



**Energy Summit 2014:**  
***The Future of Louisiana Energy***

 **Tuscaloosa Marine Shale**

The TMS logo is a black teardrop shape with the letters "TMS" in white inside.

***October, 2014***



# Amelia Resources, LLC



- Founded by Kirk A. Barrell in 2003
- Located in The Woodlands, Texas (North Houston)
- Privately held by six investors
- Focus: Prospect generation in the onshore Gulf Coast
- Strategy: Leverage knowledge, data, experience, and relationships to obtain capital partners for projects.



# Kirk A. Barrell

## *Career Summary*



- 27 years in the industry; geology, geophysics, and petrophysics
- 23 years in the Tuscaloosa Trend
- Amoco Production Company (1988-95)
- Geodynamic Solutions Inc.: Founder & CEO (1995-2004)
- Barrell Energy Inc.: Founder & President (1997-Present)
- Amelia Resources LLC: Founder & President (2003-Present)
- Wave Exploration LLC: Co-Founder & Co-Manager (2005-Present)

B.S. Geology: Louisiana State University

M.S. Geology: Texas A&M University



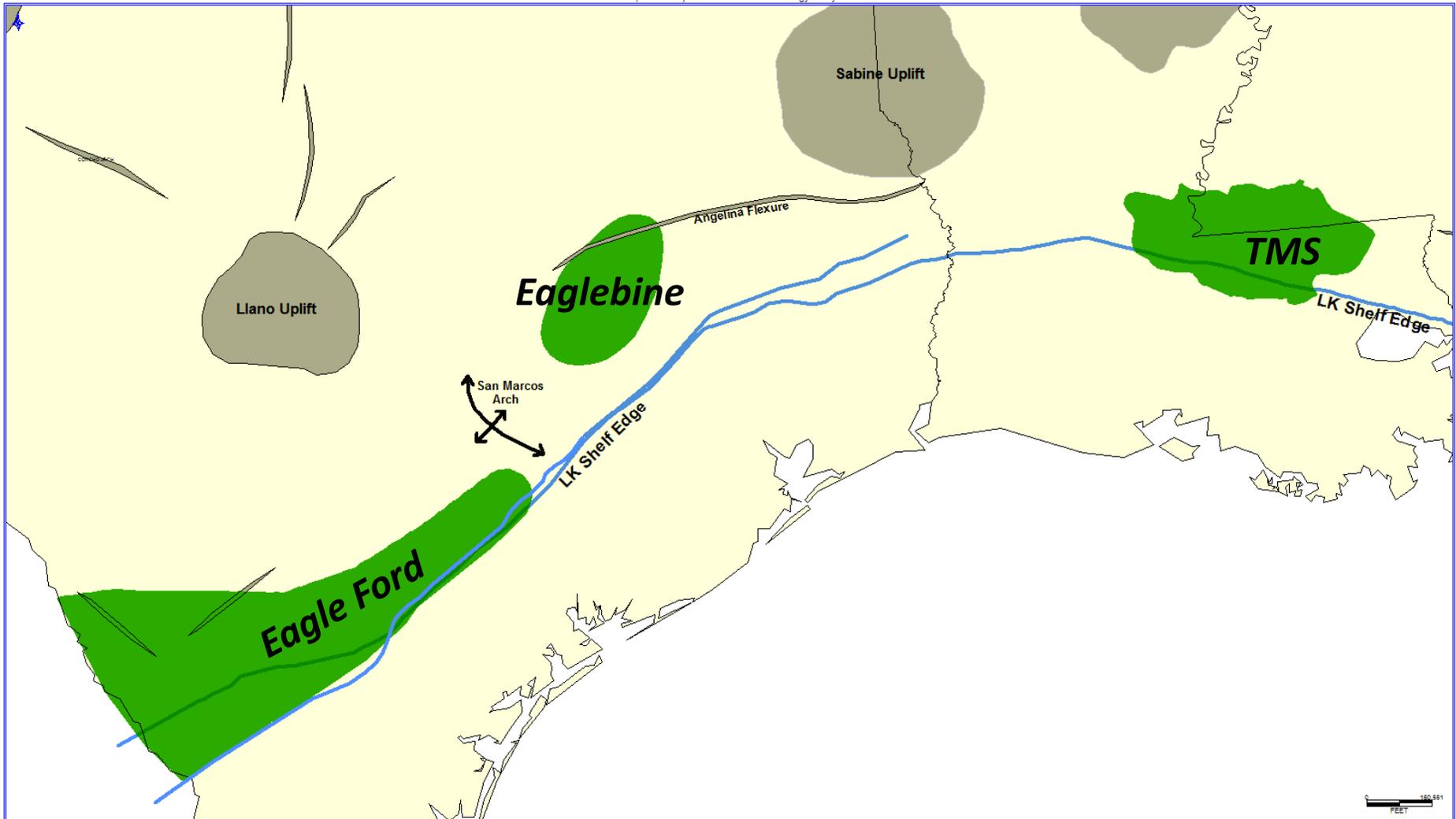


# U.S. Unconventional Plays





# Upper Cretaceous Plays





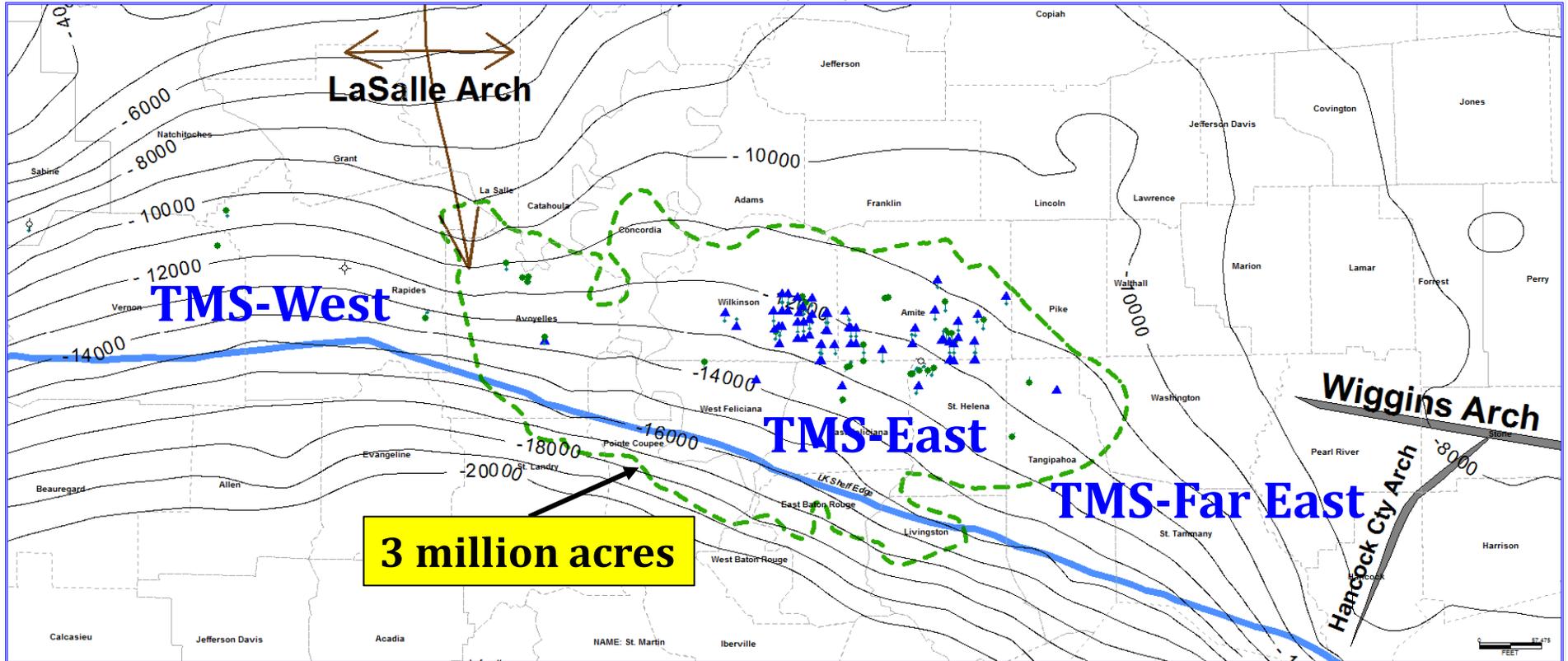
# Play Summary



- Central Louisiana, Southern Mississippi
- 2.9-7.4 million acres prospective
- Proven source rock
- Proven producer
- Eagle Ford age equivalent
- Oil-prone unconventional reserves
- Major players involved



