729.54 | 305610.75 | 39°19'44.524"N | 81°01'28.715"W | 617.34 | 55.586 | 1.12 |

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Actual Wellpath Report
PEN-20B-HS AWP Proj: 15256

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REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|-------------------|----------|----------------|
| Operator | NOBLE ENERGY | Slot | Slot B |
| Area | Richie County, WV | Well | PEN-20B-HS |
| Field | Richie | Wellbore | PEN-20B-HS AWB |
| Facility | PEN-20 Pad | | |

WELLPATH DATA (159 stations)

| MD | Inclination | TVD | Vert Sect | East | Grid East | Grid North | Latitude | Longitude | Closure Dist | Closure Dir | DLS |
|---------|-------------|---------|-----------|--------|------------|------------|------------|-----------|----------------|----------------|-----------|
| [ft] | [°] | [ft] | [ft] | [ft] | [US ft] | [US ft] | | | [ft] | [°] | [%/100ft] |
| 2900.00 | 24.090 | 60.080 | 2768.43 | 67.69 | 368.55 | 544.53 | 1568764.78 | 305630.40 | 39°19'44.724"N | 81°01'28.270"W | 55.909 |
| 3000.00 | 24.230 | 58.810 | 2859.67 | 74.40 | 389.36 | 579.77 | 1568800.03 | 305651.20 | 39°19'44.936"N | 81°01'27.826"W | 56.116 |
| 3100.00 | 23.880 | 57.530 | 2950.98 | 80.20 | 410.85 | 614.40 | 1568834.66 | 305672.69 | 39°19'45.154"N | 81°01'27.390"W | 56.229 |
| 3200.00 | 24.220 | 57.120 | 3042.30 | 85.39 | 432.86 | 648.71 | 1568868.96 | 305694.70 | 39°19'45.377"N | 81°01'26.959"W | 56.286 |
| 3300.00 | 23.760 | 53.730 | 3133.67 | 89.25 | 455.91 | 682.18 | 1568902.43 | 305717.75 | 39°19'45.611"N | 81°01'26.538"W | 56.245 |
| 3400.00 | 23.820 | 52.060 | 3225.17 | 91.28 | 480.24 | 714.35 | 1568934.59 | 305742.08 | 39°19'45.857"N | 81°01'26.134"W | 56.088 |
| 3500.00 | 22.270 | 50.710 | 3317.19 | 92.25 | 504.66 | 744.94 | 1568965.18 | 305766.50 | 39°19'46.103"N | 81°01'25.750"W | 55.884 |
| 3600.00 | 21.460 | 51.080 | 3410.00 | 92.82 | 528.15 | 773.84 | 1568994.08 | 305789.96 | 39°19'46.340"N | 81°01'25.387"W | 55.686 |
| 3700.00 | 19.220 | 54.850 | 3503.76 | 94.56 | 549.12 | 801.53 | 1569021.77 | 305810.96 | 39°19'46.552"N | 81°01'25.039"W | 55.585 |
| 3800.00 | 19.010 | 56.450 | 3598.25 | 97.78 | 567.60 | 828.56 | 1569048.80 | 305829.43 | 39°19'46.739"N | 81°01'24.690"W | 55.587 |
| 3900.00 | 21.170 | 55.540 | 3692.16 | 101.36 | 586.82 | 857.03 | 1569077.27 | 305848.65 | 39°19'46.934"N | 81°01'24.341"W | 55.600 |
| 3900.00 | 21.170 | 55.540 | 3692.16 | 101.36 | 586.82 | 857.03 | 1569077.27 | 305848.65 | 39°19'46.934"N | 81°01'24.341"W | 55.600 |
| 4000.00 | 23.980 | 53.970 | 3784.48 | 104.51 | 609.00 | 888.36 | 1569108.59 | 305870.83 | 39°19'47.158"N | 81°01'23.947"W | 55.568 |
| 4100.00 | 27.530 | 54.320 | 3874.54 | 107.66 | 634.44 | 923.57 | 1569143.81 | 305896.27 | 39°19'47.415"N | 81°01'23.505"W | 55.513 |
| 4200.00 | 27.240 | 53.420 | 3963.33 | 110.76 | 661.56 | 960.73 | 1569180.96 | 305923.38 | 39°19'47.690"N | 81°01'23.038"W | 55.449 |
| 4300.00 | 4053.17 | 112.61 | 688.33 | 995.52 | 1569215.75 | 305950.16 | 1569215.75 | 305950.16 | 39°19'47.960"N | 81°01'22.601"W | 55.339 |
| 4400.00 | 50.210 | 4143.92 | 113.18 | 714.90 | 1028.06 | 1569248.28 | 305976.72 | 305976.72 | 39°19'48.228"N | 81°01'22.193"W | 55.186 |
| 4500.00 | 23.520 | 50.970 | 4235.15 | 113.59 | 740.90 | 1059.69 | 1569279.92 | 306002.72 | 39°19'48.490"N | 81°01'21.796"W | 55.040 |
| 4600.00 | 24.540 | 51.720 | 4326.48 | 114.56 | 766.33 | 1091.49 | 1569311.72 | 306028.15 | 39°19'48.747"N | 81°01'21.397"W | 54.928 |
| 4700.00 | 23.570 | 49.110 | 4417.80 | 114.87 | 792.28 | 1122.91 | 1569343.14 | 306054.10 | 39°19'49.009"N | 81°01'21.003"W | 54.795 |
| 4800.00 | 44.650 | 4509.49 | 112.70 | 819.55 | 1152.03 | 1569372.26 | 306081.57 | 306081.57 | 39°19'49.283"N | 81°01'20.638"W | 54.572 |
| 4900.00 | 42.580 | 4600.78 | 108.14 | 849.11 | 1180.18 | 1569400.40 | 306110.93 | 306110.93 | 39°19'49.580"N | 81°01'20.286"W | 54.266 |
| 5000.00 | 25.110 | 47.390 | 4691.49 | 104.48 | 878.87 | 1209.93 | 1569430.15 | 306140.69 | 39°19'49.879"N | 81°01'19.914"W | 54.006 |
| 5100.00 | 24.860 | 50.100 | 4782.13 | 103.55 | 906.72 | 1241.67 | 1569461.90 | 306168.53 | 39°19'50.159"N | 81°01'19.516"W | 53.862 |
| 5200.00 | 25.740 | 54.480 | 4872.55 | 105.28 | 932.82 | 1275.48 | 1569495.70 | 306194.63 | 39°19'50.423"N | 81°01'19.092"W | 53.820 |
| 5300.00 | 23.670 | 62.500 | 4963.41 | 111.32 | 954.71 | 1310.97 | 1569531.19 | 306216.53 | 39°19'50.645"N | 81°01'18.645"W | 53.936 |
| 5353.00 | 22.660 | 67.290 | 5012.15 | 116.66 | 963.57 | 1329.83 | 1569550.04 | 306225.38 | 39°19'50.736"N | 81°01'18.407"W | 54.074 |
| 5637.00 | 21.600 | 64.670 | 5275.23 | 146.16 | 1007.05 | 1427.55 | 1569647.76 | 306268.87 | 39°19'51.182"N | 81°01'17.173"W | 54.799 |
| 5732.00 | 23.650 | 62.430 | 5362.91 | 154.69 | 1023.36 | 1460.25 | 1569680.46 | 306285.17 | 39°19'51.349"N | 81°01'16.760"W | 54.977 |
| 5827.00 | 24.340 | 64.990 | 5449.70 | 163.86 | 1040.45 | 1494.88 | 1569715.09 | 306302.26 | 39°19'51.523"N | 81°01'16.323"W | 55.162 |
| 5923.00 | 24.110 | 71.550 | 5537.27 | 176.18 | 1055.02 | 1531.41 | 1569751.62 | 306316.83 | 39°19'51.674"N | 81°01'15.861"W | 55.436 |

