

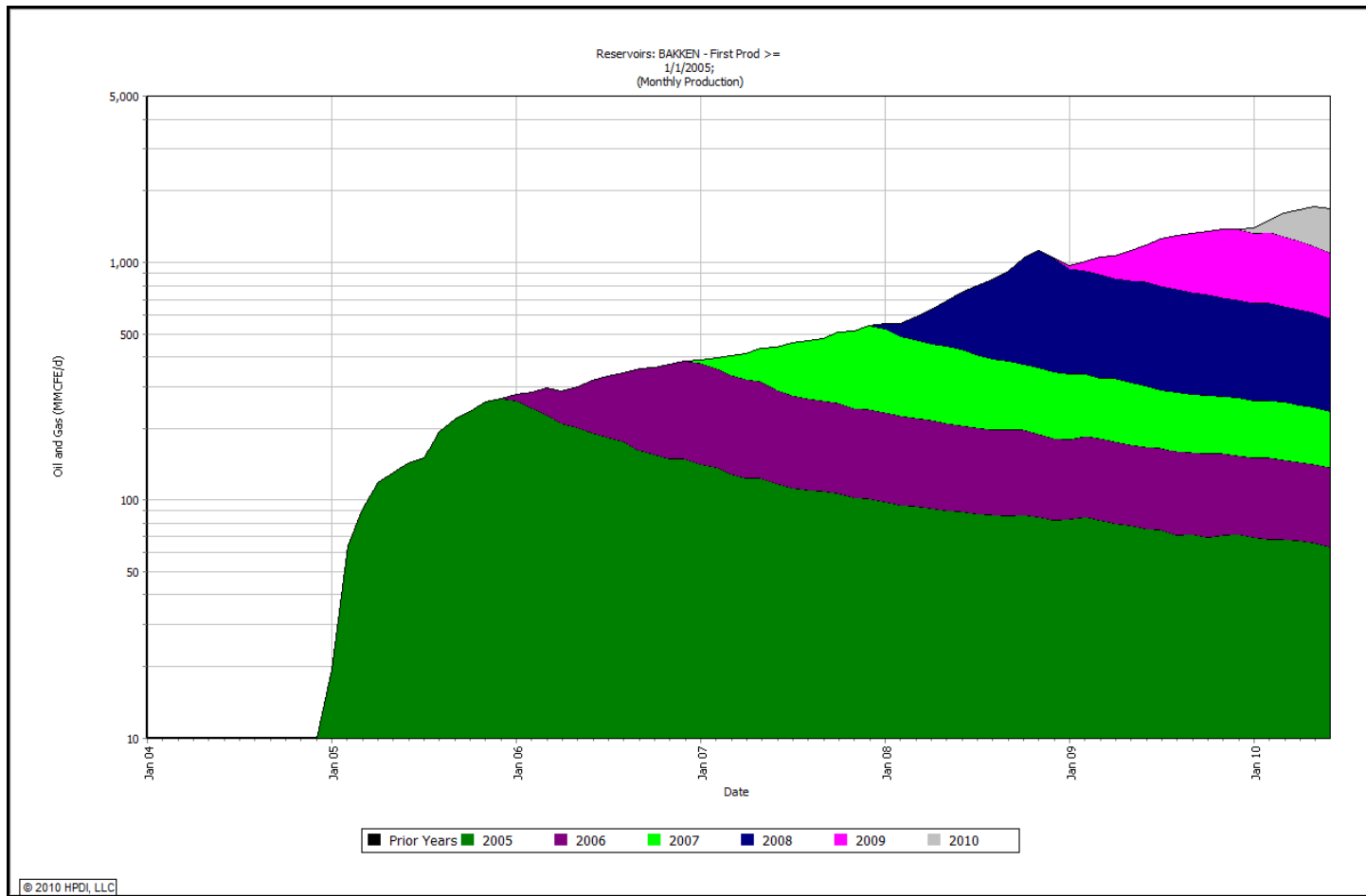
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Triumphs and Tribulations Of Tight Sands and Shale Plays

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10 - TRIUMPH – Technology has opened previously “locked” rock

