Commonwealth of Virginia
Department of Mines, Minerals, and Energy
Division of Gas and Oil
P.O. Box 1416; Abingdon, VA 24212
Telephone: (276) 676-5423

| | |
|---|---|
| **Tracking Number:** | 1033 |
| **Company:** | CNX Gas Company LLC |
| **File Number:** | BU-3667 |
| **Operations Name:** | CBM P48A W/PL |
| **Operation Type:** | Coalbed/Pipeline |
| **Drilling Report Type:** | Original |

# DRILLING REPORT (DGO-GO-14)

## 1. Drilling Data

Date drilling commenced: 11/16/2007
Drilling Contractor: Noah Horn
Date drilling completed: 11/30/2007
Rig Type: ☑ Rotary ☐ Cable Tool
Driller's Total Depth (feet): 2,800
Log Total Depth (feet): 2,771
Coal Seam At Total Depth: Pocahontas

## 2. Final Location Plat (as required by 4 VAC25-150-360.C.)

Permitted State Plane X: 1,032,710
Final Plat State Plane X: 1,032,710
Permitted State Plane Y: 335,633
Final Plat State Plane Y: 335,626
☐ Plat Previously Submitted Or...

List of Attached Items:

| Description | FileName |
|---|---|
| Plat | P48A Plat.pdf |

## 3. Geological Data

*Fresh Water At:*

| Depth (in feet) | Rate | Unit of Measure |
|---|---|---|

*Salt Water At:*

| Depth (in feet) | Rate | Unit of Measure |
|---|---|---|

*Coal Seams*

List of Attached Items:

| Description | FileName |
|---|---|
| Exhibit A | P48A Exhibit A.pdf |

*Gas and Oil Shows*

List of Attached Items:

| Description | FileName |
|---|---|
| Gas Show | P48A Gas Show.xls |

**4. Electric Logs** *(As required by 4VAC25-150-280.A.)*

List all logs run: Caliper Gamma Temp Density Deviation

Did logs disclose vertical locations of a coal seam? ☑ Yes ☐ No

**5. Survey Results** *(As required by 4VAC25-150-280.B.2)*

List of Attached Items:

| Description | FileName |
|---|---|
| Deviation | P48A Deviation.pdf |

**6. Casing and Tubing Program**

List of Attached Items:

| Description | FileName |
|---|---|
| Casing | P48A Casing.xls |

**7. Remarks**

Use this space to note any conditions or occurrences, such as lost circulation, fishing jobs, junk left in hole, sidetracks, squeeze jobs, etc., not shown above. Include data and depth of condition/occurence.

Void @ 619' ; 9 5/8" casing cemented on the backside to surface

**8. Drillers Log**

Compiled By: Naoh Horn

List of Attached Items:

| Description | FileName |
|---|---|
| Drill Data | P48A Drill Data.pdf |

## 9. Comments

## 10. Signature

Permitee: CNX Gas Company LLC Date: 1/12/2008 *(Company)*

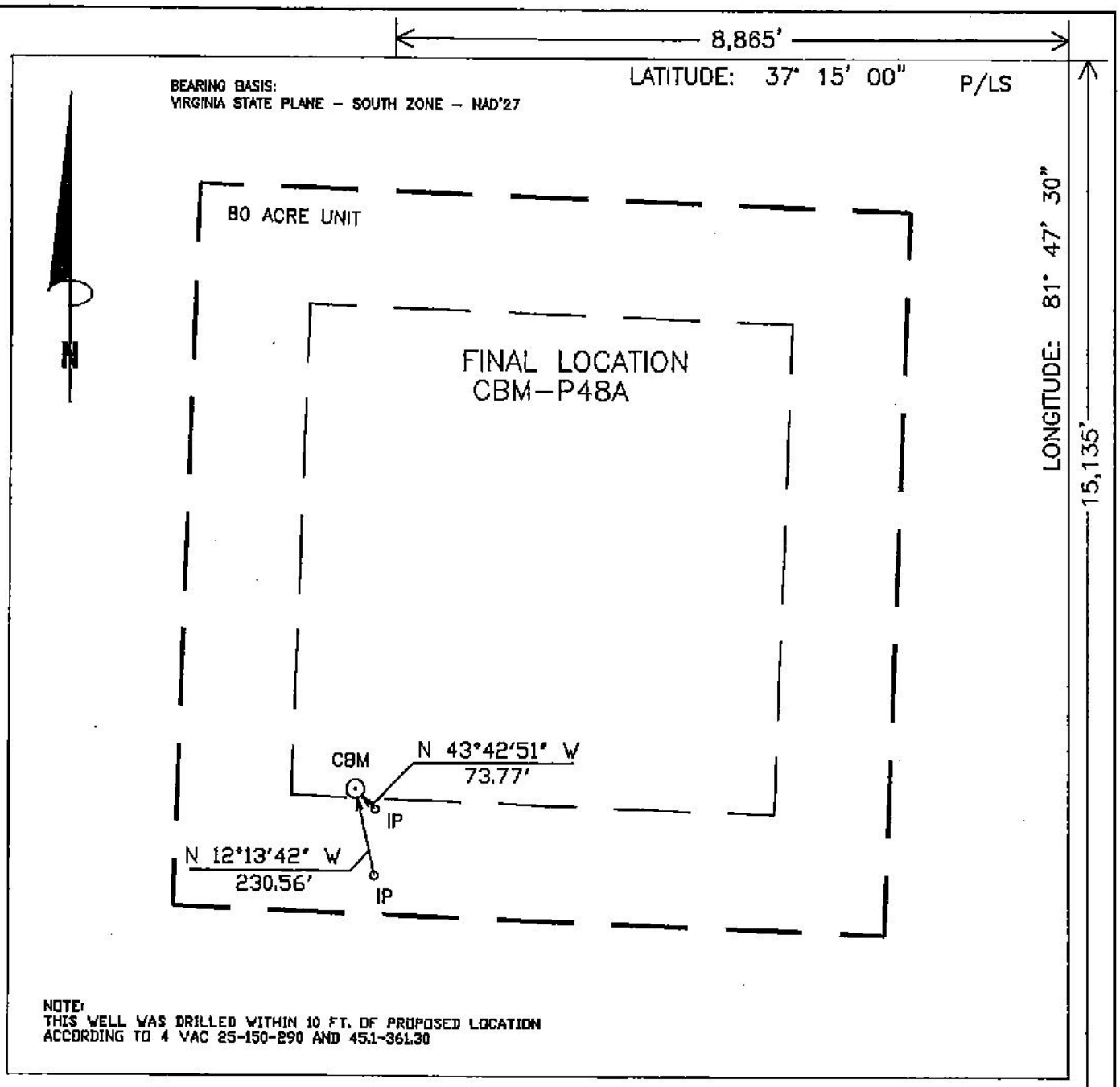
Signed By: Les Arrington Title: Manager *(Signature)*

**INTERNAL USE ONLY**

Submit Date: 1/12/2008

Status: Inspr Approved Date: 1/15/2008

Final PDF Date: 1/22/2008




# WELL LOCATION PLAT

P48AFNL
CON36/88-585/57

COMPANY CNX GAS COMPANY, LLC. WELL NAME OR NUMBER CBM–P48A

TRACT NUMBER JAMES MCGUIRE LAND TRUST QUADRANGLE JEWELL RIDGE

DISTRICT: GARDEN

WELL COORDINATES (VIRGINIA STATE PLANE): STATE PLANE: N 335,625.60 E 1,032,709.95

ELEVATION: 2884.73' METHOD USED TO DETERMINE ELEVATION: BY TRIG. LEVELS FROM CONSOL INC BM'S

COUNTY BUCHANAN Scale: 1" = 400' Date 11-20-07

THIS PLAT IS A NEW PLAT _____; AN UPDATED PLAT _____; OR A FINAL LOCATION PLAT X

+ Denotes the location of a well on United States Topographic Maps, scale 1 to 24,000, latitude and longitude lines being represented by border lines as shown (optional).