# Play Map



## TMS-West

**Indigo Minerals**  
**EOG**

## TMS-East

**Encana**    **Goodrich**  
**Halcon**    **Sanchez**  
**Comstock**    **Contango**  
**EOG**

## TMS-Far East

**Helis**



# Type Log

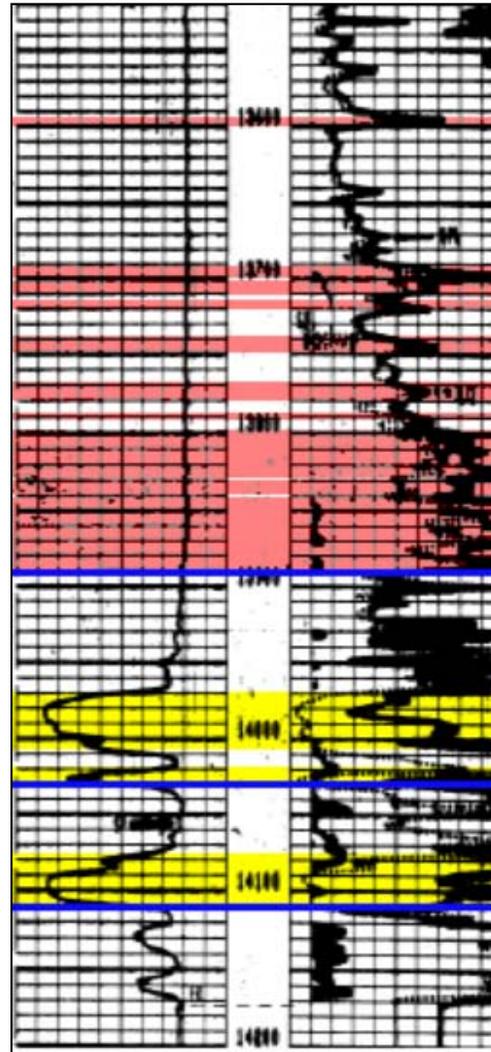


**Tuscaloosa  
Marine Shale  
(TMS)**

**Tusc**

**“A”**

**“B”**



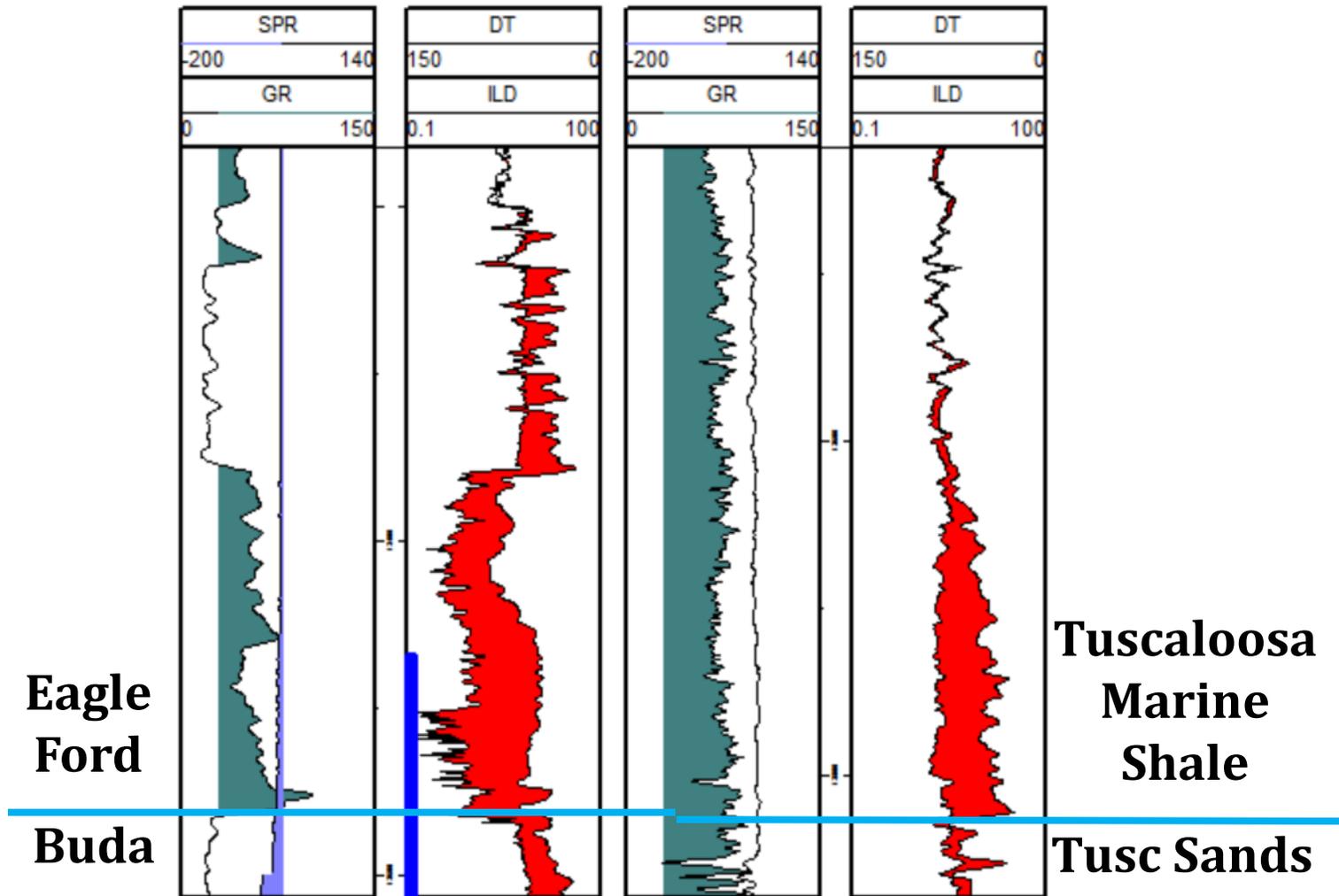


# Log Comparison



## Eagle Ford

## TMS





# Amelia Resources - TMS



- Trend wide analysis including 1000 wells (2007-2010)
- Joint Ventures:
  - Encana – 60,000 acres leased (2011)
  - Graves O&G – 58,000 acres leased (2011)
- Marketed and sold 95,000 acres (2013)
- Marketing 142,000 net acres (2014)



# Checking The Boxes



## *The 2010-11 Tour*

1. **Too much clay**
  - **Not an issue with regards to the producibility of this reservoir**
  - **Clay increases vertically from the base of the TMS as you transition into deeper facies until reaching the maximum flooding surface (MFS)**
  - **Total clay and swelling clays have been confused**
2. **TOC is too low**
  - **Range: 1-4**
  - **Initial rates, produced volumes, and decline curves confirm that this is not an issue.**
3. **Hydraulic fracturing will “frac down” into the wet Tuscaloosa sands below**
  - **Not aware of any well that has high water production indicating that this has occurred.**
  - **Several pilot holes took conventional core below the TMS and confirm very high frac gradients.**
4. **Too expensive and uneconomic**
  - **Final hurdle for the play**
  - **Only 50 completions to date**
  - **Would rather have mechanical challenges than reservoir rock challenges**



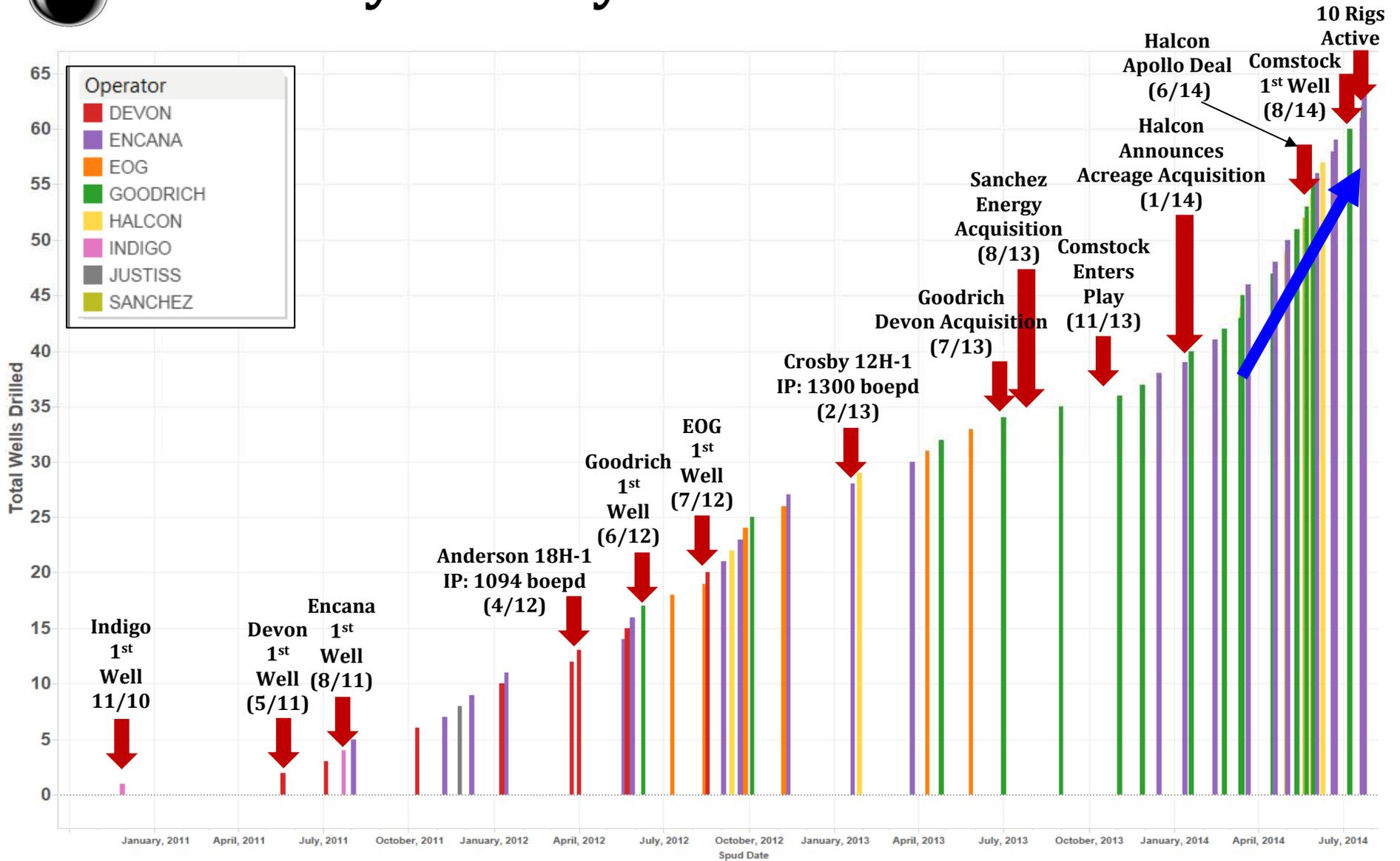
# Play Benchmarks



- Current lease terms: 3 year paid up lease, 2-3 year extensions
- 50 Completion results
- Long Laterals – Encana, 8932'
- Drilling Time – Recent decrease from 42 to 27 days
- IP: Best – 1540; Range 1000-1540 boepd
- Frac stages – 32 max; average 22
- Frac proppant: 475-600k/stage proven best practice
- Goodrich Crosby 12H-1: 170 MBOE in 14 months
- EUR & Decline
  - 450-850 MBOE (Crosby 800 MBOE)
  - 78-83% 1<sup>st</sup> year decline



# TMS Play History - Current Era





# Acreage Holdings



- Halcon: 307,000
- Goodrich: 300,000
- Encana: 200,000
- EOG: 180,000
- Sanchez: 80,000
- Comstock: 80,000
- Helis: 55,000
- Contango: 45,000



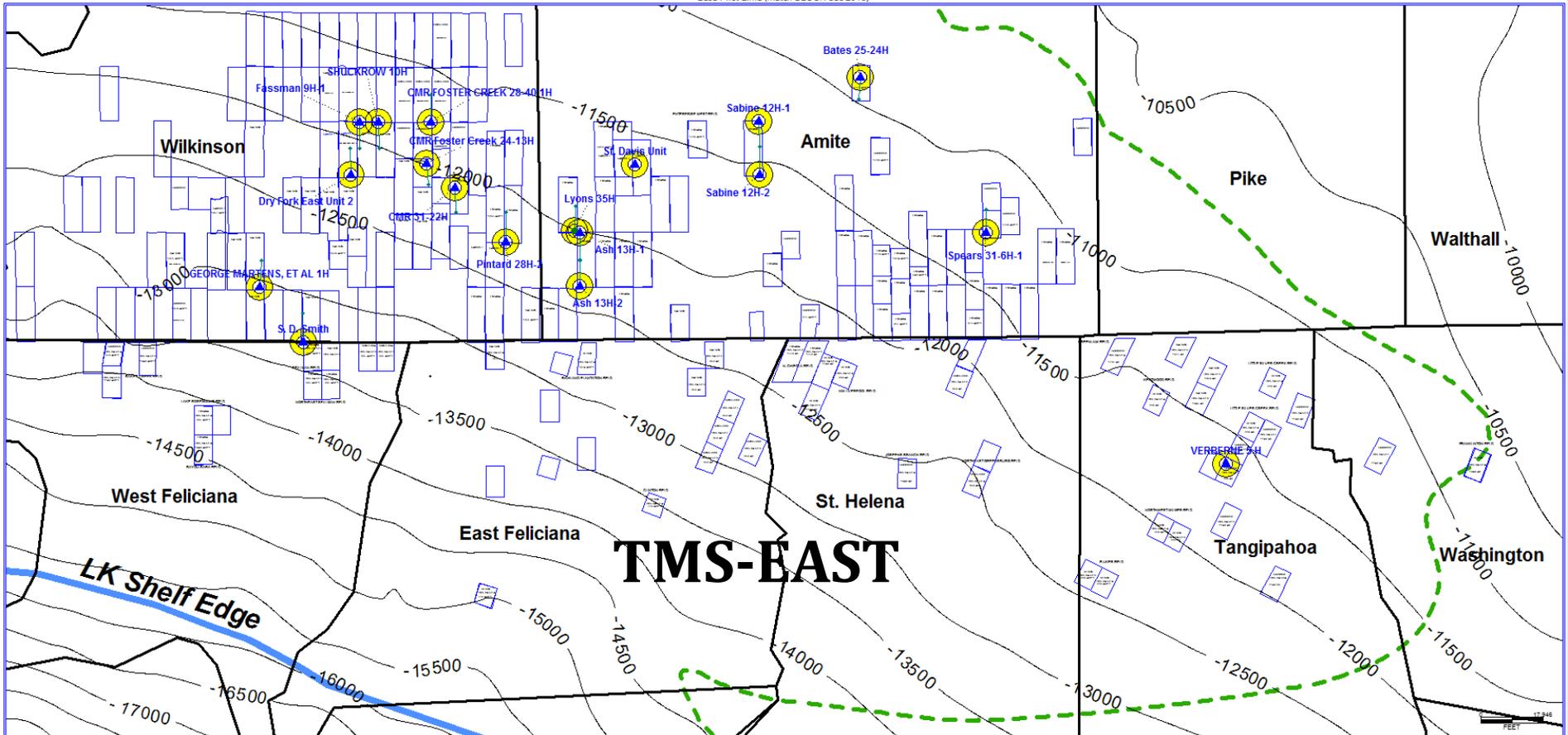
# Transactions



- Devon/Sinopec: ~\$5000/acre average across 5 plays (2012)
- EOG/MCX: \$2750/acre (2012)
- Goodrich/Devon: \$215/acre (2013)
- Sanchez Energy: \$1900-2950/acre (2013)
- Comstock: \$1000/acre average (2013)
- Undisclosed: \$475, \$800, \$1200, \$1500 (2013)
- Halcon: LA state lease: \$1650/acre 1<sup>st</sup> year bonus (2014)