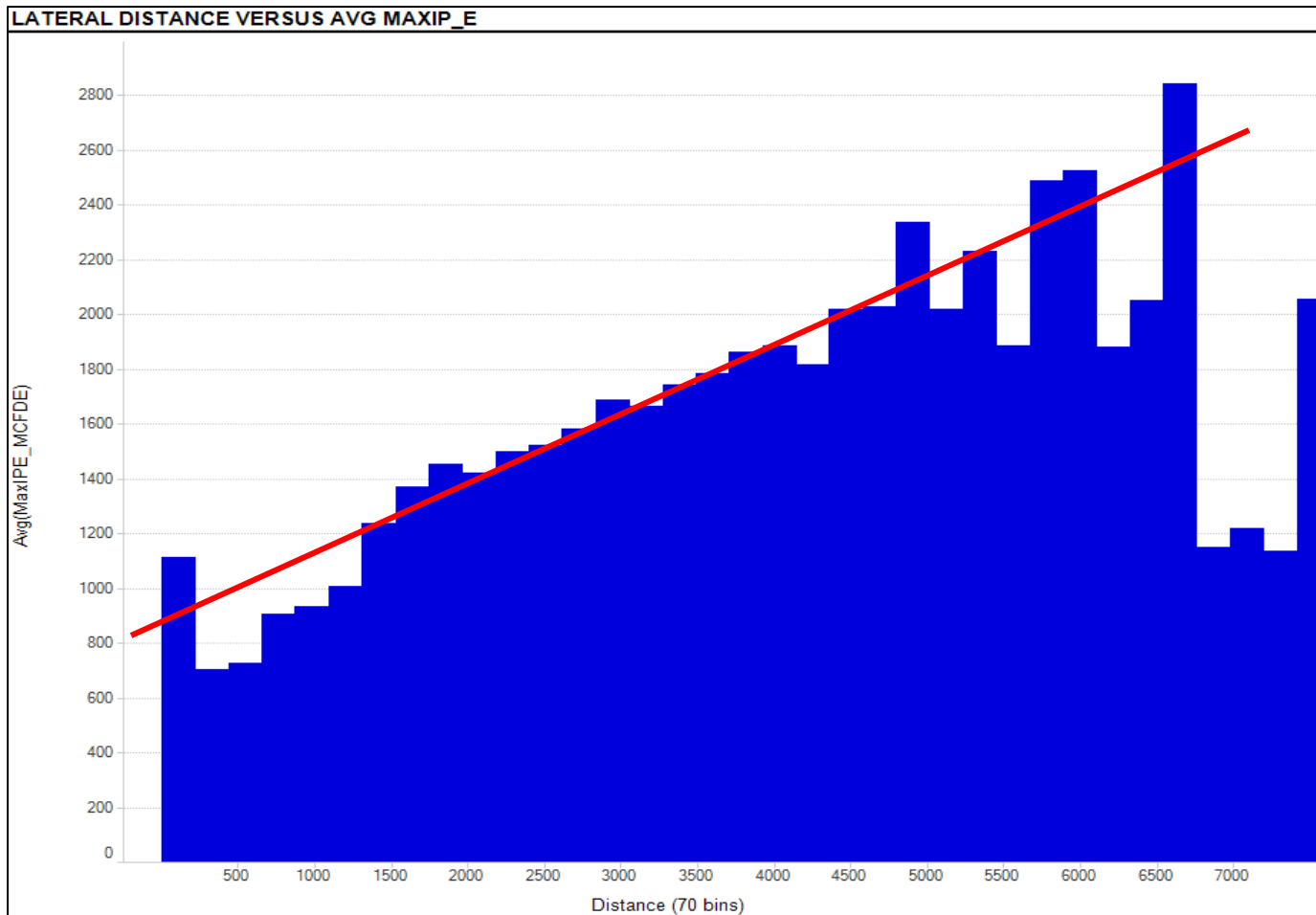


9 - TRIUMPH & TRIBULATION

Shale Plays still have opportunities – not for the timid!

