

- Resource Plays - STACK AND SCOOP Overview

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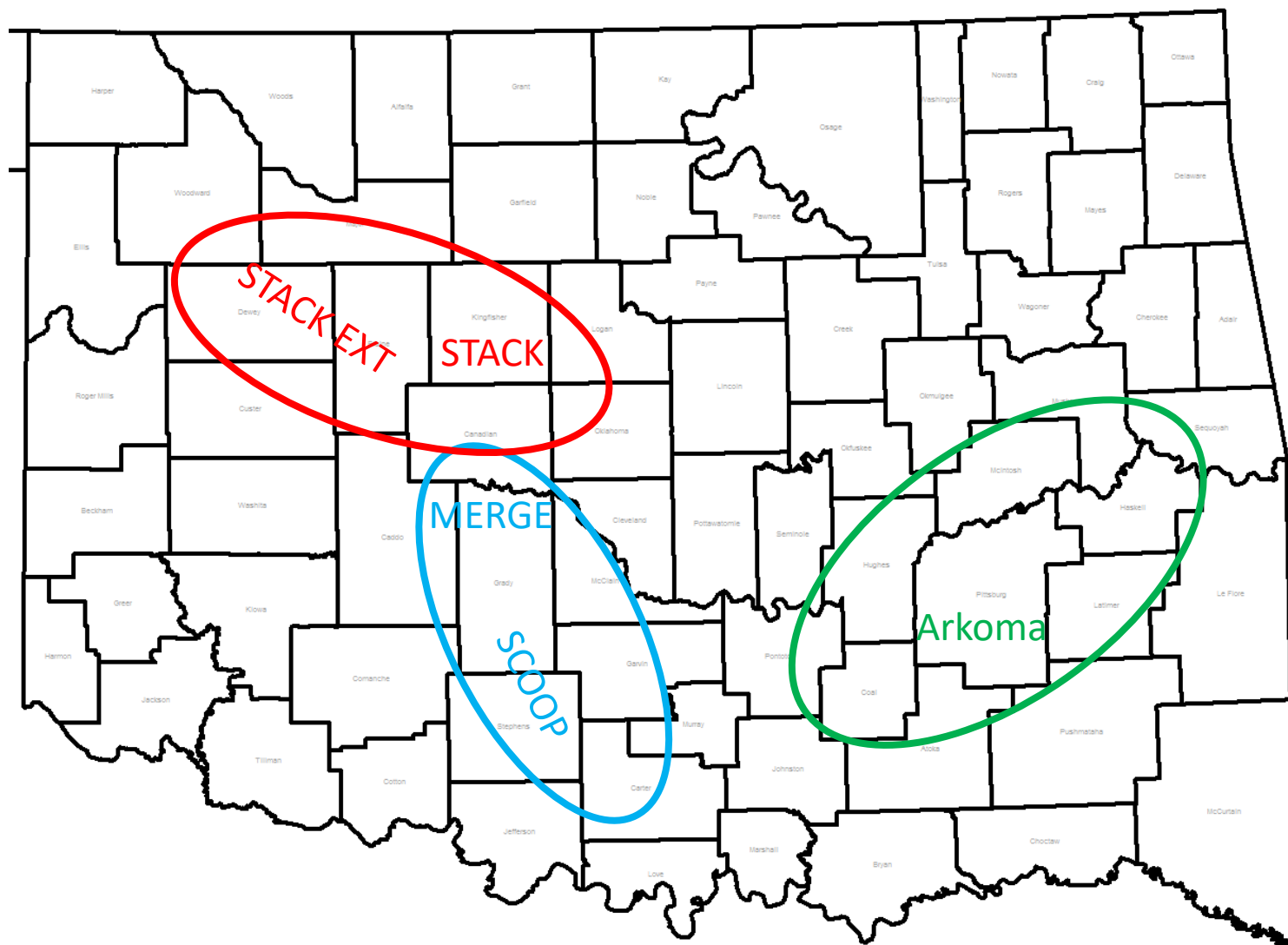
The Gulf Coast Business Development Group
Society of Petroleum Engineers

The views presented here are the opinions of the presenter



Staghorn
PETROLEUM, LLC

STACK / SCOOP / Arkoma – Locator Map



The Evolution of Resource Plays

- 1990-1994 – Austin Chalk Horizontals
- Pre-2009 – Fayetteville/Haynesville/Barnett/Marcellus
- 2009-10 – Anadarko/Arkoma/Bakken/Eagleford
- 2011-12 – Miss Lime/Utica/Niobrara/Permian
- 2012+ – Powder/Uinta/Eaglebine/TMS/Brown Dense
- 2013 – Present – SCOOP/STACK/Springer/Eagleford ++