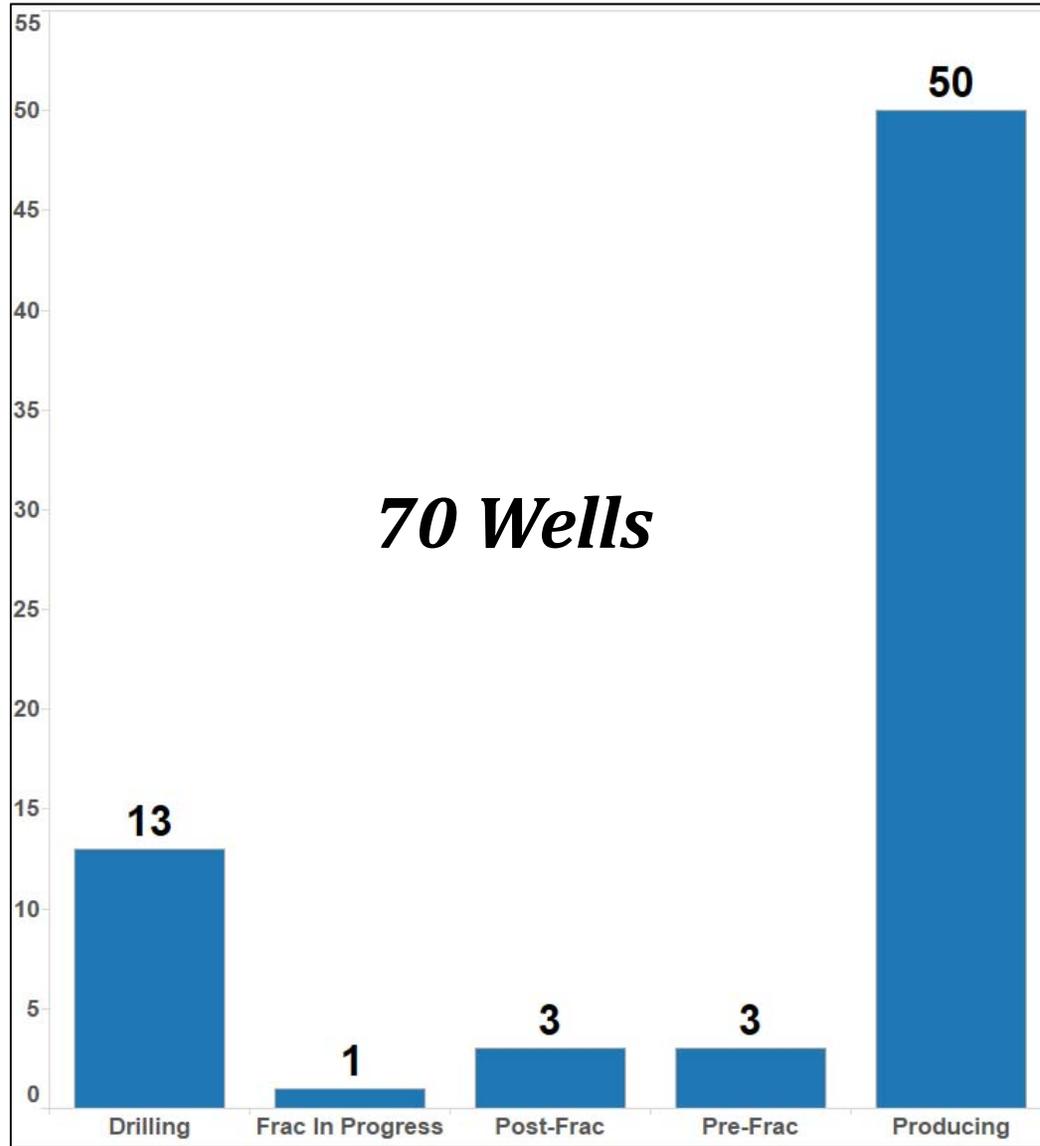


# Current Activity (Sept-2014)



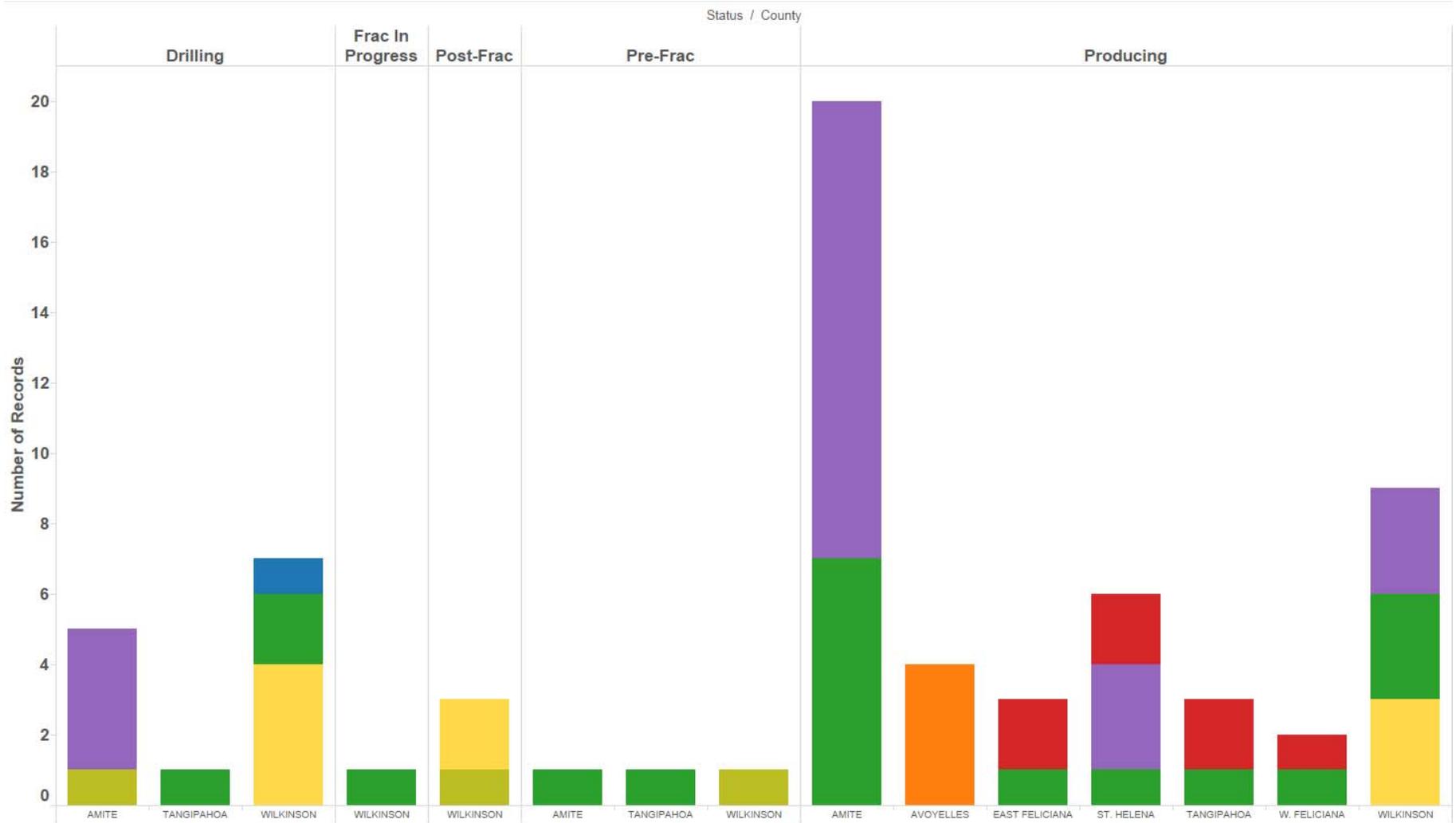


# Current Wells



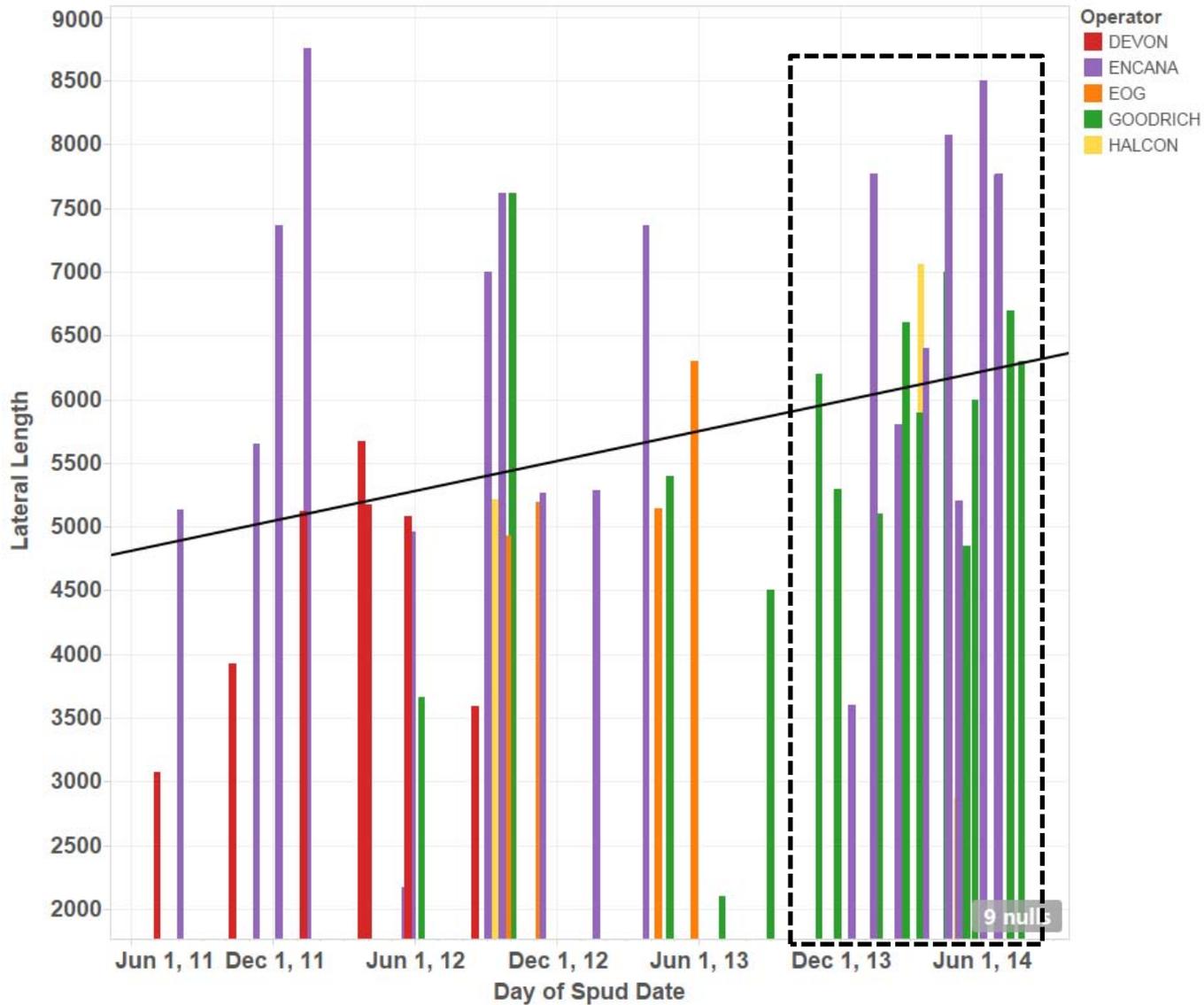


# Current Wells By County/Parish



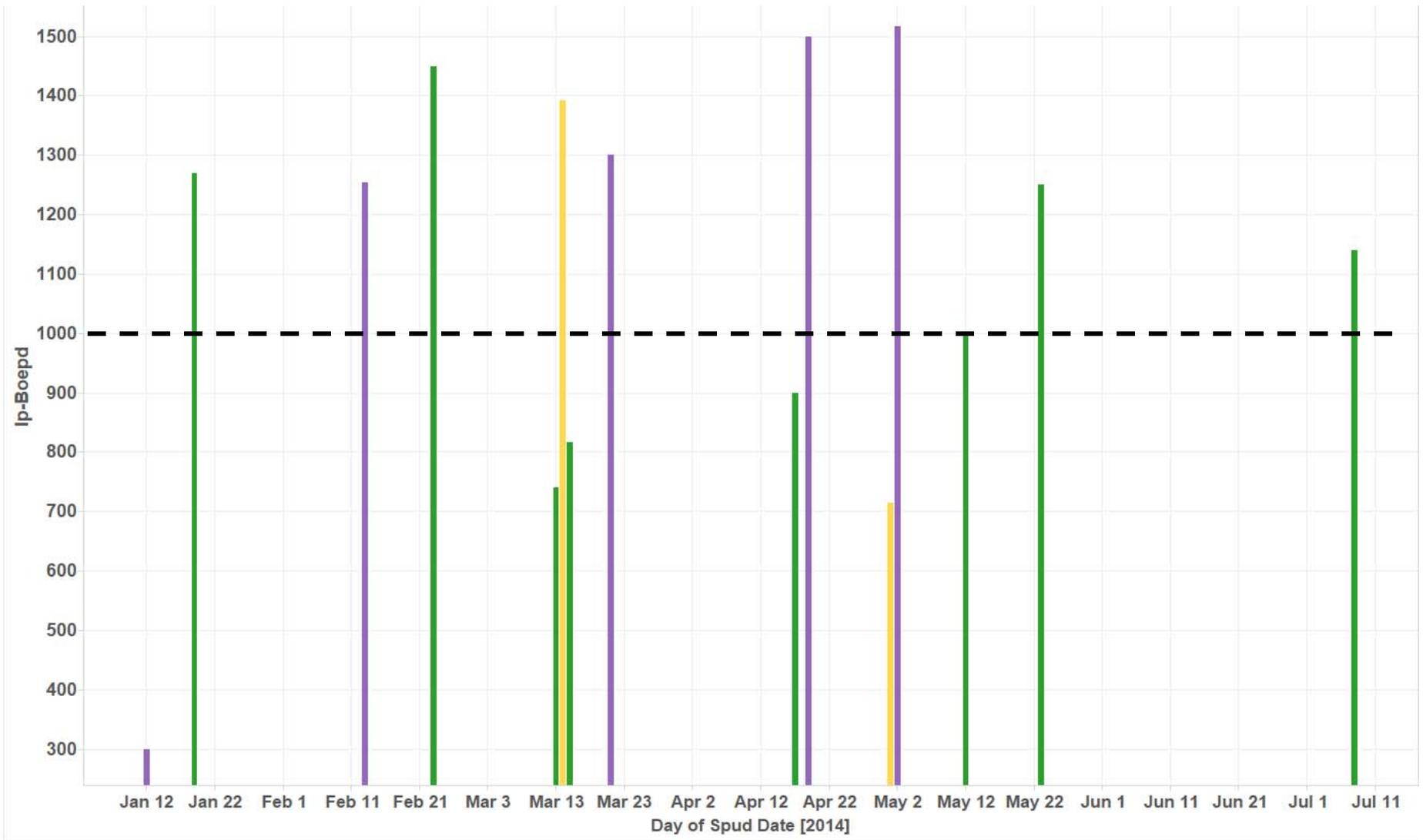