Danny R. Price

Licensed Professional Engineer or Licensed Land Surveyor (Affix Seal)

COMMONWEALTH OF VIRGINIA
DRP
DANNY R. PRICE
Lic. No. 008540
11/20/07
PROFESSIONAL ENGINEER

Form DGO-GO-7
Rev. 10/96

Exhibit A

Well Name: 07 CBM P48A
SURFACE ELEV: 2884.73 EASTING: 1032709.95 NORTHING: 335625.60

| SEAM | DEPTH FROM (FT) | DEPTH TO (FT) | ELEVATION (TOSE) | THK. (FT) | REMARKS |
|---|---|---|---|---|---|
| COAL | 66.90 | 68.10 | 2817.83 | 1.20 | |
| | 68.10 | 128.20 | 2816.63 | 60.10 | |
| UB2 | 128.20 | 130.40 | 2756.53 | 2.20 | |
| | 130.40 | 192.90 | 2754.33 | 62.50 | |
| LB1 | 192.90 | 195.90 | 2691.83 | 3.00 | |
| | 195.90 | 269.90 | 2688.83 | 74.00 | |
| LB2 | 269.90 | 270.20 | 2614.83 | 0.30 | |
| | 270.20 | 340.80 | 2614.53 | 70.60 | |
| KN1 | 340.80 | 341.50 | 2543.93 | 0.70 | |
| | 341.50 | 376.00 | 2543.23 | 34.50 | |
| KN2 | 376.00 | 379.80 | 2508.73 | 3.80 | |
| | 379.80 | 388.10 | 2504.93 | 8.30 | |
| COAL | 388.10 | 388.90 | 2496.63 | 0.80 | |
| | 388.90 | 395.50 | 2495.83 | 6.60 | |
| COAL | 395.50 | 396.10 | 2489.23 | 0.60 | |
| | 396.10 | 500.90 | 2488.63 | 104.80 | |
| AL1 | 500.90 | 501.90 | 2383.83 | 1.00 | |
| | 501.90 | 539.00 | 2382.83 | 37.10 | |
| AL2 | 539.00 | 543.30 | 2345.73 | 4.30 | |
| | 543.30 | 586.80 | 2341.43 | 43.50 | |
| RA1 | 586.80 | 588.70 | 2297.93 | 1.90 | |
| | 588.70 | 618.00 | 2296.03 | 29.30 | |
| RA2 | 618.00 | 620.50 | 2266.73 | 2.50 | |
| | 620.50 | 757.20 | 2264.23 | 136.70 | |
| JB1 | 757.20 | 758.90 | 2127.53 | 1.70 | |
| | 758.90 | 807.10 | 2125.83 | 48.20 | |
| JB3 | 807.10 | 809.40 | 2077.63 | 2.30 | |
| | 809.40 | 823.30 | 2075.33 | 13.90 | |
| T2 | 823.30 | 824.00 | 2061.43 | 0.70 | |
| | 824.00 | 890.00 | 2060.73 | 66.00 | |
| COAL | 890.00 | 891.00 | 1994.73 | 1.00 | |
| | 891.00 | 1126.10 | 1993.73 | 235.10 | |
| *US2 | 1126.10 | 1126.20 | 1758.63 | 0.10 | |
| | 1126.20 | 1339.80 | 1758.53 | 213.60 | |
| *SE2 | 1339.80 | 1340.90 | 1544.93 | 1.10 | |
| | 1340.90 | 1387.70 | 1543.83 | 46.80 | |
| *LS1 | 1387.70 | 1388.60 | 1497.03 | 0.90 | |
| | 1388.60 | 1388.90 | 1496.13 | 0.30 | |
| *LS1 | 1388.90 | 1389.10 | 1495.83 | 0.20 | |
| | 1389.10 | 1436.90 | 1495.63 | 47.80 | |
| *LS3 | 1436.90 | 1437.40 | 1447.83 | 0.50 | |
| | 1437.40 | 1459.70 | 1447.33 | 22.30 | |
| *COAL | 1459.70 | 1460.10 | 1425.03 | 0.40 | |
| | 1460.10 | 1460.30 | 1424.63 | 0.20 | |
| *COAL | 1460.30 | 1460.70 | 1424.43 | 0.40 | |
| | 1460.70 | 1528.80 | 1424.03 | 68.10 | |
| *UH3 | 1528.80 | 1530.20 | 1355.93 | 1.40 | |
| | 1530.20 | 1586.80 | 1354.53 | 56.60 | |

| | | | | |
|---|---|---|---|---|
| *MH1 | 1586.80 | 1588.00 | 1297.93 | 1.20 |
| | 1588.00 | 1657.10 | 1296.73 | 69.10 |
| *MH2 | 1657.10 | 1658.90 | 1227.63 | 1.80 |
| | 1658.90 | 1692.90 | 1225.83 | 34.00 |
| *P11 | 1692.90 | 1695.80 | 1191.83 | 2.90 |
| | 1695.80 | 1716.10 | 1188.93 | 20.30 |
| *P10 | 1716.10 | 1717.10 | 1168.63 | 1.00 |
| | 1717.10 | 1791.10 | 1167.63 | 74.00 |
| *LH3 | 1791.10 | 1792.50 | 1093.63 | 1.40 |
| | 1792.50 | 1793.10 | 1092.23 | 0.60 |
| *COAL | 1793.10 | 1793.80 | 1091.63 | 0.70 |
| | 1793.80 | 1839.90 | 1090.93 | 46.10 |
| *COAL | 1839.90 | 1840.10 | 1044.83 | 0.20 |
| | 1840.10 | 1840.40 | 1044.63 | 0.30 |
| *P92 | 1840.40 | 1840.90 | 1044.33 | 0.50 |
| | 1840.90 | 1860.90 | 1043.83 | 20.00 |
| *P81 | 1860.90 | 1861.20 | 1023.83 | 0.30 |
| | 1861.20 | 1861.90 | 1023.53 | 0.70 |
| *COAL | 1861.90 | 1862.20 | 1022.83 | 0.30 |
| | 1862.20 | 1889.80 | 1022.53 | 27.60 |
| *P71 | 1889.80 | 1891.10 | 994.93 | 1.30 |
| | 1891.10 | 2021.50 | 993.63 | 130.40 |
| *COAL | 2021.50 | 2021.80 | 863.23 | 0.30 |
| | 2021.80 | 2023.00 | 862.93 | 1.20 |
| *COAL | 2023.00 | 2023.30 | 861.73 | 0.30 |
| | 2023.30 | 2023.70 | 861.43 | 0.40 |
| *COAL | 2023.70 | 2023.90 | 861.03 | 0.20 |
| | 2023.90 | 2036.70 | 860.83 | 12.80 |
| *COAL | 2036.70 | 2036.90 | 848.03 | 0.20 |
| | 2036.90 | 2058.80 | 847.83 | 21.90 |
| *COAL | 2058.80 | 2059.10 | 825.93 | 0.30 |
| | 2059.10 | 2115.90 | 825.63 | 56.80 |
| *P61 | 2115.90 | 2116.70 | 768.83 | 0.80 |
| | 2116.70 | 2127.70 | 768.03 | 11.00 |
| *P62 | 2127.70 | 2127.90 | 757.03 | 0.20 |
| | 2127.90 | 2155.40 | 756.83 | 27.50 |
| *P51 | 2155.40 | 2156.90 | 729.33 | 1.50 |
| | 2156.90 | 2350.00 | 727.83 | 193.10 |
| *P31 | 2350.00 | 2351.00 | 534.73 | 1.00 |
| | 2351.00 | 2358.20 | 533.73 | 7.20 |
| *P32 | 2358.20 | 2359.20 | 526.53 | 1.00 |
| | 2359.20 | 2359.50 | 525.53 | 0.30 |
| *P33 | 2359.50 | 2360.00 | 525.23 | 0.50 |
| | 2360.00 | 2360.00 | 524.73 | 0.00 |
| *345 | 2360.00 | 2364.80 | 524.73 | 4.80 |
| | 2364.80 | 2510.30 | 519.93 | 145.50 |
| *P01 | 2510.30 | 2510.80 | 374.43 | 0.50 |
| | 2510.80 | 2510.90 | 373.93 | 0.10 |
| *COAL | 2510.90 | 2511.10 | 373.83 | 0.20 |
| | 2511.10 | 2550.00 | 373.63 | 38.90 |
| *COAL | 2550.00 | 2550.20 | 334.73 | 0.20 |
| | 2550.20 | 2552.80 | 334.53 | 2.60 |
| *SJ3 | 2552.80 | 2553.10 | 331.93 | 0.30 |
| | 2553.10 | 2553.80 | 331.63 | 0.70 |
| *COAL | 2553.80 | 2554.00 | 330.93 | 0.20 |
| | 2554.00 | 2800.00 | 330.73 | 246.00 |

COAL SEAMS TO BE STIMULATED WERE ADJUSTED DUE TO THE GAS
WELL'S PROXIMITY TO SPRING BRANCH.
GAMMA-CALIPER LOG FROM 0 TO 900.00
GAMMA-DENSITY LOG FROM 900.00 TO TD.
NOTE: FOOTAGE NOT ADJUSTED FOR DEVIATION
FILE: H:\JIMHAZ~1\PROJECTS\GAS\P48A.CMP
DATE: 12/06/07