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Actual Wellpath Report

PEN-20B-HS AWP Proj: 15256

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REFERENCE WELLPATH IDENTIFICATION

| | |
|----------|-------------------|
| Operator | NOBLE ENERGY |
| Area | Richie County, WV |
| Field | Richie |
| Facility | PEN-20 Pad |
| Well | PEN-20B-HS |
| Wellbore | PEN-20B-HS AWB |
| Slot | Slot B |

WELLPATH DATA (159 stations)

| MD | Inclination | Azimuth | TVD | Vert Sect | North | East | Grid East | Grid North | Latitude | Longitude | Closure Dist | Closure Dir | DLS |
|---------|-------------|---------|---------|-----------|---------|---------|------------|------------|----------------|----------------|--------------|-------------|-------|
| [ft] | [°] | [°] | [ft] | [ft] | [ft] | [ft] | [US ft] | [US ft] | | | [ft] | [°/1000ft] | |
| 6016.00 | 24.420 | 69.720 | 5622.05 | 189.64 | 1067.70 | 1567.47 | 1569787.67 | 306329.51 | 39°19'51.805"N | 81°01'15.405"W | 1896.56 | 55.739 | 0.87 |
| 6111.00 | 24.950 | 68.240 | 5708.37 | 202.54 | 1081.93 | 1604.50 | 1569824.70 | 306343.74 | 39°19'51.952"N | 81°01'14.937"W | 1935.20 | 56.008 | 0.86 |
| 6206.00 | 26.550 | 83.890 | 5794.03 | 220.67 | 1091.63 | 1644.27 | 1569864.47 | 306353.44 | 39°19'52.054"N | 81°01'14.433"W | 1973.64 | 56.420 | 7.33 |
| 6301.00 | 32.630 | 99.480 | 5876.73 | 252.06 | 1089.67 | 1690.75 | 1569910.95 | 306351.48 | 39°19'52.043"N | 81°01'13.841"W | 2011.47 | 57.199 | 10.28 |
| 6395.00 | 39.300 | 104.890 | 5952.79 | 295.74 | 1077.83 | 1744.59 | 1569964.79 | 306339.64 | 39°19'51.935"N | 81°01'13.154"W | 2050.69 | 58.292 | 7.85 |
| 6490.00 | 46.730 | 106.920 | 6022.20 | 349.41 | 1060.01 | 1806.85 | 1570027.04 | 306321.82 | 39°19'51.769"N | 81°01'12.358"W | 2094.83 | 59.601 | 7.95 |
| 6585.00 | 56.010 | 112.890 | 6081.48 | 413.62 | 1034.55 | 1876.41 | 1570096.60 | 306296.36 | 39°19'51.529"N | 81°01'11.467"W | 2142.71 | 61.130 | 10.93 |
| 6681.00 | 64.110 | 121.560 | 6129.42 | 490.25 | 996.35 | 1950.10 | 1570170.28 | 306258.17 | 39°19'51.164"N | 81°01'10.521"W | 2189.89 | 62.936 | 11.50 |
| 6774.00 | 63.980 | 126.740 | 6170.14 | 570.65 | 949.44 | 2019.27 | 1570239.45 | 306211.25 | 39°19'50.712"N | 81°01'09.631"W | 2231.34 | 64.818 | 5.01 |
| 6869.00 | 69.430 | 127.080 | 6207.70 | 655.61 | 897.05 | 2089.01 | 1570309.19 | 306158.87 | 39°19'50.206"N | 81°01'08.732"W | 2273.46 | 66.761 | 5.75 |
| 6965.00 | 76.130 | 133.470 | 6236.13 | 745.89 | 837.77 | 2158.82 | 1570379.00 | 306099.59 | 39°19'49.631"N | 81°01'07.831"W | 2315.68 | 68.790 | 9.44 |
| 7060.00 | 85.400 | 138.400 | 6251.66 | 839.26 | 770.48 | 2223.88 | 1570444.05 | 306032.30 | 39°19'48.977"N | 81°01'06.989"W | 2353.57 | 70.891 | 10.68 |
| 7156.00 | 92.370 | 141.490 | 6253.83 | 935.16 | 697.08 | 2285.59 | 1570505.76 | 305958.90 | 39°19'48.262"N | 81°01'06.188"W | 2389.52 | 73.039 | 8.28 |
| 7252.00 | 91.940 | 144.560 | 6250.22 | 1030.94 | 620.44 | 2343.28 | 1570563.45 | 305882.28 | 39°19'47.515"N | 81°01'05.438"W | 2424.03 | 75.170 | 3.23 |
| 7348.00 | 90.990 | 145.380 | 6247.77 | 1126.55 | 541.86 | 2398.37 | 1570618.53 | 305803.70 | 39°19'46.747"N | 81°01'04.720"W | 2458.82 | 77.269 | 1.31 |
| 7443.00 | 90.990 | 144.580 | 6246.13 | 1221.18 | 464.07 | 2452.87 | 1570673.04 | 305725.91 | 39°19'45.988"N | 81°01'04.009"W | 2496.39 | 79.286 | 0.84 |
| 7538.00 | 90.990 | 146.350 | 6244.49 | 1315.73 | 385.83 | 2506.72 | 1570726.88 | 305647.67 | 39°19'45.223"N | 81°01'03.308"W | 2536.24 | 81.250 | 1.86 |
| 7634.00 | 90.400 | 142.180 | 6243.32 | 1411.43 | 307.93 | 2562.77 | 1570782.93 | 305569.77 | 39°19'44.463"N | 81°01'02.578"W | 2581.21 | 83.149 | 4.39 |
| 7729.00 | 90.580 | 140.080 | 6242.51 | 1506.40 | 233.97 | 2622.38 | 1570842.54 | 305495.82 | 39°19'43.742"N | 81°01'01.803"W | 2632.80 | 84.902 | 2.22 |
| 7825.00 | 89.320 | 140.540 | 6242.59 | 1602.40 | 160.10 | 2683.69 | 1570903.84 | 305421.95 | 39°19'43.022"N | 81°01'01.007"W | 2688.46 | 86.586 | 1.40 |
| 7920.00 | 89.480 | 139.910 | 6243.59 | 1697.39 | 87.09 | 2744.47 | 1570964.62 | 305348.95 | 39°19'42.311"N | 81°01'00.218"W | 2745.85 | 88.182 | 0.68 |
| 8016.00 | 89.570 | 138.920 | 6244.38 | 1793.39 | 14.19 | 2806.92 | 1571027.06 | 305276.05 | 39°19'41.601"N | 81°00'59.408"W | 2806.95 | 89.710 | 1.04 |
| 8112.00 | 89.380 | 138.980 | 6245.26 | 1889.36 | -58.21 | 2869.96 | 1571090.10 | 305203.66 | 39°19'40.896"N | 81°00'58.590"W | 2870.55 | 91.162 | 0.21 |
| 8207.00 | 89.510 | 140.210 | 6246.18 | 1984.36 | -130.54 | 2931.53 | 1571151.67 | 305131.32 | 39°19'40.191"N | 81°00'57.791"W | 2934.44 | 92.550 | 1.30 |
| 8303.00 | 89.450 | 139.130 | 6247.05 | 2080.35 | -203.72 | 2993.66 | 1571213.80 | 305058.15 | 39°19'39.479"N | 81°00'56.985"W | 3000.59 | 93.893 | 1.13 |
| 8399.00 | 89.820 | 138.060 | 6247.66 | 2176.32 | -275.73 | 3057.15 | 1571277.29 | 304986.15 | 39°19'38.778"N | 81°00'56.162"W | 3069.56 | 95.154 | 1.18 |
| 8494.00 | 90.340 | 135.520 | 6247.53 | 2271.16 | -344.96 | 3122.19 | 1571342.32 | 304916.92 | 39°19'38.104"N | 81°00'55.320"W | 3141.19 | 96.305 | 2.73 |
| 8589.00 | 89.970 | 137.170 | 6247.28 | 2365.96 | -413.69 | 3187.77 | 1571407.89 | 304848.19 | 39°19'37.436"N | 81°00'54.470"W | 3214.50 | 97.394 | 1.78 |
| 8685.00 | 89.910 | 138.210 | 6247.38 | 2461.88 | -484.68 | 3252.39 | 1571472.51 | 304777.20 | 39°19'36.745"N | 81°00'53.633"W | 3288.30 | 98.476 | 1.09 |
| 8781.00 | 90.090 | 142.000 | 6247.38 | 2557.87 | -558.32 | 3313.95 | 1571534.07 | 304703.56 | 39°19'36.028"N | 81°00'52.834"W | 3360.65 | 99.563 | 3.95 |

