Producing Oil & Gas Shales

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Motto

Errors using inadequate data are much less than those using no data at all.

Charles Babbage, Mathematician, 1792 – 1871
Barnett Shale

Source: Newark Energy, LLC
Summary of Conclusions

- Technology matters: Newer wells are better producers

  From the plots of sorted cumulative gas production in 9 Barnett shale counties, it is clear that the newer wells are generally more productive, sometimes significantly, than the older wells.

- In some wells, there is significant production of the hydrocarbon gas condensate and/or liquid hydrocarbons.

- Newer wells in general produce more water, some a lot more.

- High water production is symptomatic of hydrofracturing into the water-rich strata just above and perhaps below the shale.
What you will see

- You will see 9 slides with cumulative gas production in Bcf, versus the square root of time on production in months (down-times removed), sorted in increasing order from the left to right.

- The production curves are color-coded according to starting dates. In general, the newer purple wells produce more gas faster than the older wells.

- Next, you will see 9 slides with cumulative condensate production in thousands of barrels, versus the square root of time on production.

- Finally, you will see 9 slides with cumulative water production in thousands of barrels vs. square root of time on production.

- In some wells, water production really takes off.
Cumulative gas in Tarrant county
Cumulative gas in Johnson county

Cumulative gas production, Bcf

√month


- p.7/32
Cumulative gas in Denton county
Cumulative gas in Wise county

Cumulative gas production, Bcf
Cumulative gas in Parker county

![3D graph showing cumulative gas production, Bcf over square root of months, with years 1990 to 2010 indicated on the color scale.](image)
Cumulative gas in Hood county

Cumulative gas production, Bcf

\[ \sqrt{\text{month}} \]

- p.11/32
Cumulative gas in Hill county
Cumulative gas in Erath county

Cumulative gas production, Bcf

√month

[Graph showing cumulative gas production over time and years]
Cumulative gas in Jack county

Cumulative gas production, Bcf

√month
Cumulative HC liquid in Tarrant

Cumulative oil production, $10^3$ bbl

- p.15/32
Cumulative HC liquid in Johnson
Cumulative HC liquid in Denton

Cumulative oil production, 10^3 bbl

√month

Cumulative HC liquid in Denton

Cumulative oil production, 10^3 bbl

√month
Cumulative HC liquid in Wise

Cum oil production, $10^3$ bbl

√month
Cumulative HC liquid in Parker

Cum oil production, $10^3$ bbl

√month

0 5 10 15 20 25

0 5 10 15 20 25

Cumulative HC liquid in Hood

Cumulative oil production, $10^3$ bbl
Cumulative HC liquid in Hill

Cum oil production, 10^3 bbl
Cumulative HC liquid in Erath

Cum oil production, $10^3$ bbl

$\sqrt{\text{month}}$
Cumulative water in Tarrant county

Cumulative water production, $10^3$ bbl

√month

- p.24/32
Cumulative water in Johnson county

Cumulative water production, $10^3$ bbl

$\sqrt{\text{month}}$
Cumulative water in Denton county

Cumulative water production, $10^3$ bbl

√month

- p.26/32
Cumulative water in Parker county

Cumulative water production, $10^3$ bbl

$\sqrt{\text{month}}$

0 5 10 15 500 1000
Cumulative water in Hill county

Cumulative water production, $10^3$ bbl

√month

- p.30/32
Cumulative water in Erath county

Cumulative water production, $10^3$ bbl

√month
Cumulative water in Jack county

Cumulative water production, $10^3$ bbl