Well: P48A

## Oil & Gas Show

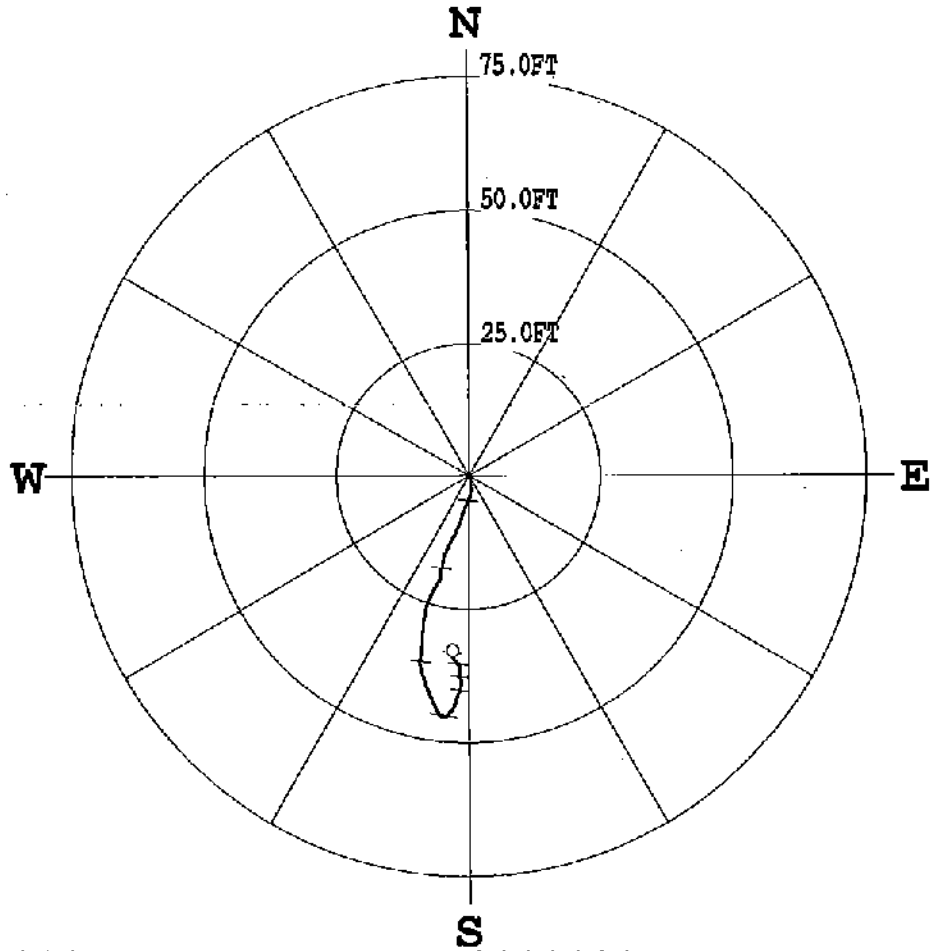
| Formation | Top | Bottom | Thickness | IPF (MCFD/BOPD) | Pressure | Hours Tested |
|---|---|---|---|---|---|---|
| Lee/Norton | 1340 | 1793 | 453 | | | |
| Pocahontas | 1890 | 2365 | 475 | | | |
| Total IPF | | | | Not Taken | | |
| | | | | | | |

# PLAN VIEW
# COMPU-LOG DEVIATION

CLIENT: CONSOL ENERGY
LOCATION:
HOLE ID: 07-CNX-P-48A
DATE OF LOG: 11/30/07
PROBE: 9136CH 1279

MAG DECL: -7.1

SCALE: 25 FT/IN
TRUE DEPTH: 2769.60 F
AZIMUTH: 185.3
DISTANCE: 32.7 FT
+ = 300 FT INCR
○ = BOTTOM OF HOLE




* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CONSOL ENERGY
FIELD OFFICE : O'DRISCOLL
DATA FROM :
MAG. DECL. : -7.100
LOG: 07-CNX-P-48A_11-30-07_19-17_9136CH_.10_0.00_2770.90_DEVI.log