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Actual Wellpath Report
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REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|--------------------|----------|----------------|
| Operator | NOBLE ENERGY | Slot | Slot B |
| Area | Ritchie County, WV | Well | PEN-20B-HS |
| Field | Ritchie | Wellbore | PEN-20B-HS_AWB |
| Facility | PEN-20 Pad | | |

WELLPATH DATA (159 stations)

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [°/100ft] |
|----------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|
| 8875.00 | 89.600 | 148.450 | 6247.63 | 2651.42 | -635.49 | 3367.53 | 1571587.65 | 304626.40 | 39°19'35.274"N | 81°00'52.136"W | 3426.97 | 100.687 | 6.88 |
| 8971.00 | 89.660 | 149.310 | 6248.25 | 2746.27 | -717.67 | 3417.15 | 1571637.26 | 304544.22 | 39°19'34.470"N | 81°00'51.487"W | 3491.70 | 101.861 | 0.90 |
| 9066.00 | 90.310 | 142.850 | 6248.28 | 2840.69 | -796.47 | 3470.13 | 1571690.25 | 304465.43 | 39°19'33.700"N | 81°00'50.796"W | 3560.36 | 102.927 | 6.83 |
| 9162.00 | 90.220 | 141.250 | 6247.83 | 2936.50 | -873.68 | 3527.17 | 1571747.28 | 304388.22 | 39°19'32.947"N | 81°00'50.053"W | 3633.76 | 103.912 | 1.46 |
| 9258.00 | 89.690 | 138.340 | 6247.91 | 3032.43 | -948.57 | 3587.17 | 1571807.28 | 304313.34 | 39°19'32.217"N | 81°00'49.274"W | 3710.47 | 104.812 | 6.18 |
| 9353.00 | 89.750 | 135.840 | 6248.37 | 3127.30 | -1018.14 | 3651.84 | 1571871.95 | 304243.77 | 39°19'31.540"N | 81°00'48.436"W | 3791.12 | 105.579 | 2.63 |
| 9449.00 | 89.940 | 135.430 | 6248.63 | 3223.02 | -1086.77 | 3718.97 | 1571939.07 | 304175.14 | 39°19'30.873"N | 81°00'47.567"W | 3874.51 | 106.290 | 0.47 |
| 9545.00 | 89.540 | 136.330 | 6249.07 | 3318.77 | -1155.68 | 3785.80 | 1572005.90 | 304106.23 | 39°19'30.203"N | 81°00'46.702"W | 3958.27 | 106.976 | 1.03 |
| 9640.00 | 89.450 | 137.020 | 6249.90 | 3413.61 | -1224.79 | 3850.98 | 1572071.08 | 304037.13 | 39°19'29.531"N | 81°00'45.858"W | 4041.06 | 107.643 | 0.73 |
| 9736.00 | 89.600 | 138.320 | 6250.70 | 3509.52 | -1295.76 | 3915.62 | 1572135.72 | 303966.16 | 39°19'28.840"N | 81°00'45.021"W | 4124.45 | 108.310 | 1.36 |
| 9832.00 | 89.660 | 141.020 | 6251.32 | 3605.51 | -1368.93 | 3977.75 | 1572197.84 | 303892.99 | 39°19'28.128"N | 81°00'44.215"W | 4206.71 | 108.991 | 2.81 |
| 9927.00 | 89.780 | 141.510 | 6251.78 | 3700.48 | -1443.04 | 4037.19 | 1572257.28 | 303818.89 | 39°19'27.405"N | 81°00'43.442"W | 4287.34 | 109.669 | 0.53 |
| 10022.00 | 89.750 | 142.810 | 6252.17 | 3795.41 | -1518.06 | 4095.46 | 1572315.55 | 303743.87 | 39°19'26.673"N | 81°00'42.685"W | 4367.76 | 110.338 | 1.37 |
| 10117.00 | 89.660 | 140.620 | 6252.66 | 3890.36 | -1592.62 | 4154.32 | 1572374.40 | 303669.31 | 39°19'25.946"N | 81°00'41.920"W | 4449.14 | 110.975 | 2.31 |
| 10213.00 | 89.850 | 142.710 | 6253.07 | 3986.32 | -1667.92 | 4213.86 | 1572433.94 | 303594.02 | 39°19'25.212"N | 81°00'41.146"W | 4531.95 | 111.595 | 2.19 |
| 10309.00 | 90.280 | 145.010 | 6252.96 | 4082.09 | -1745.44 | 4270.47 | 1572490.55 | 303516.50 | 39°19'24.455"N | 81°00'40.410"W | 4613.41 | 112.231 | 2.44 |
| 10404.00 | 90.220 | 140.370 | 6252.55 | 4176.96 | -1820.98 | 4328.04 | 1572548.11 | 303440.97 | 39°19'23.719"N | 81°00'39.661"W | 4695.52 | 112.818 | 4.88 |
| 10500.00 | 90.150 | 137.260 | 6252.24 | 4272.93 | -1893.22 | 4391.25 | 1572611.32 | 303368.73 | 39°19'23.015"N | 81°00'38.841"W | 4781.98 | 113.323 | 3.24 |
| 10595.00 | 90.890 | 138.590 | 6251.38 | 4367.86 | -1963.73 | 4454.90 | 1572674.97 | 303298.22 | 39°19'22.329"N | 81°00'38.016"W | 4868.51 | 113.788 | 1.60 |
| 10691.00 | 90.580 | 139.350 | 6250.15 | 4463.84 | -2036.14 | 4517.92 | 1572737.98 | 303225.82 | 39°19'21.624"N | 81°00'37.199"W | 4955.55 | 114.260 | 0.85 |
| 10786.00 | 90.340 | 141.260 | 6249.38 | 4558.83 | -2109.23 | 4578.59 | 1572798.65 | 303152.73 | 39°19'20.912"N | 81°00'36.412"W | 5041.07 | 114.734 | 2.03 |
| 10882.00 | 90.310 | 139.810 | 6248.84 | 4654.82 | -2183.34 | 4639.66 | 1572859.66 | 303078.62 | 39°19'20.189"N | 81°00'35.620"W | 5127.66 | 115.201 | 1.51 |
| 10978.00 | 90.250 | 136.280 | 6248.37 | 4750.75 | -2254.75 | 4703.77 | 1572923.83 | 303007.24 | 39°19'19.495"N | 81°00'34.788"W | 5216.25 | 115.610 | 3.68 |
| 11073.00 | 90.220 | 135.180 | 6247.98 | 4845.48 | -2322.75 | 4770.09 | 1572990.17 | 302939.22 | 39°19'18.833"N | 81°00'33.930"W | 5305.55 | 115.963 | 1.16 |
| 11168.00 | 90.060 | 134.720 | 6247.75 | 4940.11 | -2389.87 | 4837.32 | 1573057.34 | 302872.11 | 39°19'18.181"N | 81°00'33.060"W | 5395.47 | 116.292 | 0.51 |
| 11264.00 | 90.060 | 135.520 | 6247.65 | 5035.76 | -2457.89 | 4905.06 | 1573125.10 | 302804.09 | 39°19'17.520"N | 81°00'32.184"W | 5486.42 | 116.615 | 0.83 |
| 11359.00 | 90.060 | 136.280 | 6247.55 | 5130.52 | -2526.11 | 4971.17 | 1573191.21 | 302735.87 | 39°19'16.857"N | 81°00'31.328"W | 5576.18 | 116.937 | 0.80 |
| 11455.00 | 90.340 | 137.830 | 6247.21 | 5226.39 | -2596.38 | 5036.57 | 1573256.61 | 302665.60 | 39°19'16.174"N | 81°00'30.481"W | 5666.41 | 117.271 | 1.64 |
| 11550.00 | 89.970 | 141.200 | 6246.96 | 5321.37 | -2666.62 | 5098.24 | 1573318.28 | 302593.36 | 39°19'15.470"N | 81°00'29.681"W | 5754.44 | 117.629 | 3.57 |
| 11646.00 | 90.090 | 141.130 | 6246.90 | 5417.35 | -2743.40 | 5158.44 | 1573378.47 | 302518.59 | 39°19'14.741"N | 81°00'28.899"W | 5842.58 | 118.005 | 0.14 |

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 PEN-20B-HS AWP Proj: 15256
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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|--------------------|----------|----------------|
| Operator | NOBLE ENERGY | Slot | Slot B |
| Area | Ritchie County, WV | Well | PEN-20B-HS |
| Field | Ritchie | Wellbore | PEN-20B-HS AWB |
| Facility | PEN-20 Pad | | |

WELLPATH DATA (159 stations)