# Lateral Length



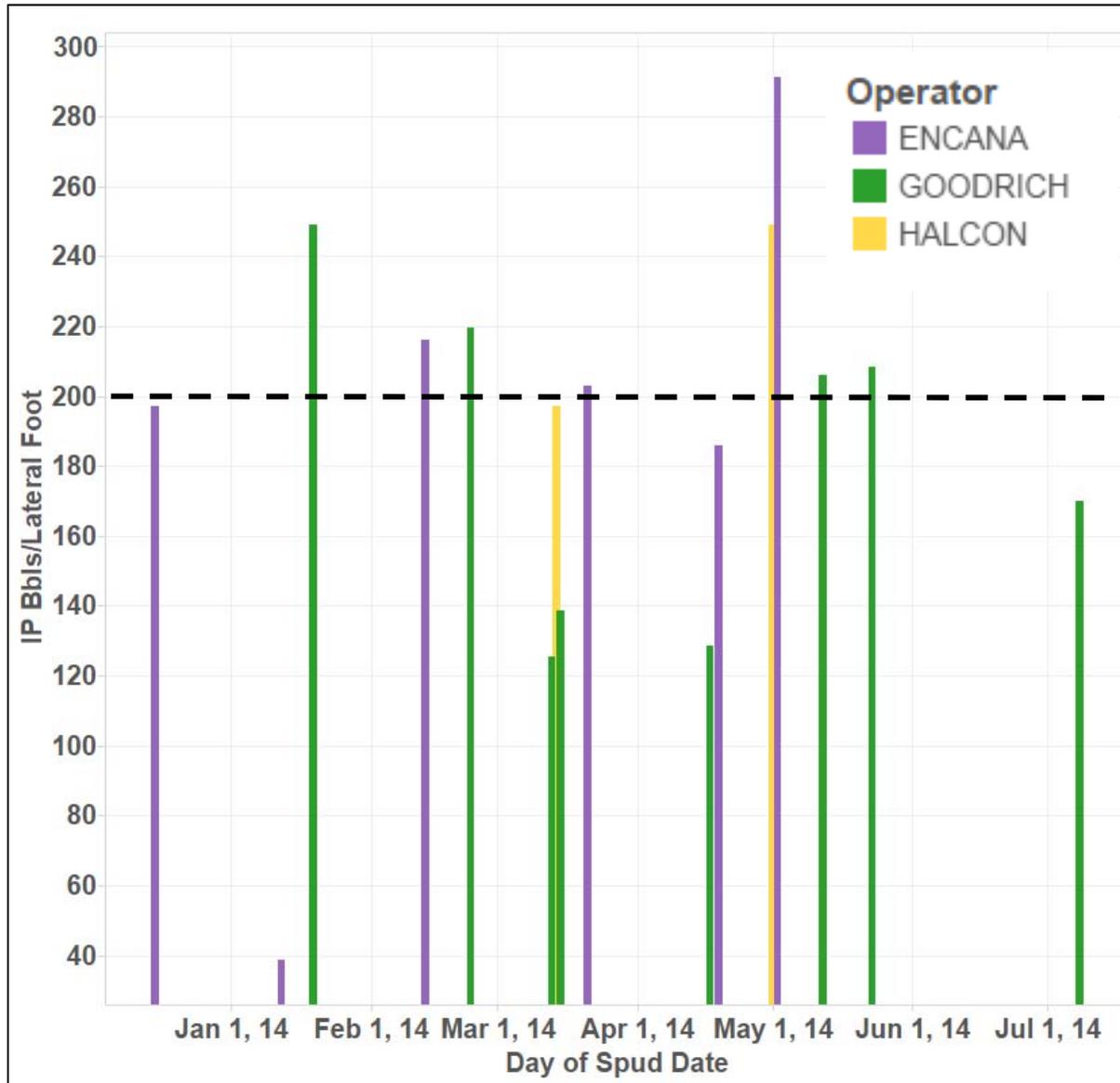


# Initial Potentials (2014)





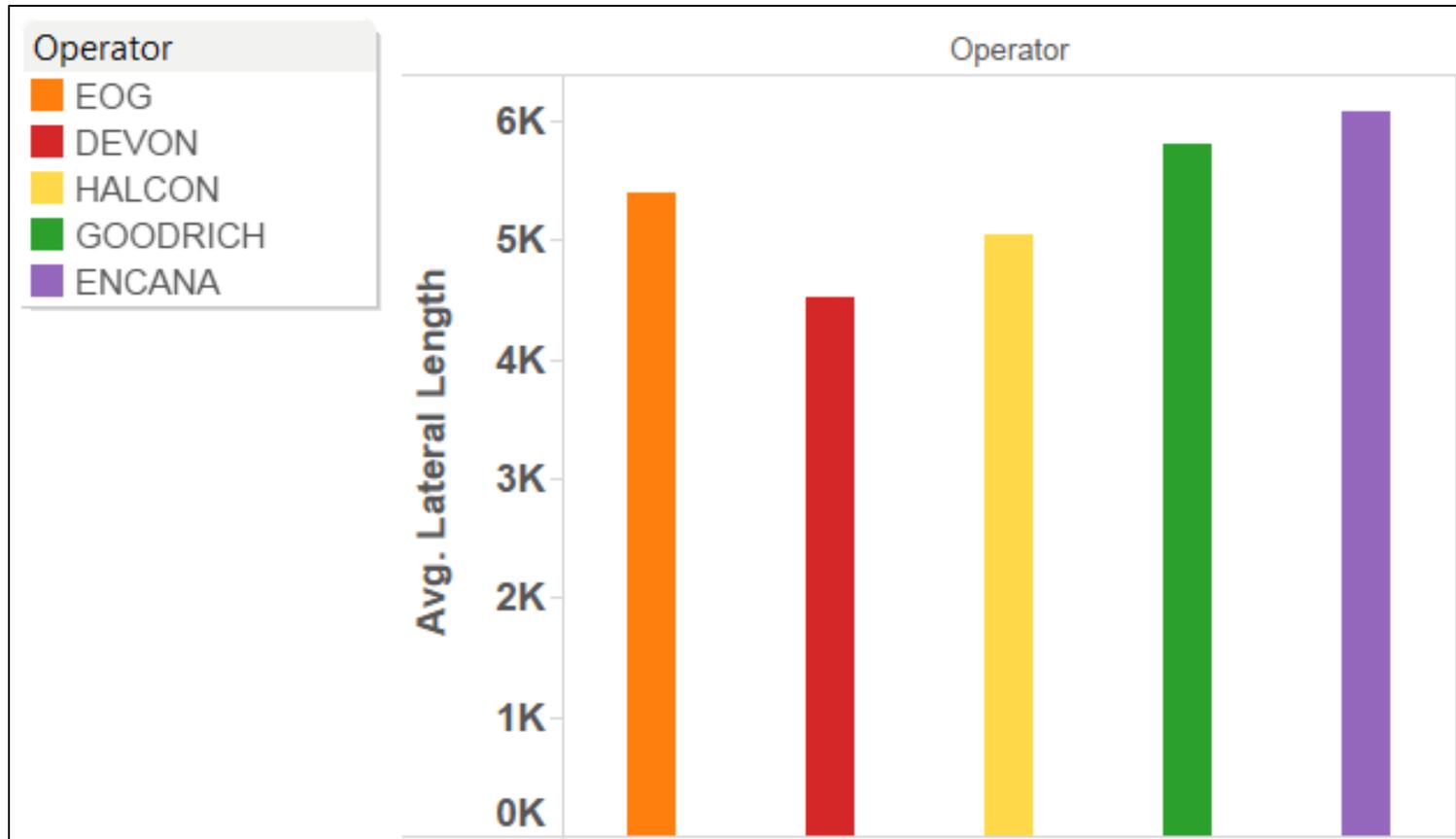
# IP Per Lateral 1000' (2014)



200 boepd per 1000'  
6000' lateral = 1200 boepd  
7000' lateral = 1400 boepd  
8000' lateral = 1600 boepd