HOLE ID. : 07-CNX-P-48A
DATE OF LOG : 11/30/07
PROBE : 9136CH , 1279
DEPTH UNITS : FEET

| CABLE DEPTH | TRUE DEPTH | NORTH DEV. | EAST DEV. | DISTANCE | AZIMUTH | SANG | SANGB |
|---|---|---|---|---|---|---|---|
| 0.50 | 0.50 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10.00 | 10.00 | -0.01 | -0.01 | 0.0 | 207.5 | 0.3 | 152.3 |
| 20.00 | 20.00 | -0.05 | 0.01 | 0.1 | 173.9 | 0.3 | 164.4 |
| 30.00 | 30.00 | -0.08 | 0.05 | 0.1 | 149.4 | 0.3 | 132.9 |
| 40.00 | 40.00 | -0.12 | 0.09 | 0.1 | 142.3 | 0.3 | 121.2 |
| 50.00 | 50.00 | -0.16 | 0.13 | 0.2 | 142.1 | 0.3 | 157.8 |
| 60.00 | 60.00 | -0.22 | 0.15 | 0.3 | 147.0 | 0.4 | 154.6 |
| 70.00 | 70.00 | -0.27 | 0.17 | 0.3 | 147.3 | 0.2 | 125.4 |
| 80.00 | 80.00 | -0.30 | 0.20 | 0.4 | 146.2 | 0.5 | 165.6 |
| 90.00 | 90.00 | -0.34 | 0.23 | 0.4 | 145.9 | 0.3 | 139.6 |
| 100.00 | 100.00 | -0.40 | 0.26 | 0.5 | 147.1 | 0.3 | 140.7 |
| 110.00 | 110.00 | -0.50 | 0.27 | 0.6 | 151.8 | 0.9 | 177.4 |
| 120.00 | 120.00 | -0.61 | 0.28 | 0.7 | 155.2 | 0.5 | 157.1 |
| 130.00 | 130.00 | -0.74 | 0.31 | 0.8 | 157.5 | 1.2 | 163.0 |
| 140.00 | 139.99 | -0.89 | 0.31 | 0.9 | 160.6 | 0.9 | 180.3 |
| 150.00 | 149.99 | -1.06 | 0.32 | 1.1 | 163.3 | 1.1 | 167.5 |
| 160.00 | 159.99 | -1.24 | 0.33 | 1.3 | 165.0 | 0.9 | 179.2 |
| 170.00 | 169.99 | -1.44 | 0.36 | 1.5 | 166.1 | 1.0 | 168.9 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 50.00 | 50.00 | -0.16 | 0.13 | 0.2 | 142.1 | 0.3 | 157.8 |
| 60.00 | 60.00 | -0.22 | 0.15 | 0.3 | 147.0 | 0.4 | 154.6 |
| 70.00 | 70.00 | -0.27 | 0.17 | 0.3 | 147.3 | 0.2 | 125.4 |
| 80.00 | 80.00 | -0.30 | 0.20 | 0.4 | 146.2 | 0.5 | 165.6 |
| 90.00 | 90.00 | -0.34 | 0.23 | 0.4 | 145.9 | 0.3 | 139.6 |
| 100.00 | 100.00 | -0.40 | 0.26 | 0.5 | 147.1 | 0.3 | 140.7 |
| 110.00 | 110.00 | -0.50 | 0.27 | 0.6 | 151.8 | 0.9 | 177.4 |
| 120.00 | 120.00 | -0.61 | 0.28 | 0.7 | 155.2 | 0.5 | 157.1 |
| 130.00 | 130.00 | -0.74 | 0.31 | 0.8 | 157.5 | 1.2 | 163.0 |
| 140.00 | 139.99 | -0.89 | 0.31 | 0.9 | 160.6 | 0.9 | 180.3 |
| 150.00 | 149.99 | -1.06 | 0.32 | 1.1 | 163.3 | 1.1 | 187.5 |
| 160.00 | 159.99 | -1.24 | 0.33 | 1.3 | 165.0 | 0.9 | 179.2 |
| 170.00 | 169.99 | -1.44 | 0.36 | 1.5 | 166.1 | 1.0 | 168.9 |
| 180.00 | 179.99 | -1.66 | 0.38 | 1.7 | 167.0 | 1.4 | 177.0 |
| 190.00 | 189.98 | -1.87 | 0.40 | 1.9 | 167.8 | 1.2 | 195.3 |
| 200.00 | 199.98 | -2.09 | 0.38 | 2.1 | 169.6 | 1.0 | 192.7 |
| 210.00 | 209.98 | -2.31 | 0.36 | 2.3 | 171.2 | 1.3 | 175.1 |
| 220.00 | 219.98 | -2.56 | 0.37 | 2.6 | 171.8 | 1.3 | 181.7 |
| 230.00 | 229.97 | -2.81 | 0.35 | 2.8 | 172.9 | 1.3 | 189.4 |
| 240.00 | 239.97 | -3.07 | 0.31 | 3.1 | 174.2 | 1.5 | 187.0 |
| 250.00 | 249.97 | -3.30 | 0.27 | 3.3 | 175.4 | 1.5 | 198.9 |
| 260.00 | 259.96 | -3.55 | 0.21 | 3.6 | 176.5 | 1.5 | 191.5 |
| 270.00 | 269.96 | -3.82 | 0.16 | 3.8 | 177.6 | 1.4 | 193.3 |
| 280.00 | 279.96 | -4.09 | 0.09 | 4.1 | 178.8 | 1.7 | 193.6 |
| 290.00 | 289.95 | -4.35 | -0.01 | 4.4 | 180.1 | 1.4 | 196.2 |
| 300.00 | 299.95 | -4.65 | -0.10 | 4.6 | 181.3 | 1.5 | 199.5 |
| 310.00 | 309.94 | -4.93 | -0.22 | 4.9 | 182.6 | 1.8 | 206.6 |
| 320.00 | 319.94 | -5.20 | -0.35 | 5.2 | 183.9 | 1.7 | 208.1 |
| 330.00 | 329.93 | -5.49 | -0.48 | 5.5 | 184.9 | 1.8 | 208.5 |
| 340.00 | 339.93 | -5.77 | -0.62 | 5.8 | 186.1 | 1.8 | 206.2 |
| 350.00 | 349.92 | -6.07 | -0.76 | 6.1 | 187.2 | 1.9 | 209.4 |
| 360.00 | 359.92 | -6.37 | -0.93 | 6.4 | 188.3 | 2.1 | 210.8 |
| 370.00 | 369.91 | -6.71 | -1.08 | 6.8 | 189.2 | 2.3 | 204.3 |
| 380.00 | 379.90 | -7.04 | -1.21 | 7.1 | 189.7 | 2.2 | 189.6 |
| 390.00 | 389.89 | -7.43 | -1.35 | 7.6 | 190.3 | 2.1 | 201.5 |
| 400.00 | 399.88 | -7.83 | -1.45 | 8.0 | 190.5 | 2.4 | 185.6 |
| 410.00 | 409.88 | -8.22 | -1.54 | 8.4 | 190.6 | 2.6 | 207.1 |
| 420.00 | 419.87 | -8.60 | -1.69 | 8.8 | 191.1 | 2.0 | 198.2 |
| 430.00 | 429.86 | -8.99 | -1.85 | 9.2 | 191.6 | 2.2 | 207.9 |
| 440.00 | 439.85 | -9.39 | -2.00 | 9.6 | 192.0 | 2.7 | 196.7 |
| 450.00 | 449.84 | -9.82 | -2.16 | 10.1 | 192.4 | 2.7 | 210.7 |
| 460.00 | 459.83 | -10.24 | -2.37 | 10.5 | 193.0 | 2.4 | 211.2 |
| 470.00 | 469.82 | -10.66 | -2.57 | 11.0 | 193.6 | 2.8 | 208.4 |
| 480.00 | 479.81 | -11.08 | -2.80 | 11.4 | 194.2 | 2.9 | 211.1 |
| 490.00 | 489.79 | -11.50 | -3.05 | 11.9 | 194.8 | 2.9 | 212.1 |
| 500.00 | 499.78 | -11.91 | -3.28 | 12.4 | 195.4 | 2.9 | 209.8 |
| 510.00 | 509.77 | -12.34 | -3.51 | 12.8 | 195.9 | 2.8 | 241.7 |
| 520.00 | 519.76 | -12.80 | -3.75 | 13.3 | 196.4 | 3.0 | 200.4 |
| 530.00 | 529.74 | -13.26 | -3.98 | 13.8 | 196.7 | 3.0 | 203.0 |
| 540.00 | 539.73 | -13.73 | -4.18 | 14.4 | 196.9 | 2.9 | 223.0 |
| 550.00 | 549.71 | -14.20 | -4.43 | 14.9 | 197.3 | 3.1 | 210.7 |
| 560.00 | 559.70 | -14.69 | -4.70 | 15.4 | 197.7 | 3.3 | 191.3 |