| MD | Inclination | Azimuth | TVD | Vert Sect | North | East | Grid East | Grid North | Latitude | Longitude | Closure Dist | Closure Dir | DLS |
|----------|-------------|---------|---------|-----------|----------|---------|------------|------------|----------------|----------------|--------------|-------------|------|
| ft | ° | ° | ft | ft | ft | ft | ft | ft | ft | ft | ft | ft/100ft | |
| 11742.00 | 89.940 | 142.310 | 6246.88 | 5513.31 | -2818.76 | 5217.91 | 1573437.94 | 302443.23 | 39°19'14.006"N | 81°00'28.126"W | 5930.60 | 118.378 | 1.24 |
| 11838.00 | 90.060 | 145.370 | 6246.88 | 5609.08 | -2896.26 | 5274.55 | 1573494.58 | 302365.74 | 39°19'13.250"N | 81°00'27.389"W | 6017.41 | 118.771 | 3.19 |
| 11933.00 | 90.090 | 143.480 | 6246.76 | 5703.79 | -2973.53 | 5329.81 | 1573549.84 | 302288.48 | 39°19'12.495"N | 81°00'26.670"W | 6103.18 | 119.157 | 1.99 |
| 12028.00 | 89.940 | 140.710 | 6246.73 | 5798.72 | -3048.48 | 5388.17 | 1573608.19 | 302213.53 | 39°19'11.764"N | 81°00'25.911"W | 6190.77 | 119.500 | 2.92 |
| 12124.00 | 90.030 | 139.200 | 6246.76 | 5894.72 | -3121.97 | 5449.94 | 1573669.96 | 302140.04 | 39°19'11.048"N | 81°00'25.110"W | 6280.80 | 119.806 | 1.58 |
| 12220.00 | 89.480 | 138.780 | 6247.17 | 5990.70 | -3194.41 | 5512.93 | 1573732.95 | 302067.61 | 39°19'10.343"N | 81°00'24.293"W | 6371.55 | 120.090 | 0.72 |
| 12315.00 | 89.350 | 139.900 | 6248.14 | 6085.69 | -3266.47 | 5574.82 | 1573794.84 | 301995.55 | 39°19'09.641"N | 81°00'23.490"W | 6461.31 | 120.367 | 1.19 |
| 12411.00 | 89.390 | 140.030 | 6249.19 | 6181.68 | -3339.96 | 5636.57 | 1573856.58 | 301922.05 | 39°19'08.925"N | 81°00'22.689"W | 6551.82 | 120.649 | 0.14 |
| 12507.00 | 89.600 | 143.270 | 6250.04 | 6277.62 | -3415.24 | 5696.13 | 1573916.13 | 301846.78 | 39°19'08.191"N | 81°00'21.915"W | 6641.51 | 120.946 | 3.38 |
| 12603.00 | 90.150 | 147.630 | 6250.25 | 6373.17 | -3494.29 | 5750.56 | 1573970.56 | 301767.74 | 39°19'07.419"N | 81°00'21.206"W | 6728.96 | 121.285 | 4.58 |
| 12698.00 | 90.090 | 150.210 | 6250.05 | 6470.01 | -3575.64 | 5799.60 | 1574019.60 | 301686.39 | 39°19'06.623"N | 81°00'20.564"W | 6813.26 | 121.655 | 2.72 |
| 12794.00 | 90.120 | 146.520 | 6249.87 | 6561.97 | -3657.36 | 5849.94 | 1574069.94 | 301604.67 | 39°19'05.823"N | 81°00'19.907"W | 6899.14 | 122.013 | 3.84 |
| 12889.00 | 90.180 | 140.140 | 6249.62 | 6656.76 | -3733.52 | 5906.64 | 1574126.64 | 301528.52 | 39°19'05.080"N | 81°00'19.169"W | 6987.68 | 122.297 | 6.72 |
| 12985.00 | 90.060 | 138.720 | 6249.42 | 6752.75 | -3806.44 | 5969.08 | 1574189.07 | 301455.60 | 39°19'04.370"N | 81°00'18.359"W | 7079.47 | 122.525 | 1.48 |
| 13080.00 | 89.970 | 139.190 | 6249.40 | 6847.74 | -3878.09 | 6031.46 | 1574251.45 | 301383.95 | 39°19'03.672"N | 81°00'17.550"W | 7170.64 | 122.740 | 0.50 |