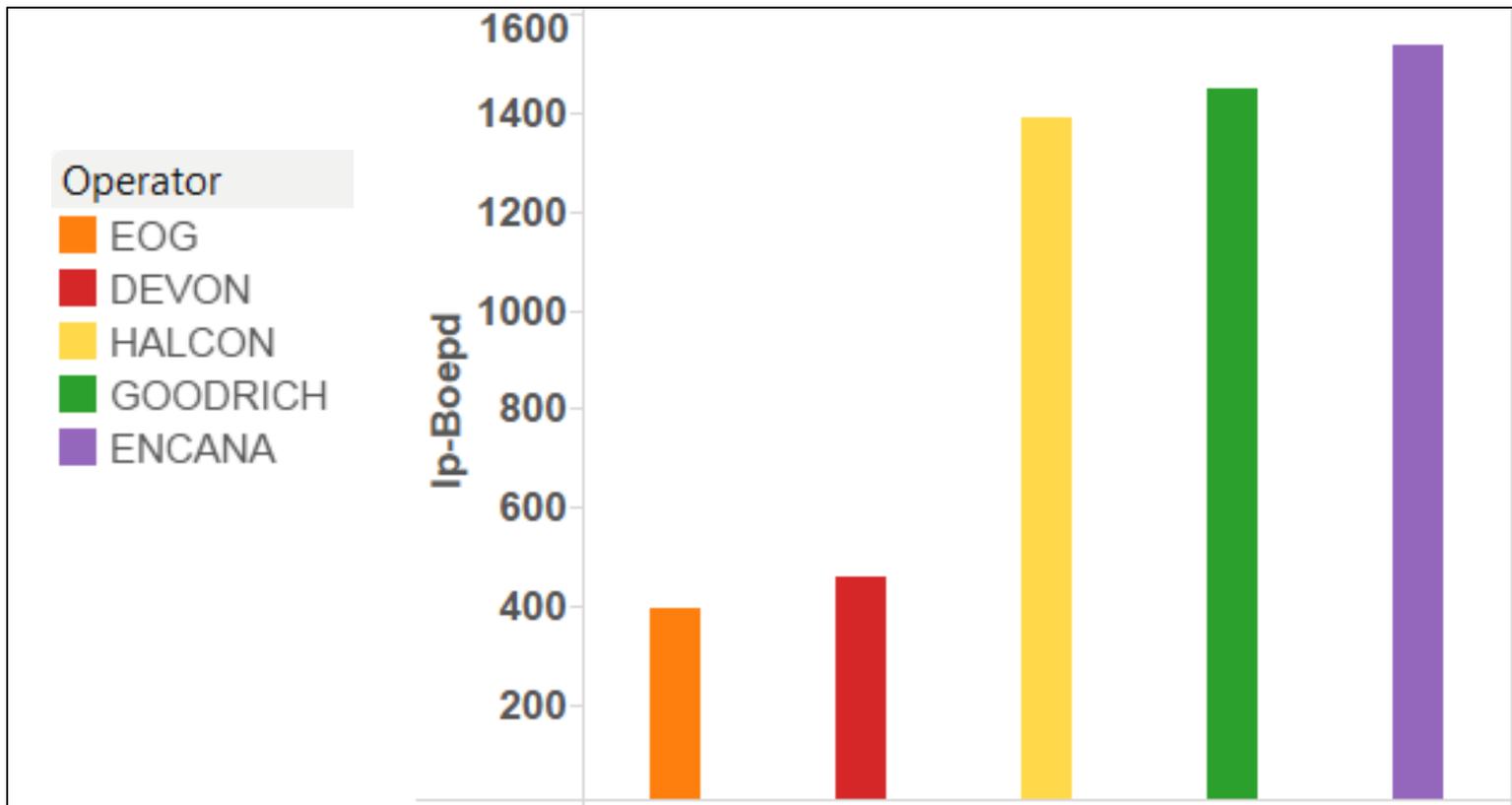


# Average Lateral Length



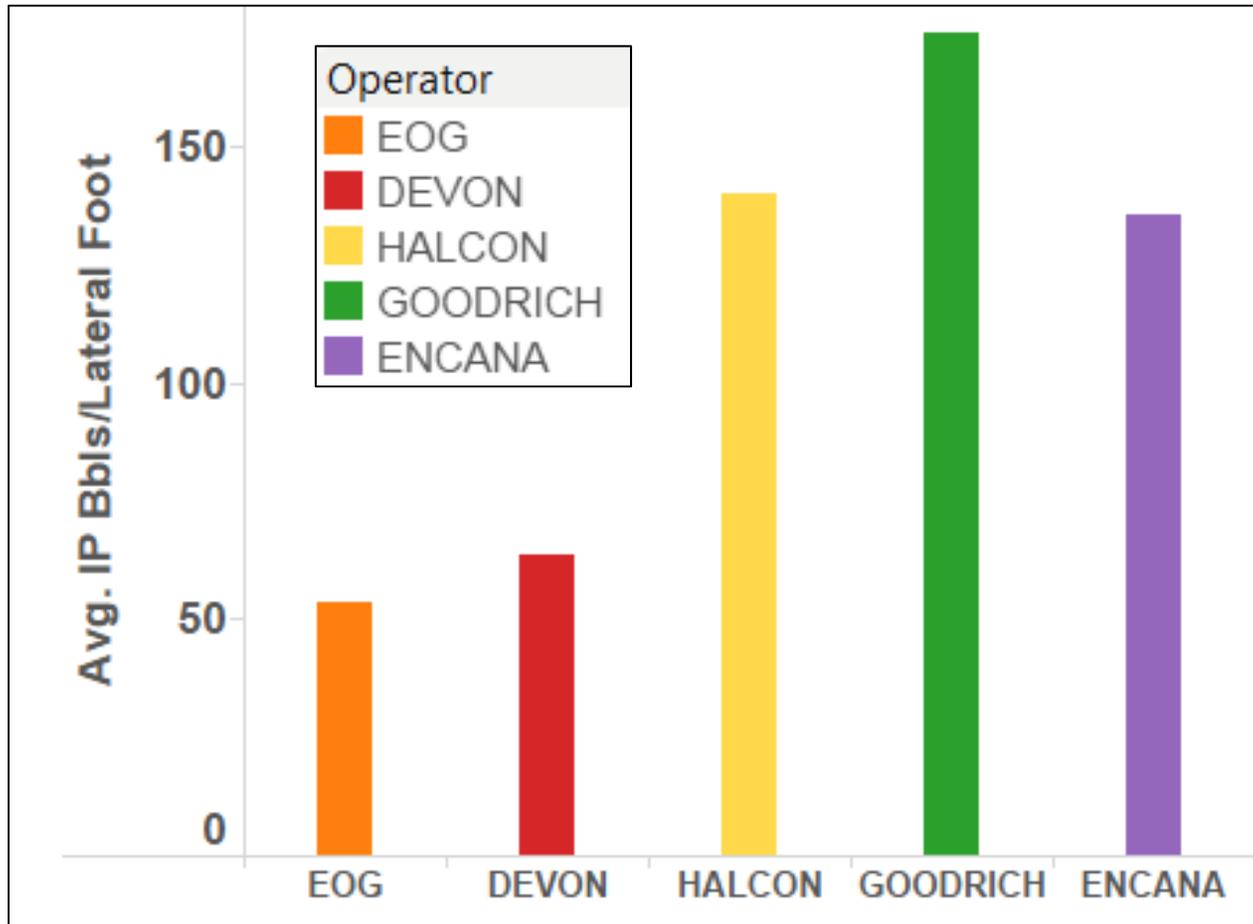


# Initial Potential (boepd)



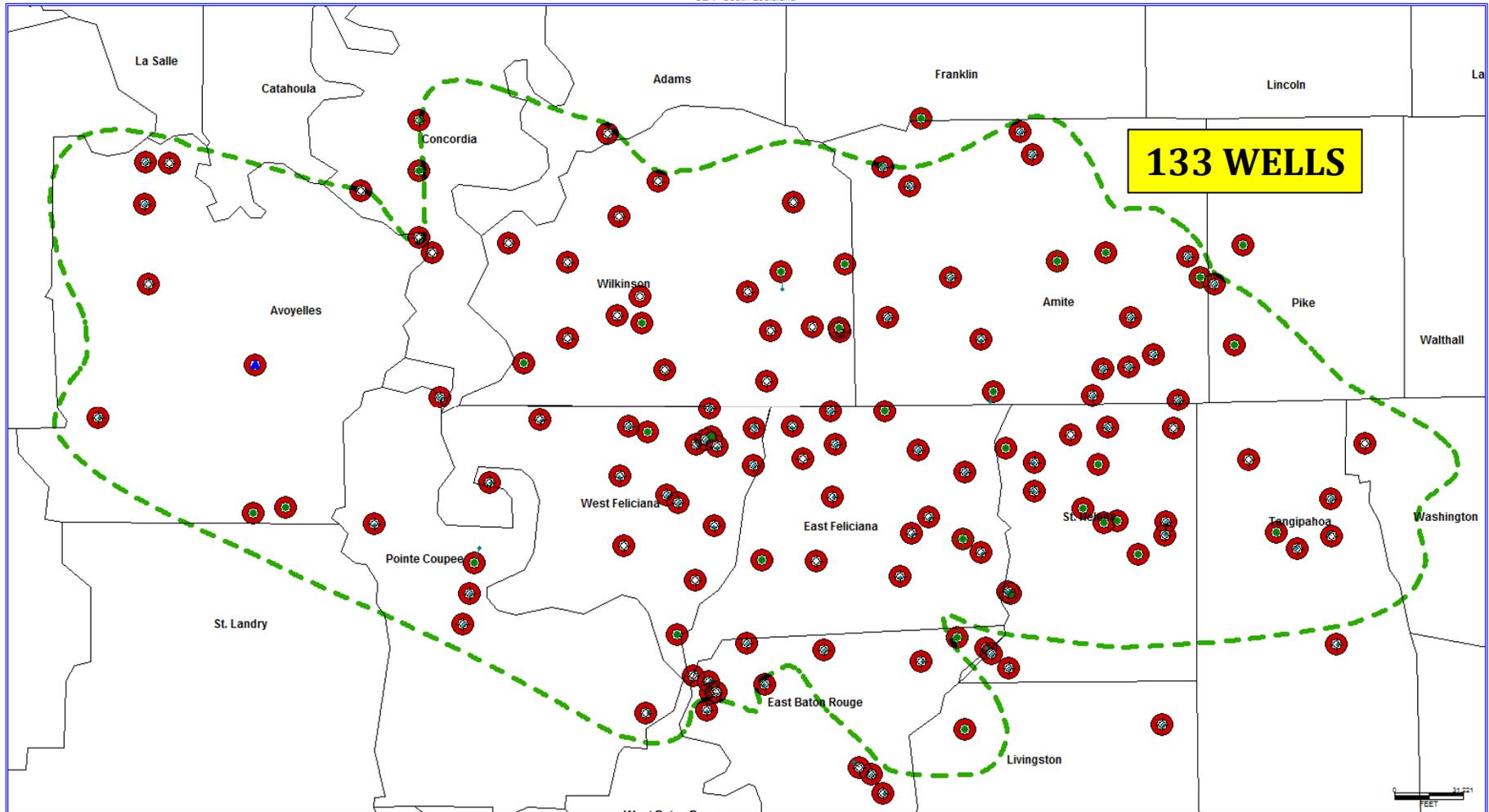


# Initial Potential (bbls/1000')



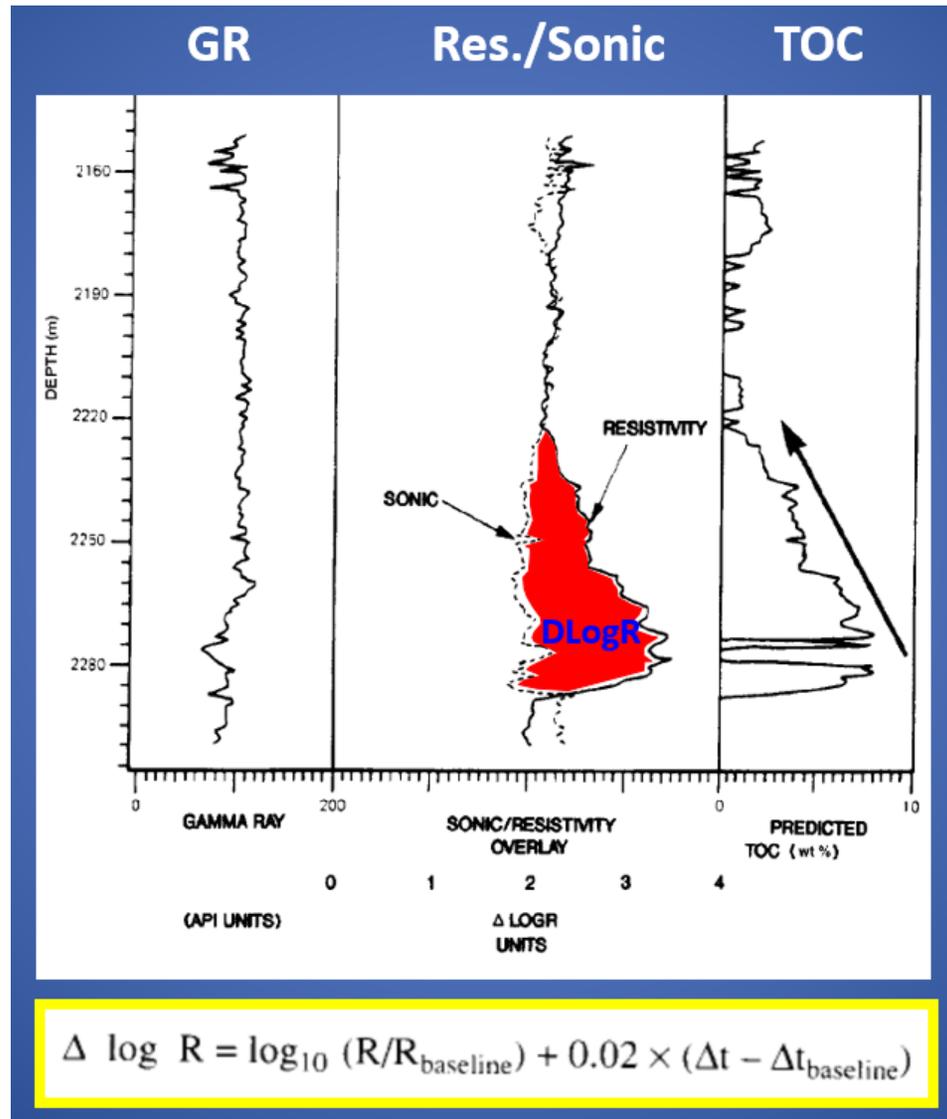