| 570.00 | 569.68 | -15.25 | -4.83 | 16.0 | 197.6 | 3.4 | 204.9 |
| 580.00 | 579.66 | -15.84 | -4.93 | 16.6 | 197.3 | 3.4 | 188.4 |
| 590.00 | 589.65 | -16.44 | -5.05 | 17.2 | 197.1 | 3.6 | 191.3 |
| 600.00 | 599.63 | -17.07 | -5.16 | 17.8 | 196.8 | 3.6 | 194.5 |
| 610.00 | 609.61 | -17.61 | -5.40 | 18.4 | 197.1 | 3.6 | 193.4 |
| 620.00 | 619.59 | -18.22 | -5.52 | 19.0 | 196.9 | 3.7 | 164.2 |
| 630.00 | 629.57 | -18.88 | -5.45 | 19.7 | 196.1 | 3.7 | 178.1 |
| 640.00 | 639.55 | -19.45 | -5.66 | 20.3 | 196.2 | 3.7 | 211.0 |
| 650.00 | 649.53 | -19.99 | -5.99 | 20.8 | 196.7 | 3.5 | 211.5 |
| 660.00 | 659.51 | -20.54 | -6.30 | 21.5 | 197.1 | 3.5 | 206.4 |
| 670.00 | 669.49 | -21.07 | -6.61 | 22.1 | 197.4 | 3.6 | 208.1 |
| 680.00 | 679.47 | -21.65 | -6.93 | 22.7 | 197.8 | 3.7 | 214.7 |
| 690.00 | 689.44 | -22.22 | -7.25 | 23.4 | 198.1 | 3.8 | 210.0 |
| 700.00 | 699.42 | -22.89 | -7.53 | 24.1 | 198.2 | 3.7 | 207.4 |
| 710.00 | 709.39 | -23.50 | -7.82 | 24.8 | 198.4 | 4.1 | 199.7 |
| 720.00 | 719.37 | -24.17 | -8.00 | 25.5 | 198.3 | 3.7 | 201.2 |
| 730.00 | 729.35 | -24.82 | -8.16 | 26.1 | 198.2 | 3.9 | 191.1 |
| 740.00 | 739.33 | -25.45 | -8.30 | 26.8 | 198.1 | 3.7 | 188.4 |
| 750.00 | 749.31 | -26.07 | -8.42 | 27.4 | 197.9 | 3.5 | 192.9 |
| 760.00 | 759.29 | -26.67 | -8.52 | 28.0 | 197.7 | 3.5 | 205.8 |
| 770.00 | 769.27 | -27.28 | -8.63 | 28.6 | 197.6 | 3.5 | 182.4 |
| 780.00 | 779.25 | -27.89 | -8.66 | 29.2 | 197.3 | 3.5 | 181.9 |
| 790.00 | 789.23 | -28.48 | -8.69 | 29.8 | 197.0 | 3.4 | 190.4 |
| 800.00 | 799.21 | -29.07 | -8.75 | 30.4 | 196.8 | 3.2 | 216.0 |
| 810.00 | 809.20 | -29.65 | -8.84 | 30.9 | 196.6 | 3.5 | 176.6 |
| 820.00 | 819.18 | -30.26 | -8.82 | 31.5 | 196.3 | 3.4 | 176.5 |
| 830.00 | 829.16 | -30.85 | -8.78 | 32.1 | 195.9 | 3.4 | 188.9 |
| 840.00 | 839.14 | -31.41 | -8.83 | 32.6 | 195.7 | 3.1 | 185.0 |
| 850.00 | 849.13 | -31.94 | -8.91 | 33.2 | 195.6 | 2.9 | 188.8 |
| 860.00 | 859.11 | -32.45 | -9.02 | 33.7 | 195.5 | 3.2 | 177.9 |
| 870.00 | 869.10 | -32.96 | -9.07 | 34.2 | 195.4 | 2.9 | 205.5 |
| 880.00 | 879.09 | -33.50 | -9.13 | 34.7 | 195.3 | 3.1 | 182.6 |
| 890.00 | 889.07 | -33.99 | -9.18 | 35.2 | 195.1 | 2.8 | 198.8 |
| 900.00 | 899.06 | -34.46 | -9.27 | 35.7 | 195.1 | 3.2 | 31.9 |
| 910.00 | 909.05 | -34.53 | -9.37 | 35.8 | 195.2 | 3.2 | 170.8 |
| 920.00 | 919.03 | -35.06 | -9.27 | 36.3 | 194.8 | 2.9 | 161.8 |
| 930.00 | 929.02 | -35.58 | -9.14 | 36.7 | 194.4 | 3.1 | 166.8 |
| 940.00 | 939.01 | -36.07 | -9.01 | 37.2 | 194.0 | 2.9 | 162.6 |
| 950.00 | 948.99 | -36.55 | -8.88 | 37.6 | 193.7 | 2.8 | 164.1 |
| 960.00 | 958.98 | -37.01 | -8.76 | 38.0 | 193.3 | 2.7 | 164.3 |
| 970.00 | 968.97 | -37.45 | -8.63 | 38.4 | 193.0 | 2.5 | 164.6 |
| 980.00 | 978.96 | -37.86 | -8.51 | 38.8 | 192.7 | 2.4 | 162.0 |
| 990.00 | 988.95 | -38.25 | -8.38 | 39.2 | 192.4 | 2.3 | 166.2 |
| 1000.00 | 998.95 | -38.63 | -8.26 | 39.5 | 192.1 | 2.2 | 159.3 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 880.00 | 879.09 | -33.50 | -9.13 | 34.7 | 195.5 | 3.4 | 332.5 |
| 890.00 | 889.07 | -33.99 | -9.18 | 35.2 | 195.1 | 2.6 | 198.8 |
| 900.00 | 899.06 | -34.46 | -9.27 | 35.7 | 195.1 | 3.2 | 31.9 |
| 910.00 | 909.05 | -34.53 | -9.37 | 35.8 | 195.2 | 3.2 | 170.8 |
| 920.00 | 919.03 | -35.06 | -9.27 | 36.3 | 194.8 | 2.9 | 161.8 |
| 930.00 | 929.02 | -35.58 | -9.14 | 36.7 | 194.4 | 3.1 | 166.8 |
| 940.00 | 939.01 | -36.07 | -9.01 | 37.2 | 194.0 | 2.9 | 162.6 |
| 950.00 | 948.99 | -36.55 | -8.88 | 37.6 | 193.7 | 2.8 | 164.1 |
| 960.00 | 958.98 | -37.01 | -8.76 | 38.0 | 193.3 | 2.7 | 164.3 |
| 970.00 | 968.97 | -37.45 | -8.63 | 38.4 | 193.0 | 2.5 | 164.6 |
| 980.00 | 978.96 | -37.86 | -8.51 | 38.8 | 192.7 | 2.4 | 162.0 |
| 990.00 | 988.95 | -38.25 | -8.38 | 39.2 | 192.4 | 2.3 | 166.2 |
| 1000.00 | 998.95 | -38.63 | -8.26 | 39.5 | 192.1 | 2.2 | 159.3 |
| 1010.00 | 1008.94 | -38.98 | -8.13 | 39.8 | 191.8 | 2.2 | 159.5 |
| 1020.00 | 1018.93 | -39.33 | -7.99 | 40.1 | 191.5 | 2.2 | 159.7 |
| 1030.00 | 1028.92 | -39.70 | -7.86 | 40.5 | 191.2 | 2.4 | 157.8 |
| 1040.00 | 1038.92 | -40.06 | -7.71 | 40.8 | 190.9 | 2.2 | 156.2 |
| 1050.00 | 1048.91 | -40.41 | -7.58 | 41.1 | 190.6 | 2.1 | 163.3 |
| 1060.00 | 1058.90 | -40.76 | -7.44 | 41.4 | 190.3 | 2.2 | 161.8 |
| 1070.00 | 1068.89 | -41.09 | -7.29 | 41.7 | 190.1 | 2.3 | 157.1 |
| 1080.00 | 1078.89 | -41.45 | -7.15 | 42.1 | 189.8 | 2.0 | 157.8 |
| 1090.00 | 1088.88 | -41.78 | -7.01 | 42.4 | 189.5 | 2.0 | 158.2 |
| 1100.00 | 1098.87 | -42.10 | -6.86 | 42.7 | 189.3 | 2.0 | 160.2 |
| 1110.00 | 1108.87 | -42.44 | -6.74 | 43.0 | 189.0 | 1.9 | 158.9 |
| 1120.00 | 1118.86 | -42.75 | -6.57 | 43.3 | 188.7 | 2.3 | 159.1 |
| 1130.00 | 1128.86 | -43.07 | -6.43 | 43.5 | 188.5 | 1.9 | 158.6 |
| 1140.00 | 1138.85 | -43.35 | -6.31 | 43.8 | 188.3 | 1.7 | 147.6 |