Resource Plays – Key Phases

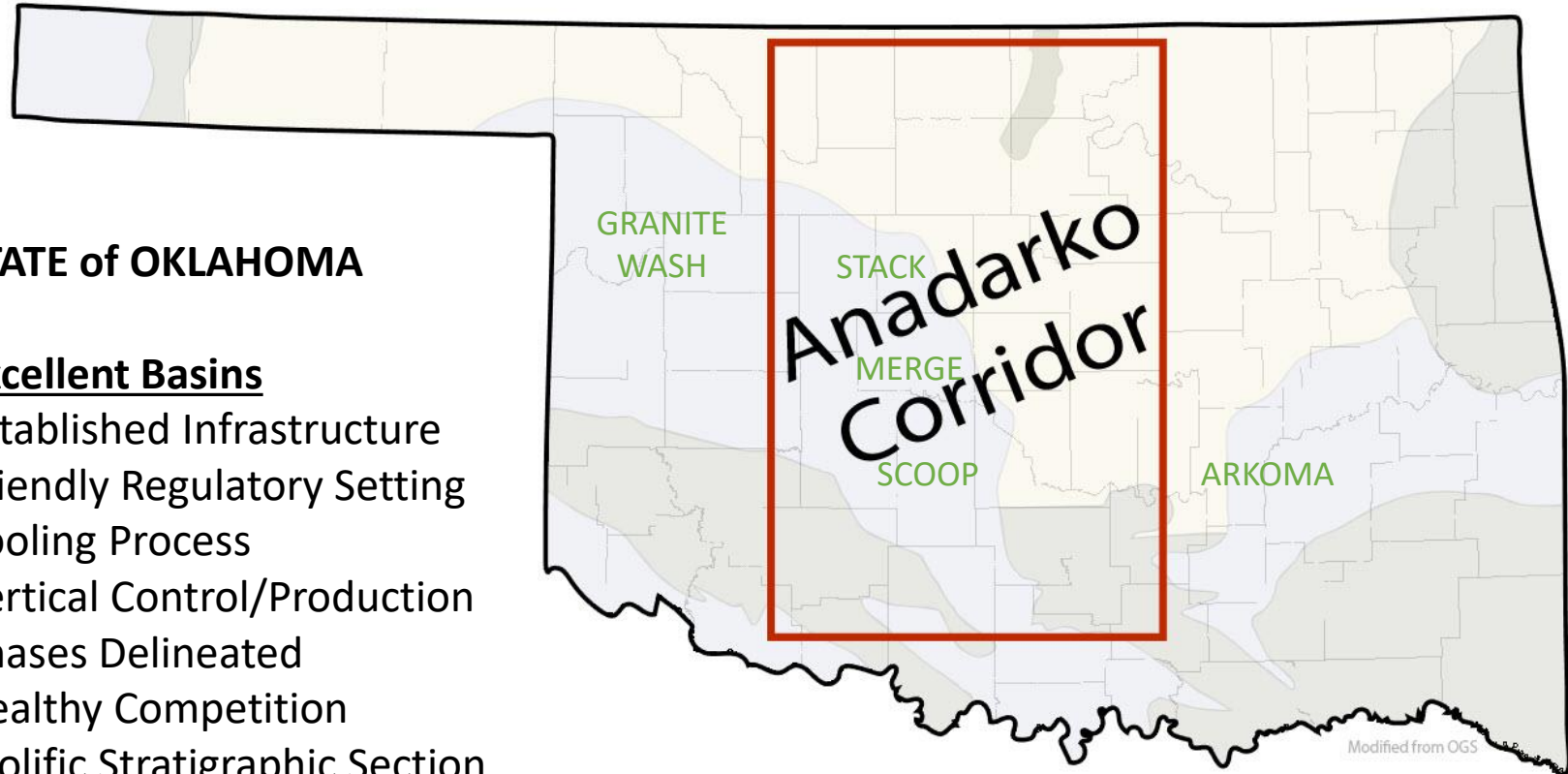
- **Austin Chalk Horizontals – Early Days of Delineation Methods**
 - Technology – wellbore imaging, seismic for fractures, connectivity, water fracs
 - Shift from conventional economics
 - Optimized for longer term production
- **Arkoma Woodford – “Perfect” Rock**
 - Allowed initial development at scale – very brittle and fractured
 - Gas market drove IRR
 - Proppant Placement - Plug and Perf technology
- **SCOOP Woodford – Strong Type Curves**
 - Delineate HC windows for IRR sweet spots
 - Optimize... well spacing, stage spacing, proppant/fluids, drilling methods
 - Ramp up for scale – strong well performance drives IRR
- **STACK Meramec – Oil Shift with a New Play**
 - Transfer of SCOOP learnings to enhance assessment
 - Adapt to new rock type – petrophysics, core, reservoir modeling
 - Continued optimization improves IRR
- **SCOOP Springer – Not perfect but foreshadows future**
 - Demonstrates the potential for new plays to emerge in your backyard
 - Excellent ROI and illustrates the industry’s ability to adapt quickly
 - Example of unconventional/resource play dividing line