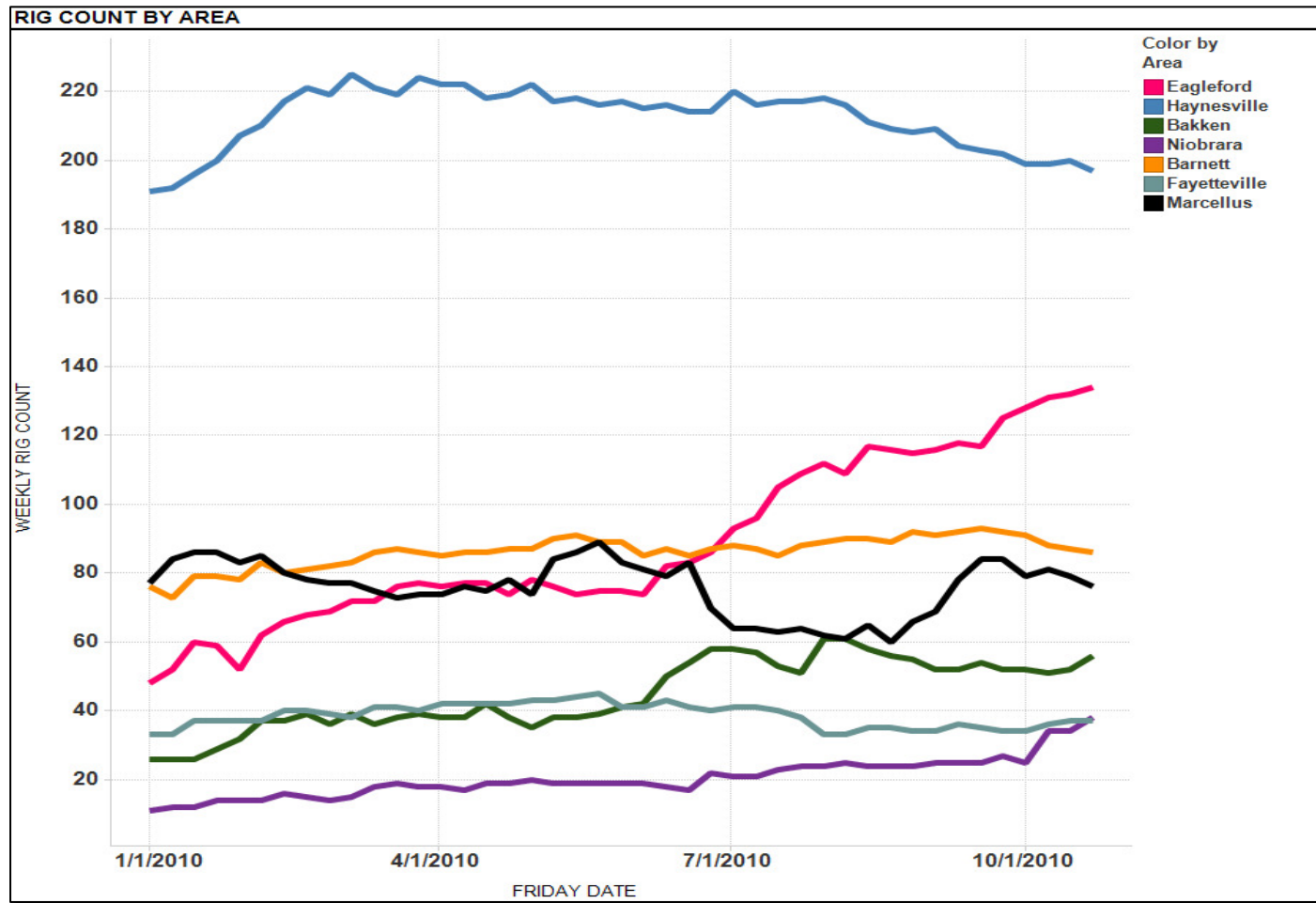
- All rock is not created equal!
- All operators are not created equal!
- All technologies should not be applied equally!

8 - TRIUMPH - Greater Efficiencies through Horizontal Drilling & Frac Techniques



7 - TRIBULATION - Expiring acreage

Those with the rigs win!