| 1150.00 | 1148.85 | -43.61 | -6.17 | 44.0 | 188.0 | 1.7 | 153.9 |
| 1160.00 | 1158.84 | -43.86 | -6.04 | 44.3 | 187.8 | 1.5 | 151.2 |
| 1170.00 | 1168.84 | -44.07 | -5.94 | 44.5 | 187.7 | 1.5 | 44.2 |
| 1180.00 | 1178.84 | -44.22 | -5.83 | 44.6 | 187.5 | 1.6 | 144.7 |
| 1190.00 | 1188.83 | -44.36 | -5.74 | 44.7 | 187.4 | 1.4 | 129.8 |
| 1200.00 | 1198.83 | -44.48 | -5.63 | 44.8 | 187.2 | 1.2 | 145.7 |
| 1210.00 | 1208.83 | -44.64 | -5.51 | 45.0 | 187.0 | 1.1 | 141.0 |
| 1220.00 | 1218.83 | -44.77 | -5.39 | 45.1 | 186.9 | 1.0 | 139.0 |
| 1230.00 | 1228.83 | -44.87 | -5.31 | 45.2 | 186.8 | 0.9 | 58.1 |
| 1240.00 | 1238.82 | -44.85 | -5.27 | 45.2 | 186.7 | 0.7 | 43.1 |
| 1250.00 | 1248.82 | -44.91 | -5.20 | 45.2 | 186.6 | 0.8 | 125.5 |
| 1260.00 | 1258.82 | -44.99 | -5.10 | 45.3 | 186.5 | 0.6 | 126.8 |
| 1270.00 | 1268.82 | -44.98 | -5.09 | 45.3 | 186.5 | 0.5 | 85.0 |
| 1280.00 | 1278.82 | -44.96 | -5.05 | 45.2 | 186.4 | 0.4 | 84.1 |
| 1290.00 | 1288.82 | -44.97 | -4.99 | 45.2 | 186.3 | 0.3 | 145.0 |
| 1300.00 | 1298.82 | -45.02 | -4.99 | 45.3 | 186.3 | 0.3 | 195.8 |
| 1310.00 | 1308.82 | -45.03 | -5.01 | 45.3 | 186.4 | 0.2 | 2.4 |
| 1320.00 | 1318.82 | -45.02 | -5.00 | 45.3 | 186.3 | 0.7 | 98.3 |
| 1330.00 | 1328.82 | -45.00 | -4.95 | 45.3 | 186.3 | 0.2 | 59.7 |
| 1340.00 | 1338.82 | -44.98 | -4.92 | 45.2 | 186.2 | 0.3 | 44.7 |
| 1350.00 | 1348.82 | -44.97 | -4.87 | 45.2 | 186.2 | 0.3 | 76.7 |
| 1360.00 | 1358.82 | -44.95 | -4.82 | 45.2 | 186.1 | 0.2 | 69.9 |
| 1370.00 | 1368.82 | -44.95 | -4.76 | 45.2 | 186.0 | 0.2 | 110.0 |
| 1380.00 | 1378.82 | -44.95 | -4.70 | 45.2 | 186.0 | 0.5 | 60.3 |
| 1390.00 | 1388.82 | -44.94 | -4.65 | 45.2 | 185.9 | 0.3 | 97.5 |
| 1400.00 | 1398.82 | -44.94 | -4.59 | 45.2 | 185.8 | 0.6 | 63.3 |
| 1410.00 | 1408.82 | -44.94 | -4.55 | 45.2 | 185.8 | 0.4 | 69.2 |
| 1420.00 | 1418.82 | -44.94 | -4.50 | 45.2 | 185.7 | 0.3 | 77.3 |
| 1430.00 | 1428.82 | -44.94 | -4.46 | 45.2 | 185.7 | 0.2 | 117.8 |
| 1440.00 | 1438.82 | -44.94 | -4.41 | 45.2 | 185.6 | 0.3 | 67.0 |
| 1450.00 | 1448.82 | -44.92 | -4.37 | 45.1 | 185.6 | 0.2 | 83.4 |
| 1460.00 | 1458.82 | -44.91 | -4.33 | 45.1 | 185.5 | 0.4 | 80.6 |
| 1470.00 | 1468.82 | -44.89 | -4.28 | 45.1 | 185.5 | 0.1 | 52.3 |
| 1480.00 | 1478.82 | -44.85 | -4.23 | 45.1 | 185.4 | 0.3 | 70.9 |
| 1490.00 | 1488.82 | -44.88 | -4.20 | 45.1 | 185.3 | 0.3 | 90.2 |
| 1500.00 | 1498.82 | -44.83 | -4.19 | 45.0 | 185.3 | 0.4 | 4.9 |
| 1510.00 | 1508.82 | -44.76 | -4.16 | 45.0 | 185.3 | 0.4 | 4.6 |
| 1520.00 | 1518.82 | -44.68 | -4.12 | 44.9 | 185.3 | 0.6 | 21.9 |
| 1530.00 | 1528.82 | -44.66 | -4.05 | 44.8 | 185.2 | 0.6 | 99.7 |
| 1540.00 | 1538.82 | -44.61 | -3.96 | 44.8 | 185.1 | 0.8 | 46.3 |
| 1550.00 | 1548.82 | -44.52 | -3.91 | 44.7 | 185.0 | 0.8 | 22.9 |
| 1560.00 | 1558.81 | -44.43 | -3.82 | 44.6 | 184.9 | 0.6 | 44.9 |
| 1570.00 | 1568.81 | -44.32 | -3.75 | 44.5 | 184.9 | 1.0 | 10.7 |
| 1580.00 | 1578.81 | -44.18 | -3.75 | 44.3 | 184.8 | 0.8 | 101.5 |
| 1590.00 | 1588.81 | -44.17 | -3.61 | 44.3 | 184.7 | 1.2 | 60.8 |
| 1600.00 | 1598.81 | -44.06 | -3.51 | 44.2 | 184.6 | 0.9 | 32.0 |
| 1610.00 | 1608.81 | -43.93 | -3.39 | 44.1 | 184.4 | 1.0 | 39.3 |
| 1620.00 | 1618.81 | -43.81 | -3.28 | 43.9 | 184.3 | 0.9 | 38.9 |
| 1630.00 | 1628.81 | -43.69 | -3.20 | 43.8 | 184.2 | 0.8 | 21.1 |
| 1640.00 | 1638.80 | -43.55 | -3.11 | 43.7 | 184.1 | 1.1 | 27.6 |
| 1650.00 | 1648.80 | -43.39 | -3.02 | 43.5 | 184.0 | 1.2 | 19.7 |
| 1660.00 | 1658.80 | -43.20 | -2.93 | 43.3 | 183.9 | 1.2 | 20.0 |
| 1670.00 | 1668.80 | -42.99 | -2.85 | 43.1 | 183.8 | 1.4 | 22.3 |
| 1680.00 | 1678.79 | -42.75 | -2.75 | 42.8 | 183.7 | 1.5 | 27.9 |
| 1690.00 | 1688.79 | -42.51 | -2.68 | 42.6 | 183.6 | 1.4 | 18.6 |
| 1700.00 | 1698.79 | -42.28 | -2.60 | 42.4 | 183.5 | 1.4 | 17.6 |
| 1710.00 | 1708.78 | -42.03 | -2.50 | 42.1 | 183.4 | 1.5 | 21.7 |
| 1720.00 | 1718.78 | -41.78 | -2.44 | 41.8 | 183.3 | 1.6 | 28.8 |
| 1730.00 | 1728.78 | -41.52 | -2.34 | 41.6 | 183.2 | 1.4 | 27.1 |
| 1740.00 | 1738.77 | -41.29 | -2.27 | 41.4 | 183.2 | 1.3 | 19.6 |
| 1750.00 | 1748.77 | -41.05 | -2.19 | 41.1 | 183.1 | 1.5 | 19.1 |
| 1760.00 | 1758.77 | -40.83 | -2.10 | 40.9 | 182.9 | 1.3 | 16.2 |
| 1770.00 | 1768.77 | -40.61 | -2.03 | 40.7 | 182.9 | 1.3 | 7.0 |
| 1780.00 | 1778.76 | -40.39 | -1.93 | 40.4 | 182.7 | 1.3 | 25.7 |
| 1790.00 | 1788.76 | -40.16 | -1.85 | 40.2 | 182.6 | 1.5 | 47.8 |
| 1800.00 | 1798.76 | -39.93 | -1.76 | 40.0 | 182.5 | 1.5 | 16.5 |
| 1810.00 | 1808.75 | -39.72 | -1.69 | 39.8 | 182.4 | 1.2 | 10.2 |
| 1820.00 | 1818.75 | -39.51 | -1.61 | 39.5 | 182.3 | 1.2 | 23.5 |
| 1830.00 | 1828.75 | -39.32 | -1.58 | 39.4 | 182.3 | 1.2 | 27.7 |
| 1840.00 | 1838.75 | -39.16 | -1.49 | 39.2 | 182.2 | 0.9 | 0.2 |