# Calibrating Well Results



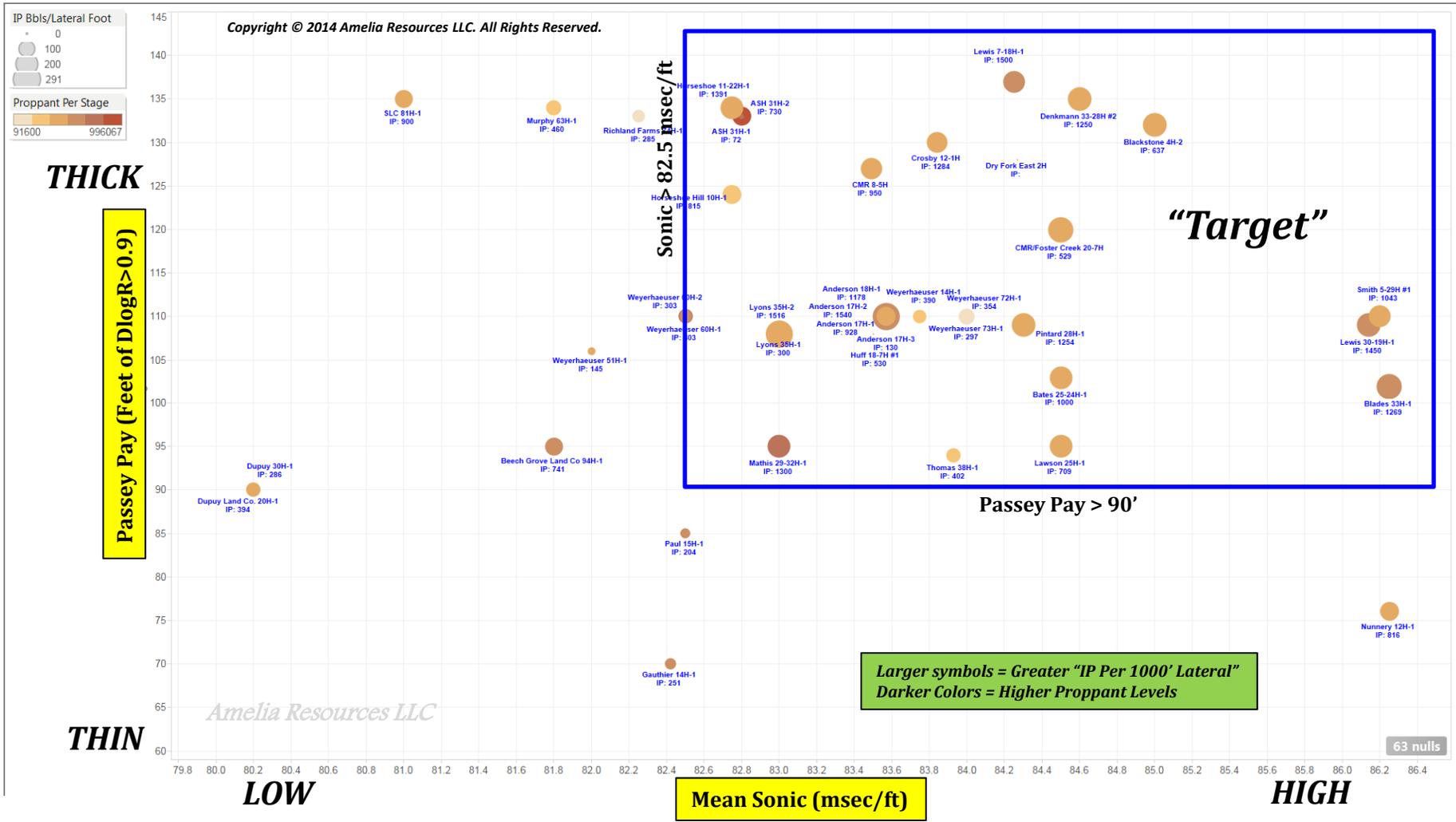


# Passey Method (Exxon 1990)



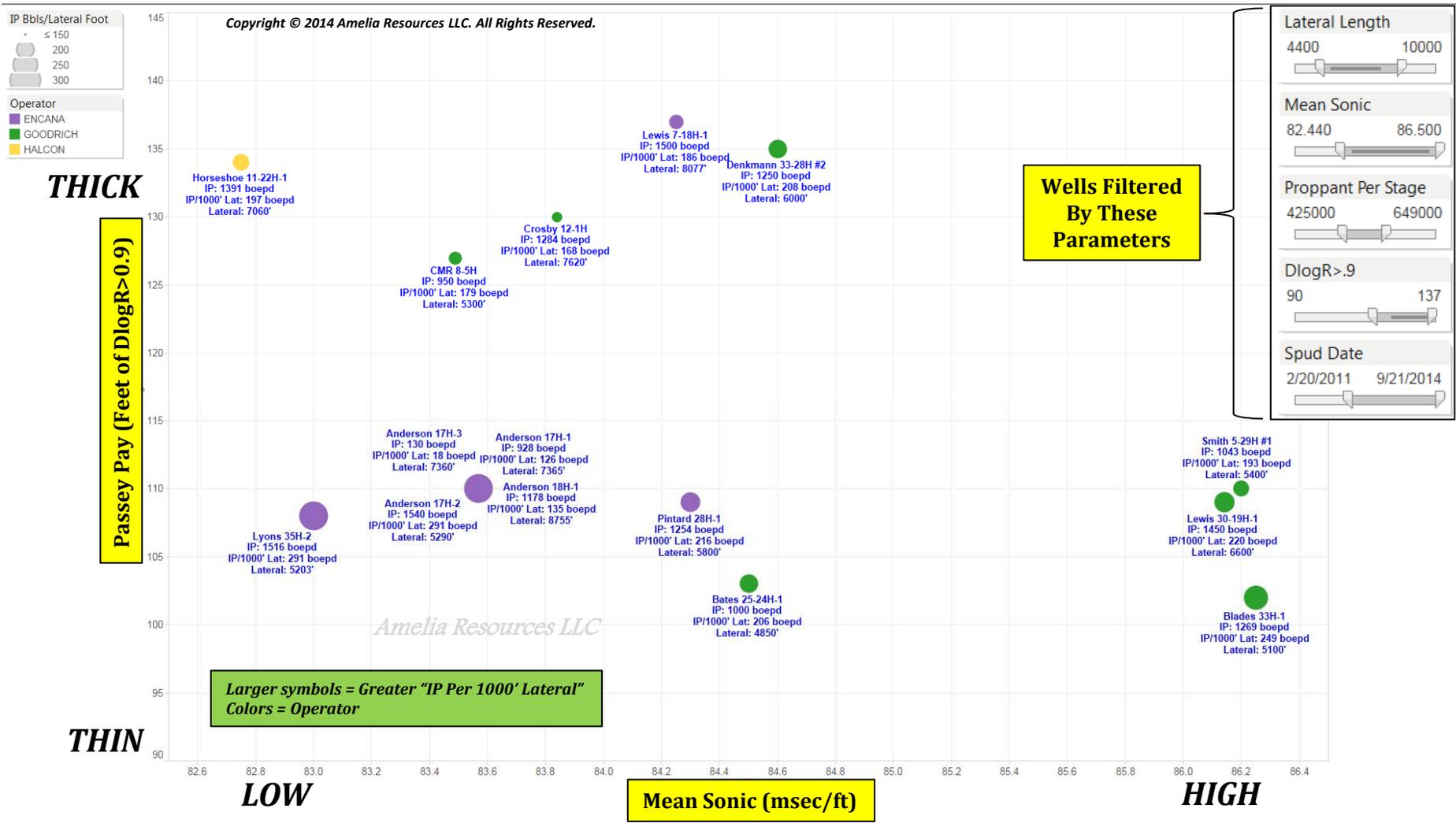


# Passey Pay, Mean Sonic, Proppant, IP (Bbls/1000')



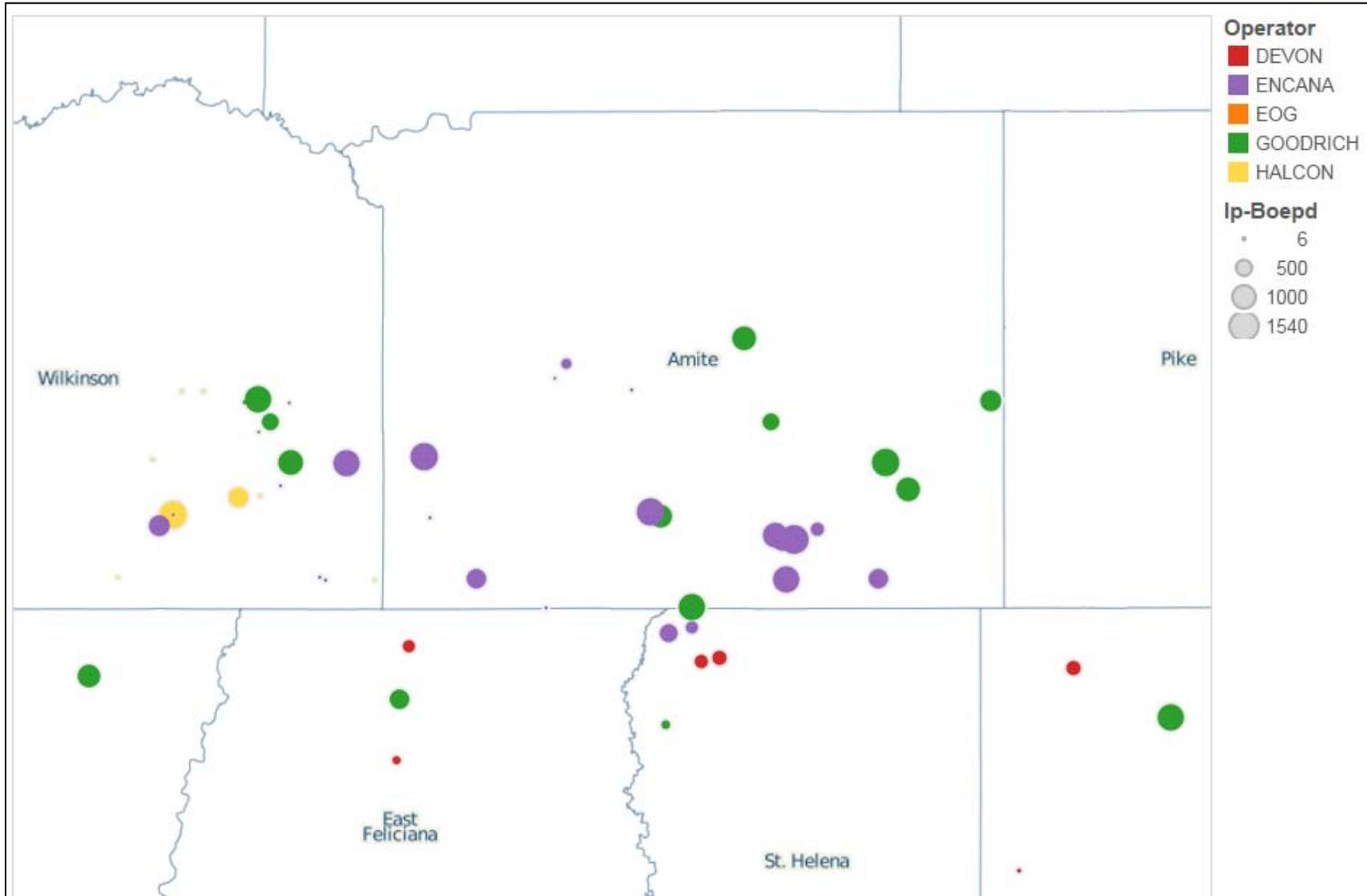


# Formula For Success



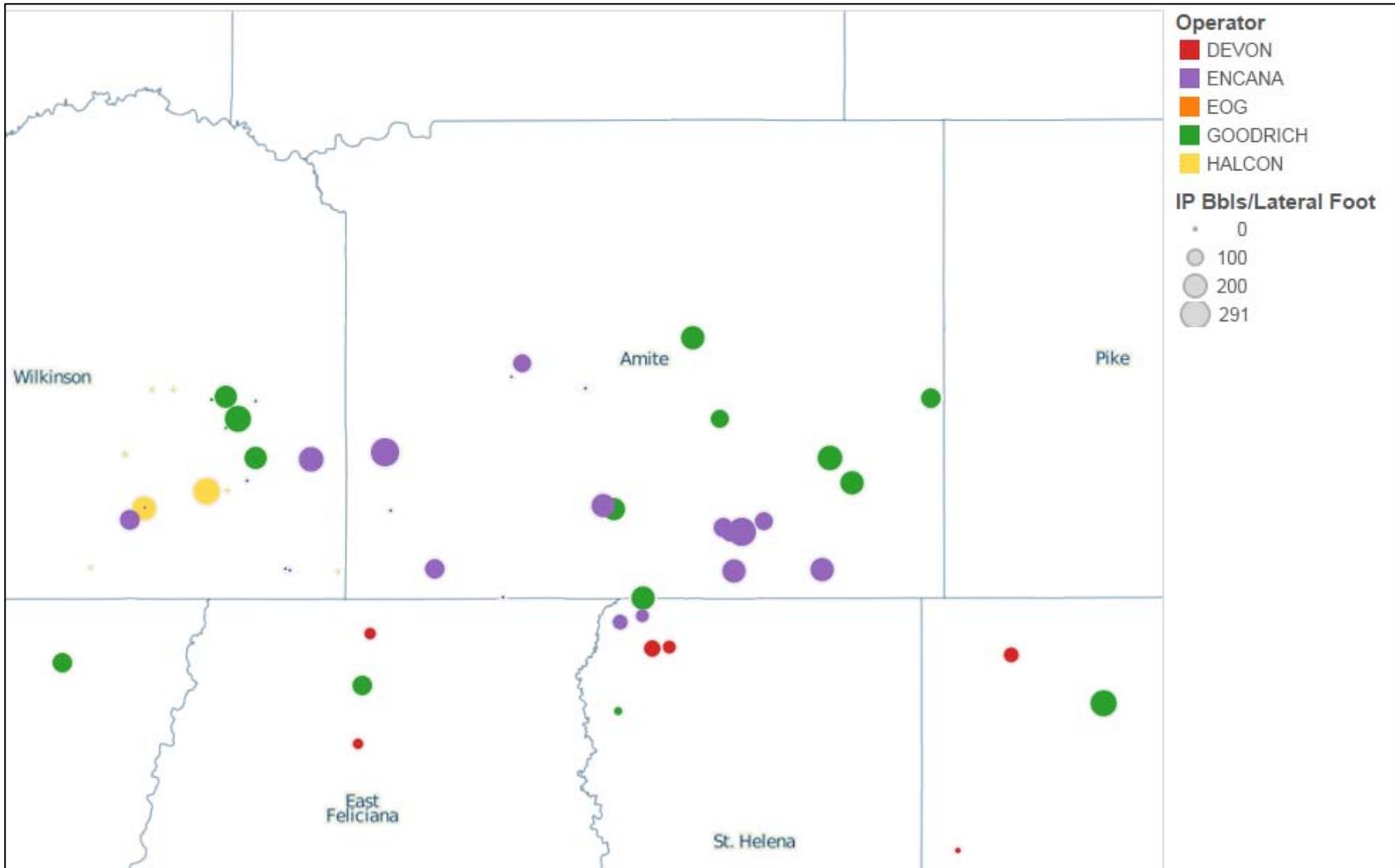