| 13176.00 | 90.060 | 138.740 | 6249.37 | 6943.72 | -3950.50 | 6094.49 | 1574314.47 | 301311.54 | 39°19'02.967"N | 81°00'16.733"W | 7262.87 | 122.952 | 0.48 |
| 13271.00 | 89.570 | 139.730 | 6249.68 | 7038.71 | -4022.46 | 6156.52 | 1574376.50 | 301239.60 | 39°19'02.266"N | 81°00'15.929"W | 7354.10 | 123.159 | 1.16 |
| 13367.00 | 89.720 | 139.500 | 6250.27 | 7134.71 | -4095.58 | 6218.72 | 1574438.70 | 301166.48 | 39°19'01.554"N | 81°00'15.122"W | 7446.22 | 123.368 | 0.29 |
| 13462.00 | 89.720 | 137.220 | 6250.74 | 7229.66 | -4166.57 | 6281.83 | 1574501.81 | 301093.49 | 39°19'00.863"N | 81°00'14.304"W | 7538.02 | 123.555 | 2.40 |
| 13558.00 | 89.690 | 136.270 | 6251.23 | 7325.50 | -4236.49 | 6347.61 | 1574567.59 | 301020.58 | 39°19'00.183"N | 81°00'13.452"W | 7631.52 | 123.720 | 0.99 |
| 13654.00 | 89.750 | 136.860 | 6251.70 | 7421.33 | -4306.20 | 6413.62 | 1574633.59 | 300955.87 | 39°18'59.505"N | 81°00'12.597"W | 7725.14 | 123.878 | 0.62 |
| 13748.00 | 89.660 | 137.810 | 6252.19 | 7515.23 | -4375.31 | 6477.32 | 1574697.29 | 300886.75 | 39°18'58.832"N | 81°00'11.772"W | 7816.59 | 124.038 | 1.02 |
| 13844.00 | 89.690 | 140.040 | 6252.73 | 7611.20 | -4447.68 | 6540.39 | 1574760.36 | 300814.39 | 39°18'58.128"N | 81°00'10.955"W | 7909.40 | 124.217 | 2.32 |
| 13939.00 | 89.600 | 138.620 | 6253.32 | 7706.19 | -4519.73 | 6602.30 | 1574822.26 | 300742.35 | 39°18'57.426"N | 81°00'10.152"W | 8001.15 | 124.394 | 1.50 |
| 14035.00 | 89.850 | 141.450 | 6253.78 | 7802.18 | -4593.30 | 6663.96 | 1574883.92 | 300668.78 | 39°18'56.709"N | 81°00'09.352"W | 8093.62 | 124.578 | 2.96 |
| 14130.00 | 89.850 | 144.940 | 6254.03 | 7897.02 | -4669.35 | 6720.86 | 1574940.82 | 300592.73 | 39°18'55.967"N | 81°00'08.612"W | 8183.69 | 124.790 | 3.67 |
| 14226.00 | 90.060 | 141.010 | 6254.10 | 7992.87 | -4745.98 | 6778.66 | 1574998.61 | 300516.11 | 39°18'55.219"N | 81°00'07.860"W | 8274.93 | 124.977 | 4.10 |
| 14322.00 | 89.940 | 138.850 | 6254.10 | 8088.86 | -4819.44 | 6840.45 | 1575060.40 | 300442.65 | 39°18'54.503"N | 81°00'07.058"W | 8367.72 | 125.167 | 2.25 |
| 14418.00 | 90.030 | 138.520 | 6254.13 | 8184.84 | -4891.55 | 6903.83 | 1575123.78 | 300370.55 | 39°18'53.801"N | 81°00'06.237"W | 8461.09 | 125.319 | 0.36 |
| 14513.00 | 90.000 | 135.220 | 6254.10 | 8279.68 | -4960.87 | 6968.77 | 1575188.71 | 300301.23 | 39°18'53.127"N | 81°00'05.396"W | 8554.18 | 125.446 | 3.47 |



Actual Wellpath Report

PEN-20B-HS AWP Proj: 15256'

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REFERENCE WELLPATH IDENTIFICATION

| Operator | NOBLE ENERGY | Slot | Slot B |
|----------|--------------------|----------|----------------|
| Area | Ritchie County, WV | Well | PEN-20B-HS |
| Field | Ritchie | Wellbore | PEN-20B-HS AWB |
| Facility | PEN-20 Pad | | |

WELLPATH DATA (159 stations)