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|---|---|---|---|---|---|---|---|
| 1760.00 | 1758.77 | -40.83 | -2.10 | 40.9 | 182.9 | 1.3 | 16.2 |
| 1770.00 | 1768.77 | -40.61 | -2.03 | 40.7 | 182.9 | 1.3 | 7.0 |
| 1780.00 | 1778.76 | -40.39 | -1.93 | 40.4 | 182.7 | 1.3 | 25.7 |
| 1790.00 | 1788.76 | -40.16 | -1.85 | 40.2 | 182.6 | 1.5 | 47.8 |
| 1800.00 | 1798.76 | -39.93 | -1.76 | 40.0 | 182.5 | 1.5 | 16.5 |
| 1810.00 | 1808.75 | -39.72 | -1.69 | 39.8 | 182.4 | 1.2 | 10.2 |
| 1820.00 | 1818.75 | -39.51 | -1.61 | 39.5 | 182.3 | 1.2 | 23.5 |
| 1830.00 | 1828.75 | -39.32 | -1.58 | 39.4 | 182.3 | 1.2 | 27.7 |
| 1840.00 | 1838.75 | -39.16 | -1.49 | 39.2 | 182.2 | 0.9 | 0.2 |
| 1850.00 | 1848.75 | -39.01 | -1.43 | 39.0 | 182.1 | 1.0 | 25.5 |
| 1860.00 | 1858.74 | -38.84 | -1.41 | 38.9 | 182.1 | 1.0 | 30.8 |
| 1870.00 | 1868.74 | -38.75 | -1.49 | 38.8 | 182.2 | 0.7 | 53.1 |
| 1880.00 | 1878.74 | -38.75 | -1.47 | 38.8 | 182.2 | 0.9 | 250.8 |
| 1890.00 | 1888.74 | -38.68 | -1.43 | 38.7 | 182.1 | 1.0 | 309.3 |
| 1900.00 | 1898.74 | -38.57 | -1.42 | 38.6 | 182.1 | 1.0 | 316.4 |
| 1910.00 | 1908.74 | -38.45 | -1.40 | 38.5 | 182.1 | 0.8 | 17.2 |
| 1920.00 | 1918.74 | -38.36 | -1.41 | 38.4 | 182.1 | 0.6 | 58.6 |
| 1930.00 | 1928.74 | -38.29 | -1.40 | 38.3 | 182.1 | 0.8 | 356.0 |
| 1940.00 | 1938.74 | -38.20 | -1.41 | 38.2 | 182.1 | 0.5 | 336.6 |
| 1950.00 | 1948.74 | -38.14 | -1.43 | 38.2 | 182.2 | 0.5 | 325.8 |
| 1960.00 | 1958.74 | -38.12 | -1.48 | 38.1 | 182.2 | 0.2 | 236.9 |
| 1970.00 | 1968.74 | -38.09 | -1.51 | 38.1 | 182.3 | 0.6 | 26.8 |
| 1980.00 | 1978.74 | -38.00 | -1.47 | 38.0 | 182.2 | 0.6 | 17.7 |
| 1990.00 | 1988.74 | -37.94 | -1.48 | 38.0 | 182.2 | 0.4 | 259.6 |
| 2000.00 | 1998.74 | -37.99 | -1.51 | 38.0 | 182.3 | 0.1 | 290.7 |
| 2010.00 | 2008.74 | -37.99 | -1.54 | 38.0 | 182.3 | 0.4 | 256.4 |
| 2020.00 | 2018.74 | -38.01 | -1.56 | 38.0 | 182.4 | 0.2 | 205.6 |
| 2030.00 | 2028.74 | -38.00 | -1.57 | 38.0 | 182.4 | 0.0 | 79.3 |
| 2040.00 | 2038.74 | -37.98 | -1.59 | 38.0 | 182.4 | 0.7 | 315.1 |
| 2050.00 | 2048.73 | -37.89 | -1.62 | 37.9 | 182.5 | 0.5 | 343.0 |
| 2060.00 | 2058.73 | -37.79 | -1.62 | 37.8 | 182.5 | 0.6 | 356.0 |
| 2070.00 | 2068.73 | -37.68 | -1.63 | 37.7 | 182.5 | 0.7 | 0.9 |
| 2080.00 | 2078.73 | -37.57 | -1.65 | 37.6 | 182.5 | 0.8 | 355.6 |
| 2090.00 | 2088.73 | -37.45 | -1.66 | 37.5 | 182.5 | 0.6 | 356.1 |
| 2100.00 | 2098.73 | -37.32 | -1.68 | 37.4 | 182.6 | 0.8 | 344.5 |
| 2110.00 | 2108.73 | -37.20 | -1.69 | 37.2 | 182.6 | 0.7 | 351.3 |
| 2120.00 | 2118.73 | -37.07 | -1.71 | 37.1 | 182.6 | 0.8 | 354.9 |
| 2130.00 | 2128.73 | -36.95 | -1.71 | 37.0 | 182.7 | 0.5 | 358.4 |
| 2140.00 | 2138.73 | -36.83 | -1.72 | 36.9 | 182.7 | 0.6 | 13.5 |
| 2150.00 | 2148.73 | -36.72 | -1.71 | 36.8 | 182.7 | 0.7 | 8.4 |
| 2160.00 | 2158.73 | -36.60 | -1.72 | 36.6 | 182.7 | 0.7 | 353.3 |
| 2170.00 | 2168.73 | -36.48 | -1.75 | 36.5 | 182.7 | 0.8 | 355.6 |
| 2180.00 | 2178.73 | -36.36 | -1.73 | 36.4 | 182.7 | 0.6 | 352.8 |
| 2190.00 | 2188.72 | -36.23 | -1.73 | 36.3 | 182.7 | 0.7 | 4.8 |
| 2200.00 | 2198.72 | -36.11 | -1.73 | 36.2 | 182.7 | 0.7 | 358.9 |
| 2210.00 | 2208.72 | -36.01 | -1.77 | 36.1 | 182.8 | 0.7 | 226.1 |
| 2220.00 | 2218.72 | -35.99 | -1.70 | 36.0 | 182.7 | 0.2 | 255.2 |
| 2230.00 | 2228.72 | -35.89 | -1.71 | 35.9 | 182.7 | 0.6 | 0.5 |
| 2240.00 | 2238.72 | -35.78 | -1.71 | 35.8 | 182.7 | 0.7 | 10.9 |
| 2250.00 | 2248.72 | -35.67 | -1.71 | 35.7 | 182.7 | 0.7 | 2.6 |
| 2260.00 | 2258.72 | -35.56 | -1.71 | 35.6 | 182.8 | 0.6 | 356.7 |
| 2270.00 | 2268.72 | -35.46 | -1.70 | 35.5 | 182.7 | 0.5 | 11.1 |
| 2280.00 | 2278.72 | -35.36 | -1.70 | 35.4 | 182.8 | 0.6 | 2.8 |
| 2290.00 | 2288.72 | -35.25 | -1.69 | 35.3 | 182.8 | 0.7 | 349.1 |
| 2300.00 | 2298.72 | -35.14 | -1.70 | 35.2 | 182.8 | 0.5 | 14.2 |
| 2310.00 | 2308.72 | -35.05 | -1.73 | 35.1 | 182.8 | 0.6 | 318.3 |
| 2320.00 | 2318.72 | -35.10 | -1.81 | 35.1 | 183.0 | 0.8 | 194.9 |
| 2330.00 | 2328.72 | -35.14 | -1.85 | 35.2 | 183.0 | 0.2 | 334.7 |
| 2340.00 | 2338.72 | -35.11 | -1.87 | 35.2 | 183.1 | 0.3 | 39.6 |
| 2350.00 | 2348.72 | -35.10 | -1.90 | 35.2 | 183.1 | 0.2 | 292.4 |
| 2360.00 | 2358.72 | -35.08 | -1.94 | 35.1 | 183.2 | 0.5 | 261.6 |
| 2370.00 | 2368.72 | -35.05 | -1.97 | 35.1 | 183.2 | 0.3 | 343.3 |
| 2380.00 | 2378.72 | -34.99 | -1.96 | 35.0 | 183.2 | 0.3 | 323.7 |
| 2390.00 | 2388.72 | -34.98 | -2.02 | 35.0 | 183.3 | 0.3 | 7.3 |
| 2400.00 | 2398.71 | -34.93 | -2.06 | 35.0 | 183.4 | 0.5 | 252.7 |
| 2410.00 | 2408.71 | -34.94 | -2.16 | 35.0 | 183.5 | 0.7 | 282.0 |
| 2420.00 | 2418.71 | -34.86 | -2.18 | 34.9 | 183.6 | 0.5 | 331.0 |
| 2430.00 | 2428.71 | -34.78 | -2.26 | 34.9 | 183.7 | 0.7 | 310.2 |
| 2440.00 | 2438.71 | -34.71 | -2.33 | 34.8 | 183.8 | 0.5 | 287.0 |
| 2450.00 | 2448.71 | -34.63 | -2.41 | 34.7 | 184.0 | 0.7 | 325.3 |
| 2460.00 | 2458.71 | -34.56 | -2.48 | 34.6 | 184.1 | 0.7 | 301.3 |
| 2470.00 | 2468.71 | -34.47 | -2.55 | 34.6 | 184.2 | 0.6 | 299.7 |
| 2480.00 | 2478.71 | -34.42 | -2.63 | 34.5 | 184.4 | 0.7 | 324.1 |
| 2490.00 | 2488.71 | -34.35 | -2.70 | 34.5 | 184.5 | 0.5 | 327.5 |
| 2500.00 | 2498.71 | -34.28 | -2.75 | 34.4 | 184.6 | 0.5 | 300.7 |
| 2510.00 | 2508.71 | -34.21 | -2.82 | 34.3 | 184.7 | 0.8 | 317.7 |
| 2520.00 | 2518.71 | -34.10 | -2.89 | 34.2 | 184.8 | 0.5 | 335.3 |
| 2530.00 | 2528.71 | -34.03 | -2.95 | 34.2 | 185.0 | 0.7 | 338.5 |
| 2540.00 | 2538.71 | -33.93 | -3.00 | 34.1 | 185.1 | 0.5 | 339.3 |
| 2550.00 | 2548.71 | -33.85 | -3.06 | 34.0 | 185.2 | 0.5 | 304.6 |
| 2560.00 | 2558.71 | -33.76 | -3.11 | 33.9 | 185.3 | 0.6 | 333.6 |
| 2570.00 | 2568.71 | -33.66 | -3.17 | 33.8 | 185.4 | 0.6 | 329.7 |
| 2580.00 | 2578.70 | -33.55 | -3.19 | 33.7 | 185.4 | 0.7 | 345.4 |
| 2590.00 | 2588.70 | -33.46 | -3.24 | 33.6 | 185.5 | 0.4 | 334.8 |
| 2600.00 | 2598.70 | -33.38 | -3.30 | 33.5 | 185.6 | 0.6 | 309.5 |
| 2610.00 | 2608.70 | -33.28 | -3.33 | 33.4 | 185.7 | 0.7 | 342.2 |
| 2620.00 | 2618.70 | -33.18 | -3.36 | 33.3 | 185.8 | 0.5 | 10.3 |
| 2630.00 | 2628.70 | -33.16 | -3.30 | 33.3 | 185.7 | 0.6 | 64.8 |
| 2640.00 | 2638.70 | -33.16 | -3.26 | 33.3 | 185.6 | 0.4 | 217.0 |
| 2650.00 | 2648.70 | -33.15 | -3.27 | 33.3 | 185.6 | 0.4 | 348.0 |
| 2660.00 | 2658.70 | -33.09 | -3.29 | 33.3 | 185.7 | 0.3 | 328.7 |
| 2670.00 | 2668.70 | -33.04 | -3.30 | 33.2 | 185.7 | 0.3 | 11.0 |
| 2680.00 | 2678.70 | -32.98 | -3.31 | 33.1 | 185.7 | 0.3 | 15.7 |
| 2690.00 | 2688.70 | -32.93 | -3.31 | 33.1 | 185.7 | 0.4 | 358.4 |
| 2700.00 | 2698.70 | -32.85 | -3.29 | 33.0 | 185.7 | 0.4 | 21.0 |
| 2710.00 | 2708.70 | -32.79 | -3.27 | 33.0 | 185.7 | 0.4 | 20.3 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2630.00 | 2628.70 | -33.18 | -3.30 | 33.4 | 185.6 | 0.4 | 217.0 |
| 2640.00 | 2638.70 | -33.16 | -3.26 | 33.3 | 185.6 | 0.4 | 348.0 |
| 2650.00 | 2648.70 | -33.15 | -3.27 | 33.3 | 185.6 | 0.4 | 328.7 |
| 2660.00 | 2658.70 | -33.09 | -3.29 | 33.3 | 185.7 | 0.3 | 11.0 |
| 2670.00 | 2668.70 | -33.04 | -3.30 | 33.2 | 185.7 | 0.3 | 15.7 |
| 2680.00 | 2678.70 | -32.98 | -3.31 | 33.1 | 185.7 | 0.3 | 350.4 |
| 2690.00 | 2688.70 | -32.93 | -3.31 | 33.1 | 185.7 | 0.4 | 21.0 |
| 2700.00 | 2698.70 | -32.85 | -3.29 | 33.0 | 185.7 | 0.4 | 20.3 |
| 2710.00 | 2708.70 | -32.79 | -3.27 | 33.0 | 185.7 | 0.4 | 31.4 |
| 2720.00 | 2718.70 | -32.72 | -3.24 | 32.9 | 185.7 | 0.5 | 94.5 |
| 2730.00 | 2728.70 | -32.69 | -3.23 | 32.9 | 185.6 | 0.4 | 8.3 |
| 2740.00 | 2738.70 | -32.68 | -3.22 | 32.8 | 185.6 | 0.1 | 63.9 |
| 2750.00 | 2748.70 | -32.65 | -3.15 | 32.8 | 185.5 | 0.5 | 82.2 |
| 2760.00 | 2758.70 | -32.61 | -3.07 | 32.8 | 185.4 | 0.5 | 16.5 |
| 2770.00 | 2768.70 | -32.53 | -3.03 | 32.7 | 185.3 | 0.6 | 15.3 |
| 2770.90 | 2769.60 | -32.52 | -3.03 | 32.7 | 185.3 | 0.5 | |