Rig count source : Smith Technologies

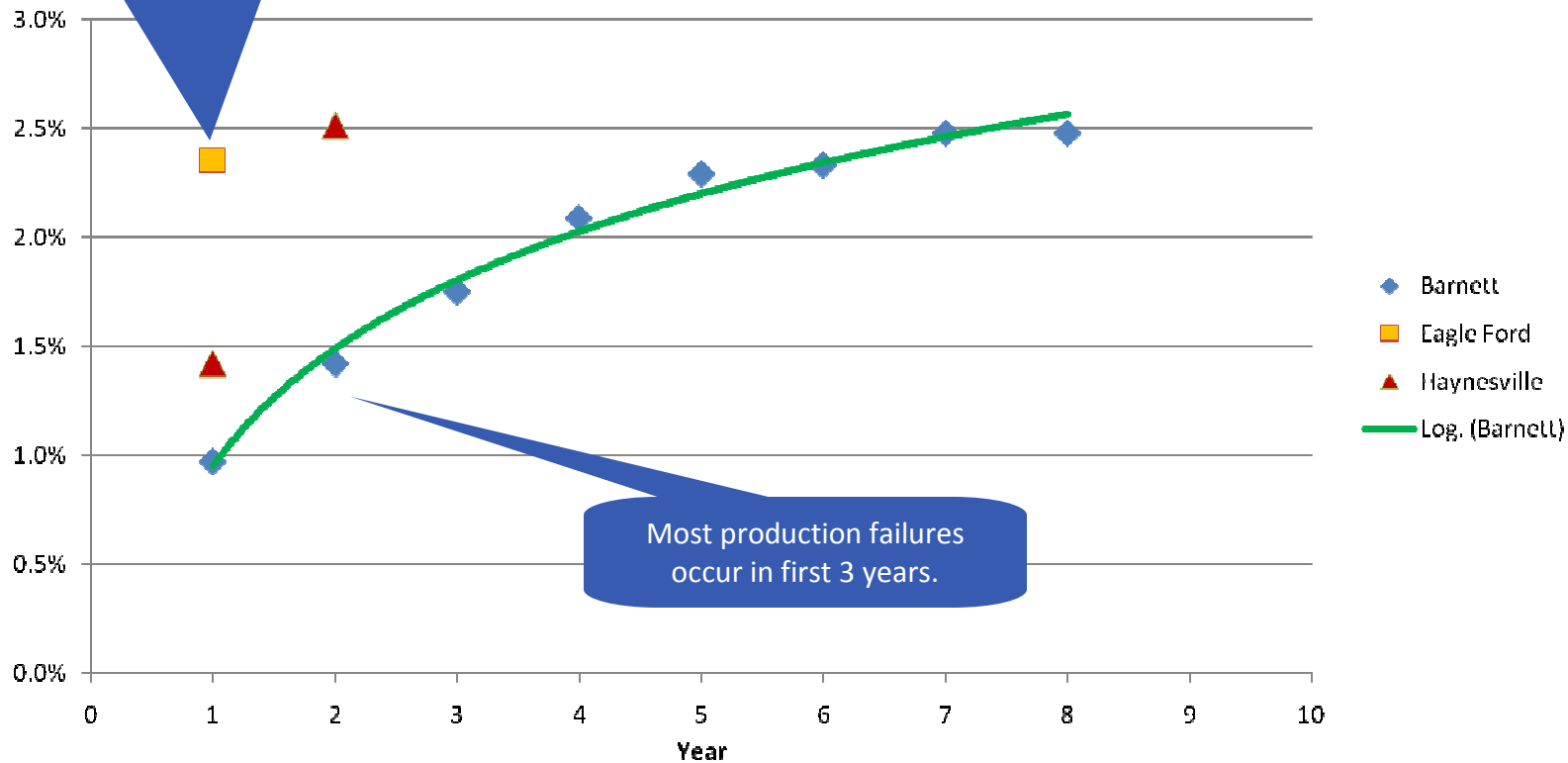
6 - TRIBULATION - Potential Reservoir Souring?

- Has lack of frac water quality regulations / inconsistent biocide applications introduced higher amounts of reservoir souring (creation of H₂S)?
- What could be the impact?