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [°/100ft] |
|----------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|
| 14609.00 | 89.420 | 134.910 | 6254.59 | 8375.33 | -5028.83 | 7036.57 | 1575236.52 | 300233.27 | 39°18'52.467"N | 81°00'04.519"W | 8648.84 | 125.552 | 0.69 |
| 14704.00 | 89.350 | 141.130 | 6255.61 | 8470.22 | -5099.41 | 7100.08 | 1575320.02 | 300162.70 | 39°18'51.780"N | 81°00'03.696"W | 8741.57 | 125.687 | 6.55 |
| 14800.00 | 89.510 | 142.620 | 6256.57 | 8566.16 | -5174.92 | 7159.34 | 1575379.28 | 300087.19 | 39°18'51.043"N | 81°00'02.926"W | 8833.80 | 125.860 | 1.56 |
| 14895.00 | 89.540 | 140.980 | 6257.35 | 8661.10 | -5249.57 | 7218.09 | 1575438.02 | 300012.54 | 39°18'50.315"N | 81°00'02.163"W | 8925.18 | 126.028 | 1.73 |
| 14991.00 | 89.450 | 139.210 | 6258.20 | 8757.10 | -5323.21 | 7279.67 | 1575499.60 | 299938.90 | 39°18'49.597"N | 81°00'01.364"W | 9018.32 | 126.176 | 1.85 |
| 15086.00 | 89.420 | 138.570 | 6259.14 | 8852.07 | -5394.78 | 7342.13 | 1575562.06 | 299867.33 | 39°18'48.900"N | 81°00'00.554"W | 9111.01 | 126.307 | 0.67 |
| 15181.00 | 89.380 | 137.250 | 6260.13 | 8947.00 | -5465.28 | 7405.80 | 1575625.73 | 299796.84 | 39°18'48.214"N | 80°59'59.729"W | 9204.08 | 126.426 | 1.39 |
| 15231.00 | 89.570 | 136.640 | 6260.59 | 8996.93 | -5501.81 | 7439.94 | 1575659.86 | 299760.31 | 39°18'47.859"N | 80°59'59.287"W | 9253.25 | 126.483 | 1.28 |
| 15256.00 | 89.570 | 136.640 | 6260.78 | 9021.89 | -5519.99 | 7457.10 | 1575677.02 | 299742.14 | 39°18'47.682"N | 80°59'59.065"W | 9277.85 | 126.510 | 0.00 |

HOLE & CASING SECTIONS - Ref Wellbore: PEN-20B-HS AWB Ref Wellpath: PEN-20B-HS AWP Proj: 15256'

| String/Diameter | Start MID [ft] | End MID [ft] | Interval [ft] | Start TVD [ft] | End TVD [ft] | Start N/S [ft] | Start E/W [ft] | End N/S [ft] | End E/W [ft] |
|-------------------------|----------------|--------------|---------------|----------------|--------------|----------------|----------------|--------------|--------------|
| 13.375in Casing Surface | 26.00 | 550.00 | 524.00 | 26.00 | 550.00 | 0.00 | 0.00 | -0.33 | -0.28 |

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PEN-20B-HS AWP Proj: 15256'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|--------------------|----------|----------------|
| Operator | NOBLE ENERGY | Slot | Slot B |
| Area | Ritchie County, WV | Well | PEN-20B-HS |
| Field | Ritchie | Wellbore | PEN-20B-HS AWB |
| Facility | PEN-20 Pad | | |

| TARGETS | | | | | | | | | |
|------------------------|---------|----------|------------|-----------|-------------------|--------------------|----------------|----------------|---------|
| Name | MD [ft] | TVD [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Shape |
| PEN-20B-IIS BHL Rev-4 | | 6240.00 | -5507.61 | 7443.72 | 1575663.64 | 299754.51 | 39°18'47.802"N | 80°59'59.238"W | point |
| PEN-20B-IIS LP Rev-4 | | 6240.00 | 754.80 | 2188.93 | 1570409.11 | 306016.62 | 39°19'48.817"N | 81°01'07.430"W | point |
| PEN-20 ALT Vertices | | 6948.00 | -57.68 | 28.44 | 1568248.72 | 305204.18 | 39°19'40.426"N | 81°01'34.745"W | polygon |
| PEN-20 Cokely Tract 1 | | 6948.00 | -57.68 | 28.44 | 1568248.72 | 305204.18 | 39°19'40.426"N | 81°01'34.745"W | polygon |
| PEN-20 Cokely Tract 2 | | 6948.00 | -57.68 | 28.44 | 1568248.72 | 305204.18 | 39°19'40.426"N | 81°01'34.745"W | polygon |
| PEN-20 LL | | 6948.00 | -57.68 | 28.44 | 1568248.72 | 305204.18 | 39°19'40.426"N | 81°01'34.745"W | polygon |
| PEN-20 Parcel 3.12-1.2 | | 6948.00 | -57.68 | 28.44 | 1568248.72 | 305204.18 | 39°19'40.426"N | 81°01'34.745"W | polygon |

| WELLPATH COMPOSITION - Ref Wellbore: PEN-20B-HS AWB Ref Wellpath: PEN-20B-IIS AWP Proj: 15256' | | | | |
|--|-------------|--|--|----------------|
| Start MD [ft] | End MD [ft] | Positional Uncertainty Model | Log Name/Comment | Wellbore |
| 26.00 | 5353.00 | Generic gyro - northseeking (Standard) | 03_Gyrodatta MS Gyro <12-1/4"> (100'-5353') | PEN-20B-HS AWB |
| 5353.00 | 15231.00 | NaviTrak (AT Curve Short Spaced) | 04_BHL AT Curve <8-3/4"> (5353')(5637'-15231') | PEN-20B-HS AWB |
| 15231.00 | 15256.00 | Blind Drilling (std) | Projection to bit | PEN-20B-HS AWB |

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PEN-20B-HS AWP Proj: 15256'

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| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|--------------------|----------|-----------------|
| Operator | NOBLE ENERGY | Slot | Slot B |
| Area | Ritchie County, WV | Well | PEN-20B-IIS |
| Field | Ritchie | Wellbore | PEN-20B-IIS AWB |
| Facility | PEN-20 Pad | | |

COMMENTS

Wellpath general comments

API: 47-085-10109-0000
 BHI Job #: 6697290
 Rig: Nomac 78
 Duration: 11.18.2014 – 11.25.2014
 Gyrodata MS Gyro <12-1/4"> (100'-5353')
 BHI AT Curve <8-3/4"> (5353')(5637'-15231')
 Projected MD at TD: 15256'

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Hydraulic Fracturing Fluid Product Component Information Disclosure



| | |
|--------------------------------|--------------------|
| Job Start Date: | 6/26/2017 |
| Job End Date: | 7/6/2017 |
| State: | West Virginia |
| County: | Ritchie |
| API Number: | 47-085-10109-00-00 |
| Operator Name: | CONSOL Energy Inc. |
| Well Name and Number: | Pen20BHS |
| Latitude: | 39.32805000 |
| Longitude: | -81.02642000 |
| Datum: | NAD83 |
| Federal Well: | NO |
| Indian Well: | NO |
| True Vertical Depth: | 6,261 |
| Total Base Water Volume (gal): | 11,148,396 |
| Total Base Non Water Volume: | 0 |