Well: P48A

## Casing & Tubing Program

| | Casing | Casing Interval | Hole Size | Cement used in cu/ft | Cemented to Surface Yes | Cemented to Surface No | Date Cemented | Packers or Bridge Plugs |
|---|---|---|---|---|---|---|---|---|
| Conductor | 13 3/8" | 18' | 15" | | | X | 11/26/2007 | |
| Surface | 9 5/8" | 667' | 12 3/8" | 288 | X | | 11/27/2007 | bskt @ 489'/534 |
| Water Protection | 4 1/2" | 2422' | 6 1/2" | 390.4 | X | | 11/30/2007 | |
| Coal Protection | 4 1/2" | 2422' | 6 1/2" | 390.4 | X | | 11/30/2007 | |
| Other Casing & Tubing | 7" | 890' | 8 7/8" | 180 | X | | 11/28/2007 | bskt @ 712'/756 |
| Other Casing & Tubing | | | | | | | | |
| Liners | | | | | | | | |

DRILL DATA
NOAH HORN WELL DRILLING

COMPANY: CNX
HOLE: P-48A
RIG #: 41
LOCATION: BROWN RIDGE

DATE STARTED: 11-16-07
DATE COMPLETED: 11-30-07

ELECTRIC LOGGED: YES
GROUTED: YES

| DEPTH FROM | THICKNESS TO | FT | STRATA DESCRIPTION,VOIDS ETC |
|---|---|---|---|
| 0 | 18 | 18 | OVERBURDEN |
| 18 | 30 | 12 | SAND |
| 30 | 61 | 31 | SAND-SHALE |
| 61 | 92 | 31 | SAND-SHALE |
| 92 | 120 | 28 | SAND-SHALE |
| 120 | 150 | 30 | SANDY SHALE |
| 150 | 180 | 30 | SANDY SHALE |
| 180 | 210 | 30 | SANDY SHALE-COAL-SANDY SHALE |
| 210 | 240 | 30 | SANDY SHALE |
| 240 | 270 | 30 | SANDY SHALE |
| 270 | 300 | 30 | SANDY SHALE |
| 300 | 330 | 30 | SANDY SHALE |
| 330 | 360 | 30 | SANDY SHALE |
| 360 | 390 | 30 | SANDY SHALE-COAL-SANDY SHALE |
| 390 | 420 | 30 | SANDY SHALE |
| 420 | 450 | 30 | SANDY-SHALE |
| 450 | 480 | 30 | SANDY SHALE |
| 480 | 510 | 30 | SANDY SHALE-COAL-SANDY SHALE |
| 510 | 540 | 30 | SANDY SHALE |
| 540 | 570 | 30 | SANDY SHALE |
| 570 | 605 | 35 | SANDY SHALE |
| 605 | 619 | 14 | SAND-SHALE |
| 619 | 623 | 4 | BROKE UP - BAD OR VOID |
| 623 | 635 | 12 | SAND-SHALE-COAL |
| 635 | 665 | 30 | SAND-SHALE |
| 665 | 695 | 30 | SAND-SHALE |
| 695 | 720 | 25 | SAND |
| 720 | 750 | 30 | SAND-SHALE |
| 750 | 780 | 30 | SAND-SHALE-COAL |
| 780 | 810 | 30 | SAND-SHALE-COAL |
| 810 | 840 | 30 | SAND-SHALE |
| 840 | 870 | 30 | SAND |
| 870 | 900 | 30 | SAND-SHALE-COAL |
| 900 | 910 | 10 | SAND |
| 910 | 935 | 25 | SAND |
| 935 | 965 | 30 | SAND-SHALE |
| 965 | 995 | 30 | SAND-SHALE |
| 995 | 1025 | 30 | SAND-SHALE-COAL |
| 1025 | 1055 | 30 | SAND-SHALE |

DRILL DATA
NOAH HORN WELL DRILLING

| DEPTH FROM | THICKNESS TO | FT | STRATA DESCRIPTION,VOIDS ETC |
|---|---|---|---|
| 1055 | 1085 | 30 | SAND-SHALE |
| 1085 | 1115 | 30 | SAND-SHALE |
| 1115 | 1145 | 30 | SAND-SHALE-COAL |
| 1145 | 1175 | 30 | SAND-SHALE |
| 1175 | 1205 | 30 | SAND |
| 1205 | 1240 | 35 | SAND-SHALE |
| 1240 | 1270 | 30 | SAND-SHALE |
| 1270 | 1300 | 30 | SAND-SHALE |
| 1300 | 1330 | 30 | SAND |
| 1330 | 1360 | 30 | SAND-SHALE-COAL |
| 1360 | 1390 | 30 | SAND-SHALE |
| 1390 | 1420 | 30 | SAND-SHALE-COAL |
| 1420 | 1450 | 30 | SAND-SHALE-COAL |
| 1450 | 1480 | 30 | SAND-SHALE |
| 1480 | 1510 | 30 | SAND-SHALE |
| 1510 | 1540 | 30 | SAND-SHALE-COAL |
| 1540 | 1570 | 30 | SAND-SHALE |
| 1570 | 1600 | 30 | SAND-SHALE |
| 1600 | 1630 | 30 | SAND-SHALE |
| 1630 | 1660 | 30 | SAND-SHALE-COAL |
| 1660 | 1690 | 30 | SAND-SHALE-COAL |
| 1690 | 1720 | 30 | SAND-SHALE-COAL |
| 1720 | 1750 | 30 | SAND-SHALE |
| 1750 | 1780 | 30 | SANDY SHALE-SAND |
| 1780 | 1810 | 30 | SANDY SHALE-COAL-SANDY SHALE |
| 1810 | 1840 | 30 | SANDY SHALE-COAL |
| 1840 | 1870 | 30 | SANDY SHALE |
| 1870 | 1900 | 30 | SANDY SHALE-COAL-SAND |
| 1900 | 1930 | 30 | SAND |
| 1930 | 1960 | 30 | SAND |
| 1960 | 1990 | 30 | SAND |
| 1990 | 2020 | 30 | SAND |
| 2020 | 2050 | 30 | SAND |
| 2050 | 2080 | 30 | SAND-SANDY SHALE |
| 2080 | 2110 | 30 | SAND-SANDY SHALE |
| 2110 | 2140 | 30 | SAND |
| 2140 | 2170 | 30 | SAND |
| 2170 | 2200 | 30 | SAND |
| 2200 | 2230 | 30 | SAND |
| 2230 | 2260 | 30 | SAND |
| 2260 | 2290 | 30 | SAND |
| 2290 | 2320 | 30 | SAND-COAL-SAND?? |
| 2320 | 2343 | 23 | SAND |
| 2343 | 2344 | 1 | COAL?? |
| 2344 | 2350 | 6 | SAND |
| 2350 | 2353 | 3 | SAND |
| 2353 | 2359 | 6 | COAL-P32 |
| 2359 | 2380 | 21 | SAND |
| 2380 | 2410 | 30 | SAND |
| 2410 | 2440 | 30 | SAND |

DRILL DATA
NOAH HORN WELL DRILLING

| DEPTH FROM | THICKNESS TO | FT | STRATA DESCRIPTION,VOIDS ETC |
|---|---|---|---|
| 2440 | 2470 | 30 | SAND |
| 2470 | 2500 | 30 | SAND-COAL-SAND |
| 2500 | 2530 | 30 | SAND |
| 2530 | 2560 | 30 | SAND-COAL-SAND |
| 2560 | 2590 | 30 | SAND-SHALE |
| 2590 | 2620 | 30 | SAND-SHALE |
| 2620 | 2650 | 30 | SAND |
| 2650 | 2680 | 30 | SAND-SHALE |
| 2680 | 2710 | 30 | SAND-SHALE |
| 2710 | 2740 | 30 | SAND |
| 2740 | 2770 | 30 | SAND |
| 2770 | 2800 | 30 | SAND-SHALE-RED SHALE |

| TOTALS | |
|---|---|
| 2800' | TOTAL DEPTH |
| 18' | 13 3/8" CASING |
| 667.50' | 9 5/8" CASING |
| 890' | 7" CASING |
| 2421.60' | 4 1/2" CASING |