# Initial Potential (boepd)





# IP Per 1000'

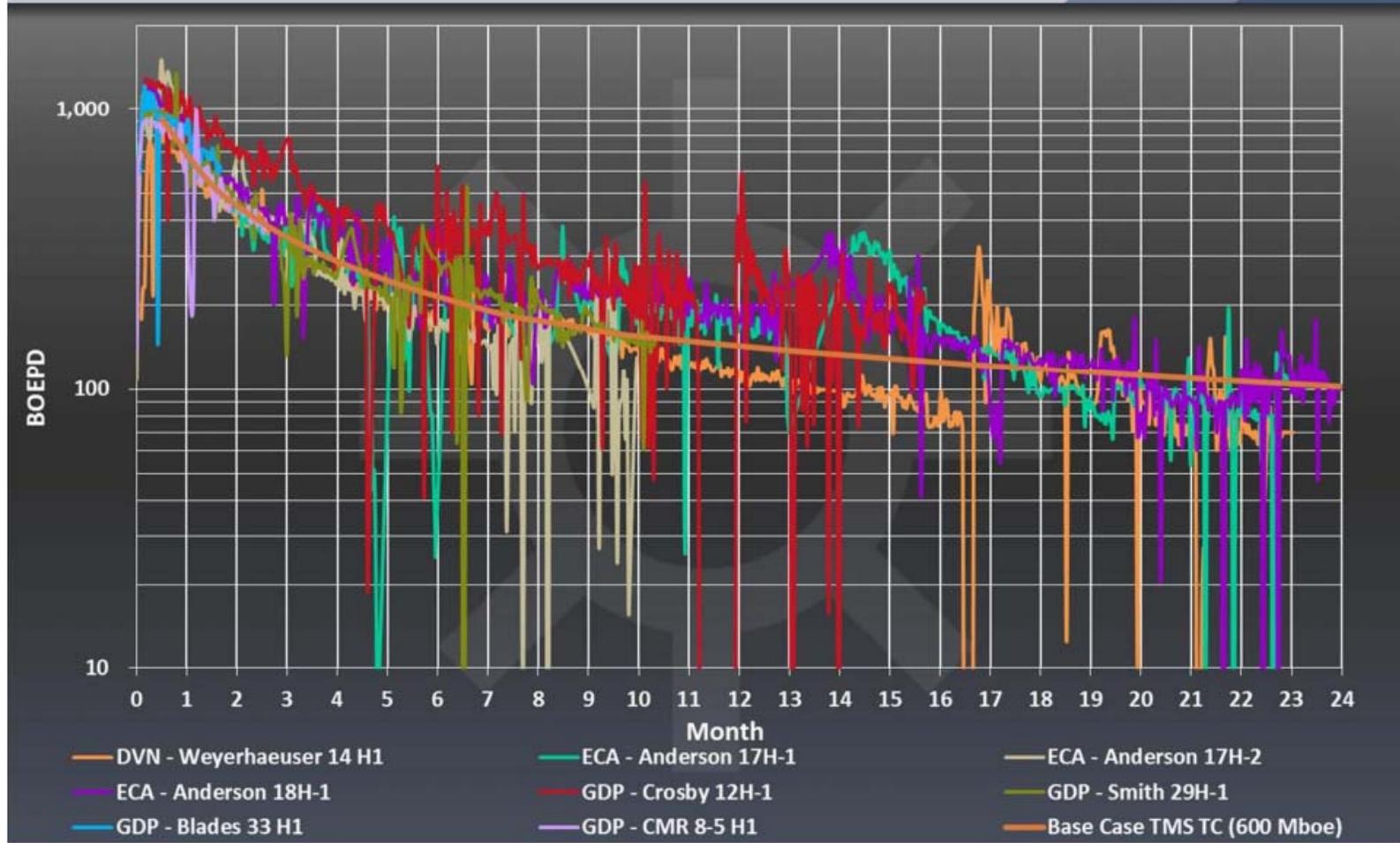




# Type Curve - 600 MBOE



TMS BASE CASE TYPE CURVE (600 MBOE) 

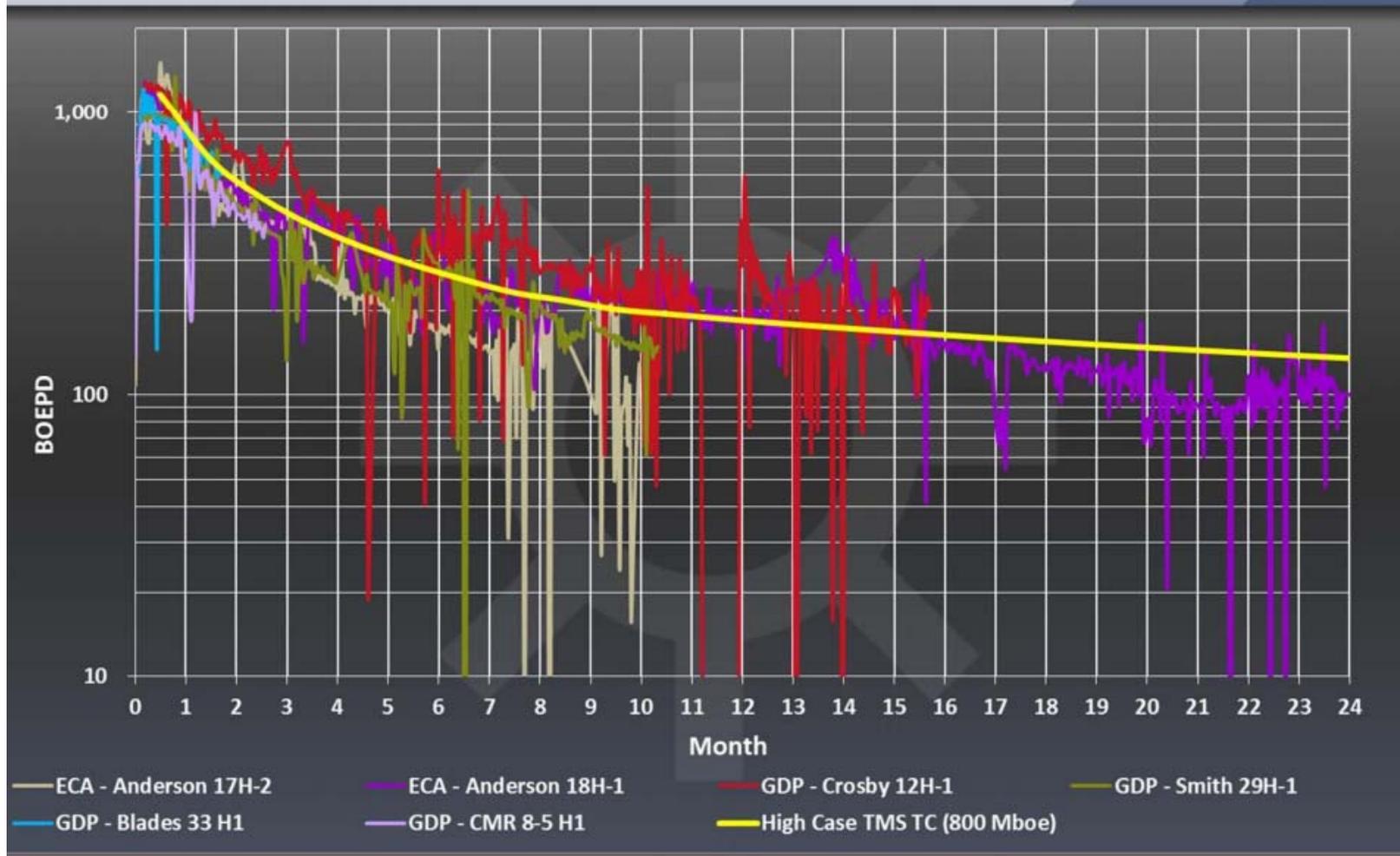




# Type Curve - 800 MBOE



TMS HIGH CASE TYPE CURVE (800 MBOE)