5 - TRIBULATION - Potential Issues with Casing Integrity in long Horizontals

5 "failures" in year 1.
Mostly in Wet Gas window. No failures from wells without intermediate casing

Cumulative Percentage of Failures vs Time



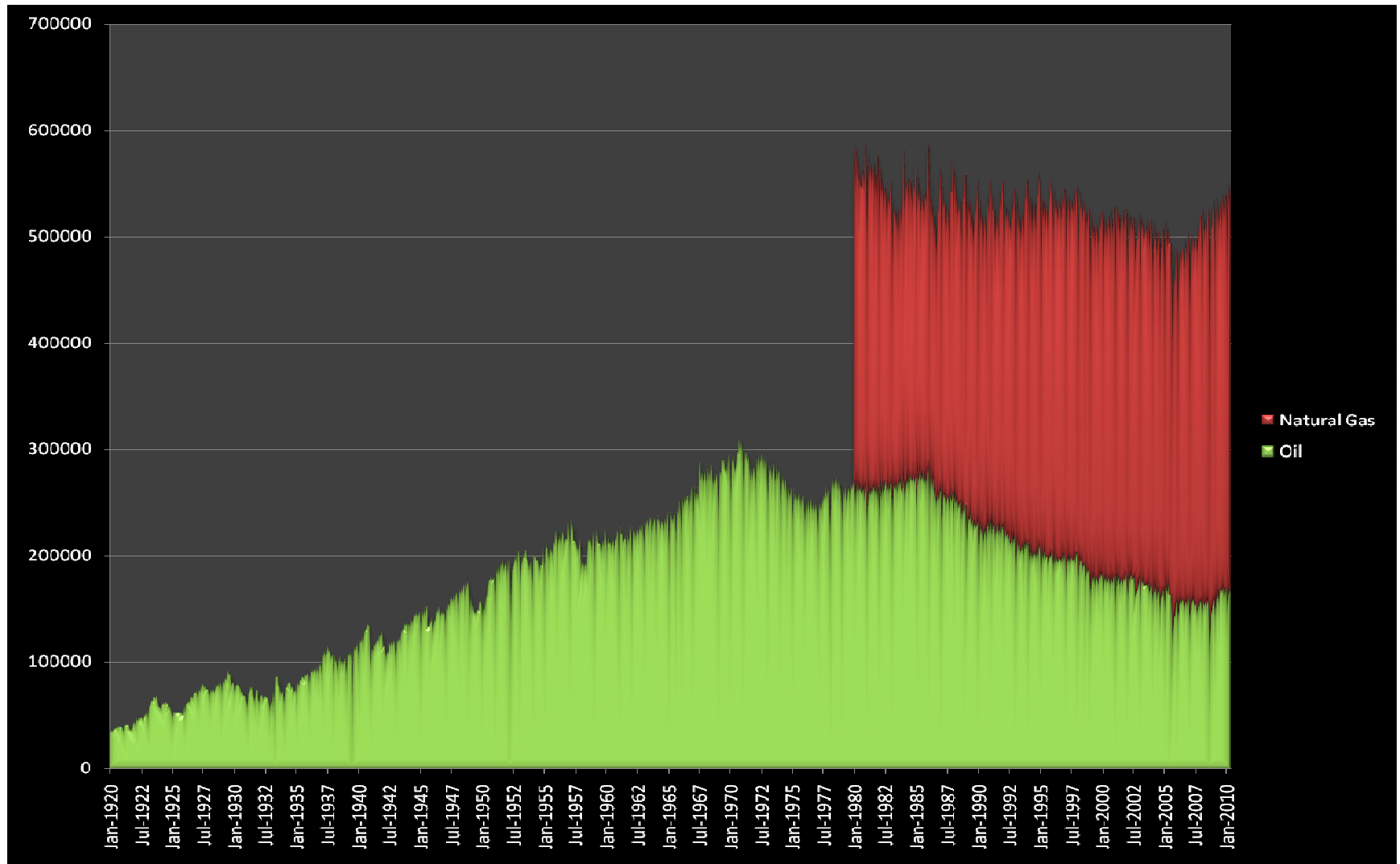
4 - TRIBULATION - Access to Gathering Systems

- Large initial volume producing wells pushing smaller, steady rate producers off gathering system

3 - TRIBULATION - Access to Frac Infrastructure

- Insufficient access forcing operators to purchase bundled, integrated services
- Can 1-3 major service providers vs 1000 experiments truly move to best practices?

2 – TRIUMPH – Found substantial oil and gas reserves



Data Source : EIA

1 – TRIBULATION – Found substantial oil and gas reserves !!