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 |
|-----------------|----------|--------------------|--|--|--|--|----------|
| Water | Consol | Carrier/Base Fluid | Water | 7732-18-5 | 100.00000 | 85.34566 | None |
| Sand | JPP | Proppant | Crystalline Silica in the form of Quartz | 14808-60-7 | 99.90000 | 13.46026 | None |
| HCL Acid (7.5%) | JPP | Acidizing | Hydrochloric Acid | 7647-01-0 | 7.50000 | 0.07279 | None |
| Unislick CST | JPP | Friction Reducer | copolymer of 2-propenamide | Proprietary | 30.00000 | 0.01506 | None |
| | | | Petroleum Distillate | 64742-47-8 | 20.00000 | 0.01004 | None |
| | | | Oleic Acid Diethanolamide | 93-83-4 | 2.00000 | 0.00100 | None |
| | | | Alcohols, C12-16, ethoxylated | 68551-12-2 | 2.00000 | 0.00100 | None |
| | | | Ammonium chloride ((NH4)Cl) | 12125-02-9 | 1.00000 | 0.00050 | None |
| K-Bac 1020 | JPP | Biocide | Polyethylene glycol | 25322-68-3 | 50.00000 | 0.01054 | None |
| | | | Water | 7732-18-5 | 30.00000 | 0.00632 | None |
| | | | 2,2-Dibromo-3-nitropropionamide | 10222-01-2 | 21.00000 | 0.00443 | None |
| HCL Acid (15%) | JPP | Acidizing | | | | | |

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|--|--------------|------------------------|--|-------------|----------|---------|------|
| | | | Hydrochloric Acid | 7647-01-0 | 15.00000 | 0.01847 | None |
| Scale-Hib A | UPP | Scale Inhibitor | | | | | |
| | | | Ethylene Glycol | 107-21-1 | 30.00000 | 0.00367 | None |
| | | | Triethanolamine Tri(Phosphate Ester), Sodium Salt | 68171-29-9 | 30.00000 | 0.00367 | None |
| SuperSurf | UPP | Surfactant | | | | | |
| | | | Other components below reportable levels | Proprietary | 50.00000 | 0.00126 | None |
| | | | Alcohols, C6-C12, ethoxylated | 68439-45-2 | 40.00000 | 0.00101 | None |
| | | | Methanol | 67-56-1 | 30.00000 | 0.00076 | None |
| Unihib G | UPP | Acid inhibitor | | | | | |
| | | | Butyl diglycol | 112-34-5 | 75.00000 | 0.00064 | None |
| | | | Alcohols, C10-16, ethoxylated | 68002-97-1 | 50.00000 | 0.00043 | None |
| | | | Methanol | 67-56-1 | 5.00000 | 0.00004 | None |
| | | | Formaldehyde | 50-00-0 | 1.00000 | 0.00001 | None |
| | | | Thiourea | 62-56-6 | 1.00000 | 0.00001 | None |
| NE-50 | UPP | Non emulsifier | | | | | |
| | | | Isopropyl alcohol | 67-63-0 | 30.00000 | 0.00003 | None |
| | | | Dimethylcocoamine, bis (chloroethyl) ether, diquaternary ammonium salt | 68607-28-3 | 20.00000 | 0.00002 | None |
| | | | Methanol | 67-56-1 | 10.00000 | 0.00001 | None |
| | | | Dimethylcocoamine | 61788-93-0 | 5.00000 | 0.00001 | None |
| Ingredients shown above are subject to 29 CFR 1910.1200(l) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS. | | | | | | | |
| Other Chemical(s) | Listed Above | See Trade Name(s) List | | | | | |
| | | | Polyethylene glycol | 25322-68-3 | 50.00000 | 0.01054 | |
| | | | Petroleum Distillate | 64742-47-8 | 20.00000 | 0.01004 | |
| | | | Water | 7732-18-5 | 30.00000 | 0.00632 | |
| | | | Ethylene Glycol | 107-21-1 | 30.00000 | 0.00367 | |
| | | | Other components below reportable levels | Proprietary | 50.00000 | 0.00126 | |
| | | | Oleic Acid Diethanolamide | 93-83-4 | 2.00000 | 0.00100 | |
| | | | Alcohols, C12-16, ethoxylated | 68551-12-2 | 2.00000 | 0.00100 | |
| | | | Methanol | 67-56-1 | 30.00000 | 0.00076 | |
| | | | Ammonium chloride ((NH4)Cl) | 12125-02-9 | 1.00000 | 0.00050 | |
| | | | Alcohols, C10-16, ethoxylated | 68002-97-1 | 50.00000 | 0.00043 | |
| | | | Methanol | 67-56-1 | 5.00000 | 0.00004 | |
| | | | Dimethylcocoamine, bis (chloroethyl) ether, diquaternary ammonium salt | 68607-28-3 | 20.00000 | 0.00002 | |
| | | | Methanol | 67-56-1 | 10.00000 | 0.00001 | |
| | | | Formaldehyde | 50-00-0 | 1.00000 | 0.00001 | |
| | | | Thiourea | 62-56-6 | 1.00000 | 0.00001 | |
| | | | Dimethylcocoamine | 61788-93-0 | 5.00000 | 0.00001 | |

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* 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%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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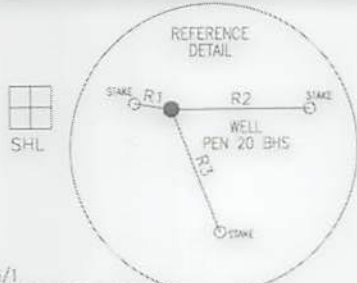
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BHL is located on topo map 7,288' feet south of Latitude: 39° 20' 00"
 SHL is located on topo map 1,895' feet south of Latitude: 39° 20' 00"

BHL is located on topo map 11,668' feet west of Longitude: 80° 57' 30"
 SHL is located on topo map 7,427' feet west of Longitude: 81° 00' 00"

| AS DRILLED SURFACE HOLE LOCATION (SHL) | AS DRILLED LANDING POINT | AS DRILLED BOTTOM HOLE LOCATION (BHL) |
|--|--|--|
| UTM 17-NAD83 N:4353191.02 E:497737.14 NAD27 WV NORTH N:305261.857 E:1568220.279 LAT/LON DATUM-NAD83 LAT:39.3281312 LON:-81.0262542 | UTM 17-NAD83 N:4353457.23 E:498390.52 NAD27 WV NORTH N:306099.59 E:1570379.00 LAT/LON DATUM-NAD83 LAT:39.330531 LON:-81.018675 | UTM 17-NAD83 N:4351547.41 E:500036.89 NAD27 WV NORTH N:299742.14 E:1575677.02 LAT/LON DATUM-NAD83 LAT:39.313325 LON:-80.999572 |