# Play Reserves



**9.1 Billion Barrels Recoverable**

## PLAY RESERVES

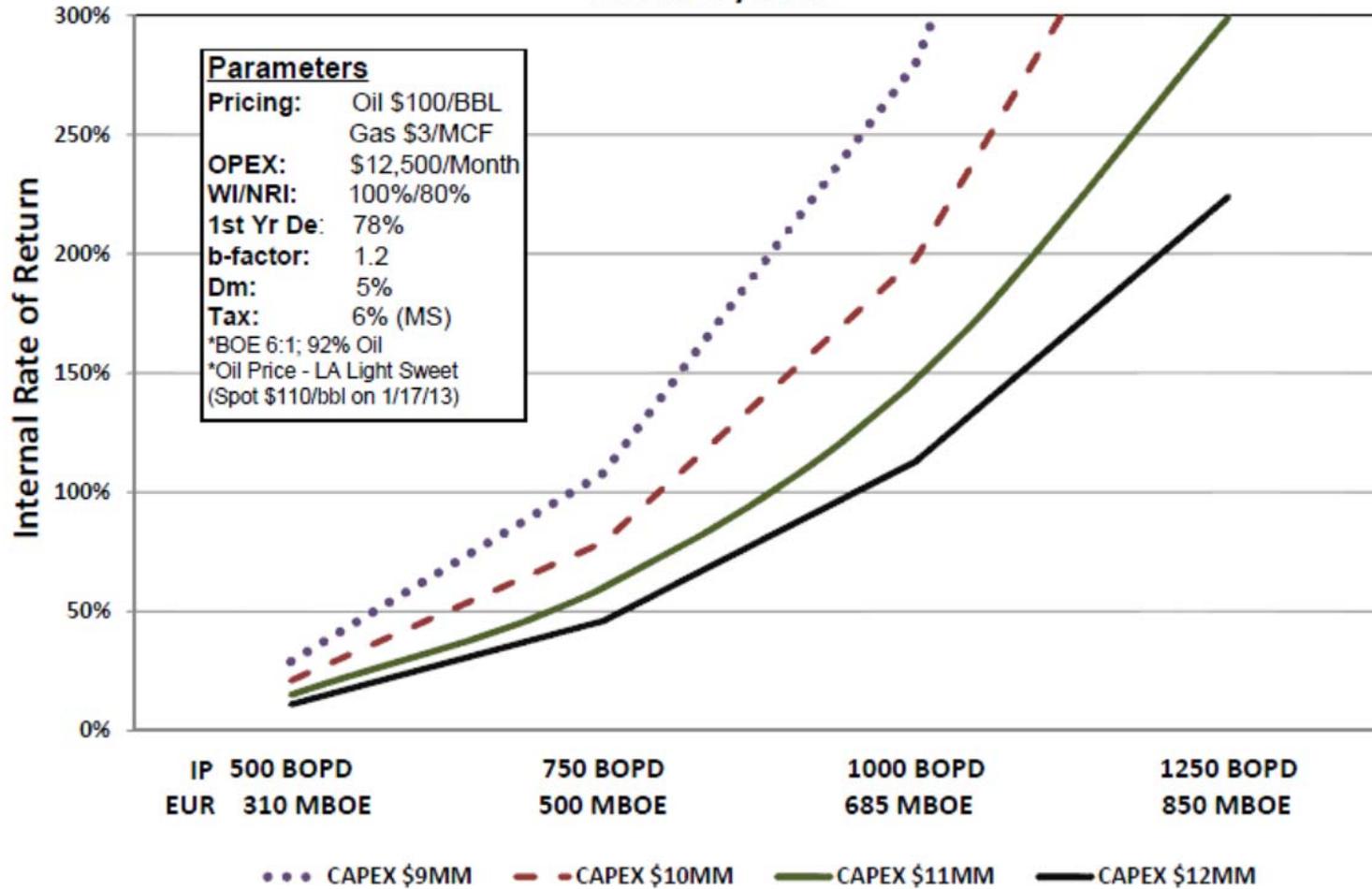
Height	Area	OOIP (BBL/AC-FT)	Recovery Factor	OOIP (MMBLS)	RESERVES (MMBLS)
75	2,660,441	350	6%	69,837	4,190
100	1,689,971	350	6%	59,149	3,549
125	511,325	350	6%	22,370	1,342
150	29,686	350	6%	1,559	94
					<b>9,175</b>



# Economics

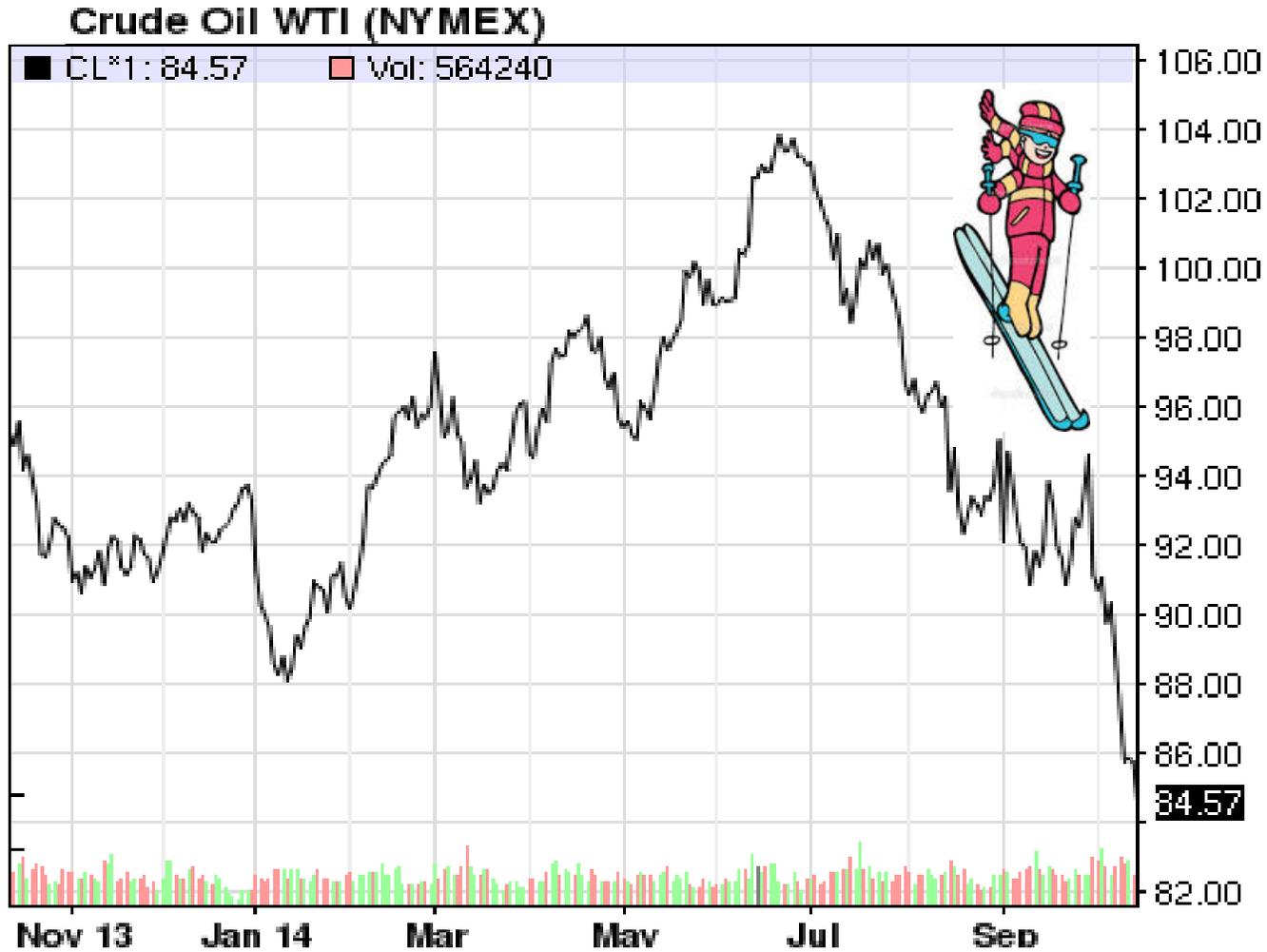


### Future TMS Economics IRR vs IP/EUR





# Oil Prices

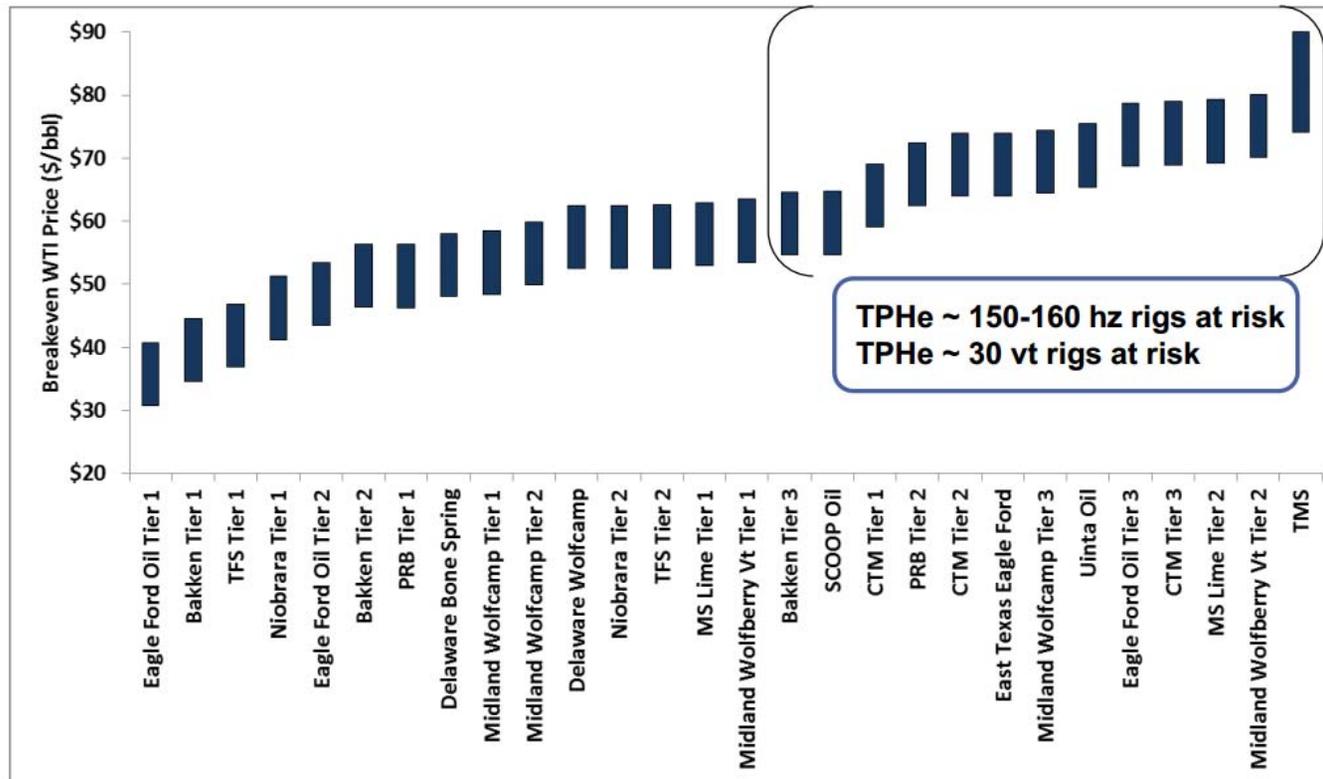




# Oil Economics



## Oil Economics – Price Required for 10% ATROR\*



CTM refers to the Cleveland, Tonkawa, Marmaton  
 \* Economics assumes \$3.75 /mcf NYMEX  
 Source: Company Filings & Presentations, RigData, TPH Research



# The Future



- **2014**
  - **Derisk the play**
  - **Lower costs, improve economics**
  - **Several new operators**
  - **Valuation escalation**
  - **Deeper pilot tests**
- **2015**
  - **Pad drilling**
  - **Joint ventures**
  - **Deeper drilling**
  - **Infrastructure challenges**



# 2014 - Things To Watch



- **Oil Prices**
- **TMS-East**
  - **Drilling: Encana, Goodrich, Halcon, Comstock, Sanchez**
- **TMS-West**
  - **EOG - October**
- **TMS-Far East**
  - **Helis - December**



# Horizontal Permits



**EAGLE FORD – 16134**

**UTICA – 1532**

**TMS - 131**

*The TMS is in its infancy*