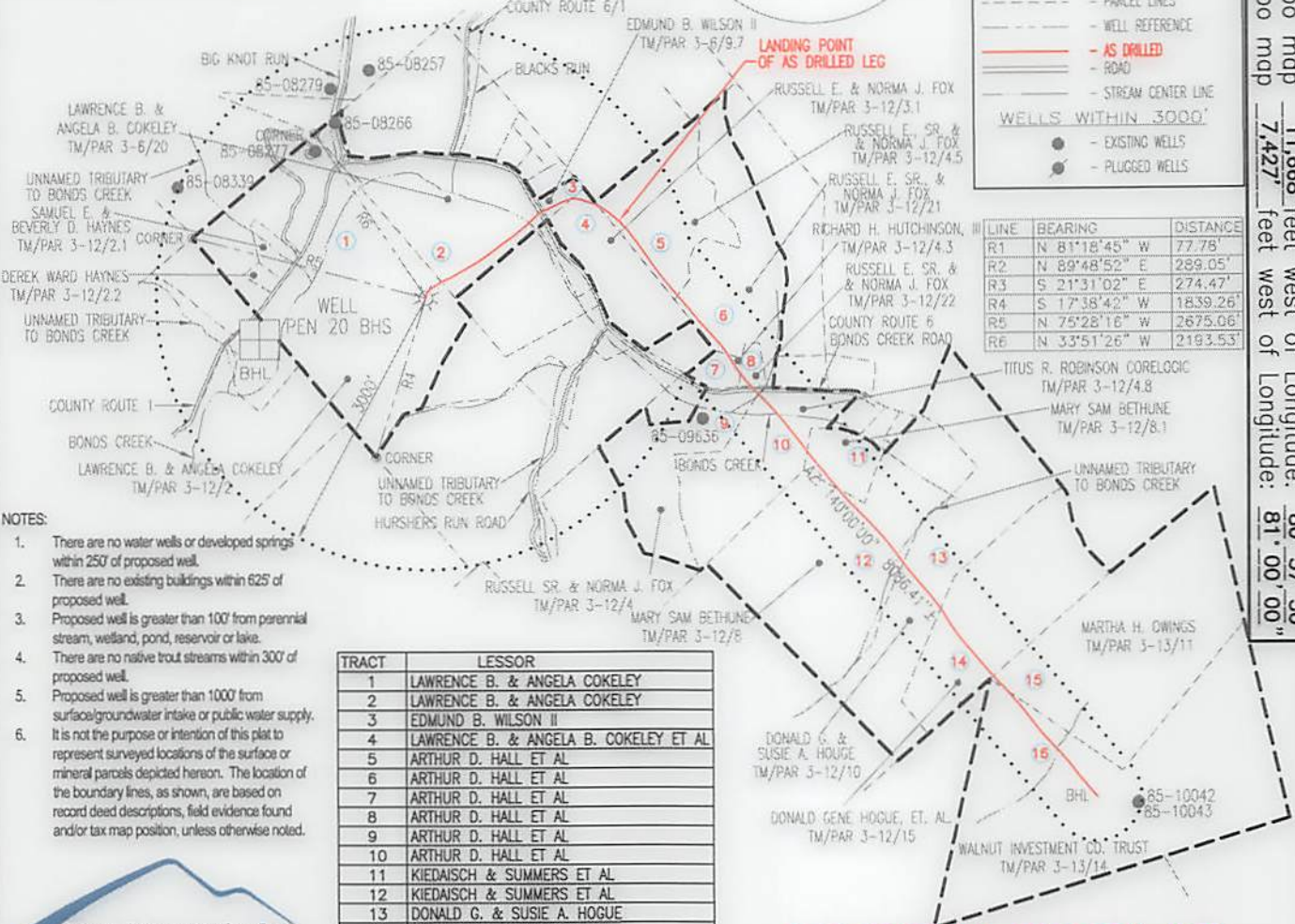


LEGEND

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- WATER SOURCE
- LEASE NUMBER BASED ON ATTACHED WW-6A1
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- AS DRILLED
- ROAD
- STREAM CENTER LINE

WELLS WITHIN 3000'

- EXISTING WELLS
- PLUGGED WELLS



- NOTES:
- There are no water wells or developed springs within 250' of proposed well.
 - There are no existing buildings within 625' of proposed well.
 - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
 - There are no native trout streams within 300' of proposed well.
 - Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
 - It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.

| TRACT | LESSOR |
|-------|---------------------------------------|
| 1 | LAWRENCE B. & ANGELA COKELEY |
| 2 | LAWRENCE B. & ANGELA COKELEY |
| 3 | EDMUND B. WILSON II |
| 4 | LAWRENCE B. & ANGELA B. COKELEY ET AL |
| 5 | ARTHUR D. HALL ET AL |
| 6 | ARTHUR D. HALL ET AL |
| 7 | ARTHUR D. HALL ET AL |
| 8 | ARTHUR D. HALL ET AL |
| 9 | ARTHUR D. HALL ET AL |
| 10 | ARTHUR D. HALL ET AL |
| 11 | KIEDAISCH & SUMMERS ET AL |
| 12 | KIEDAISCH & SUMMERS ET AL |
| 13 | DONALD G. & SUSIE A. HOGUE |
| 14 | DONALD GENE HOGUE ET AL |
| 15 | DONNA J. & JOHN N. KRUTILLA ET AL |
| 16 | WALNUT INVESTMENT COMPANY ET AL |

Blue Mountain Inc.
 11023 MASON DIXON HIGHWAY
 BURTON, WV 26562
 PHONE: (304) 662-6486

AS DRILLED PLAT



FILE #: PEN 20 BHS-AS DRILLED
 DRAWING #: PEN 20 BHS-AS DRILLED
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: *George D. Six*
 R.P.E.: _____ L.L.S.: P.S. No. 2000

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: NOVEMBER 2, 2017
 OPERATOR'S WELL #: PEN 20 BHS-AS DRILLED
 API WELL #: 47 85 10109
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: NORTH FORK HUGHES RIVER ELEVATION: 1081'±
 COUNTY/DISTRICT: RITCHIE / CLAY QUADRANGLE: ELLENBORO, WV 7.5'
 SURFACE OWNER: LAWRENCE & ANGELA COKELEY ACREAGE: 126.17±
 OIL & GAS ROYALTY OWNER: LAWRENCE B. & ANGELA COKELEY ACREAGE: 832.588±

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): AS DRILLED

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,261'± TMD: 15,256'±
 WELL OPERATOR CNX GAS COMPANY LLC DESIGNATED AGENT CHRIS TURNER
 Address 1000 CONSOL ENERGY DRIVE Address 1 DOMINION DR.
 City CANONSBURG State PA Zip Code 15317 City JANE LEW State WV Zip Code 26378

02/16/2018