Anadarko Corridor

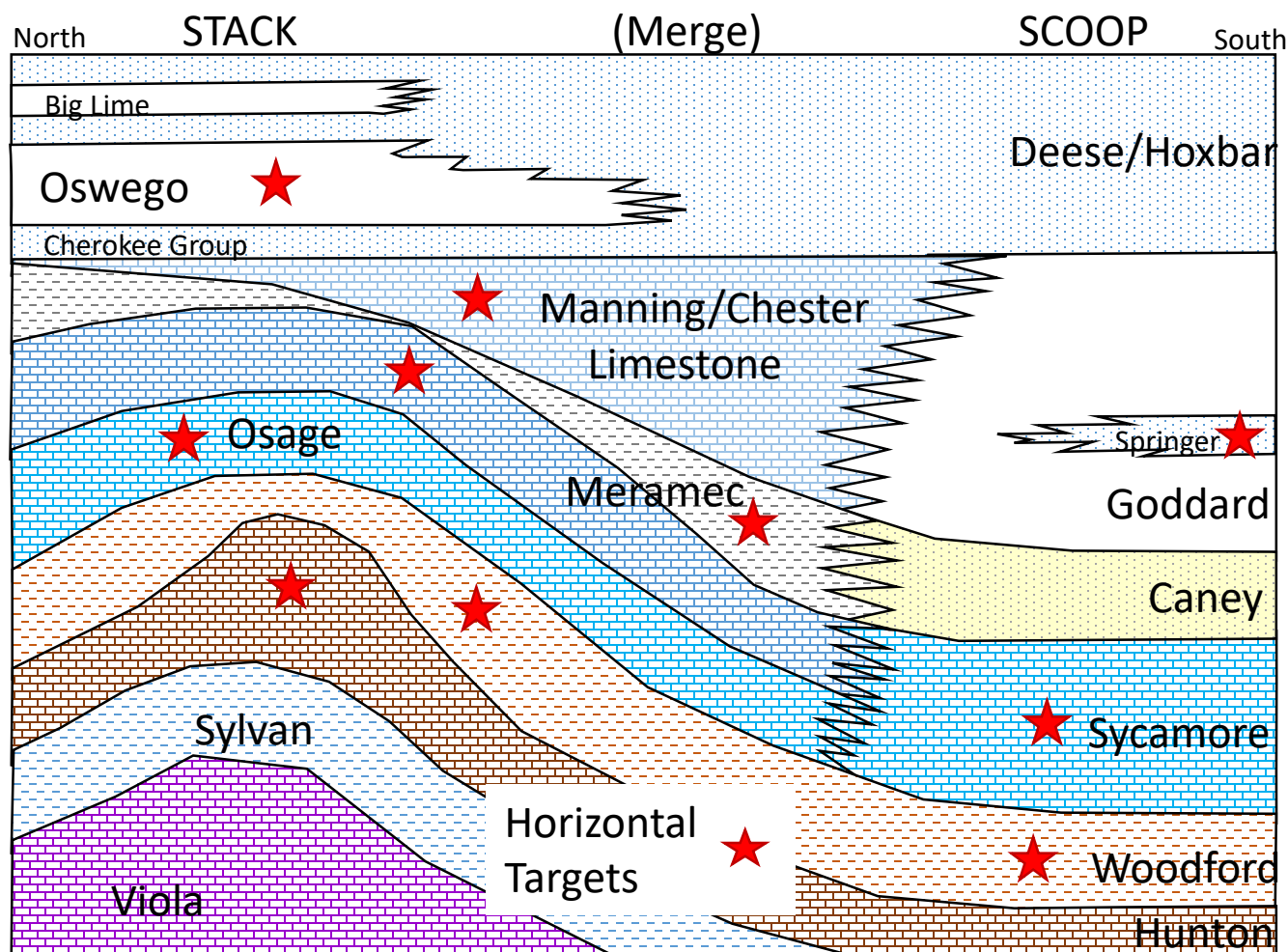
STATE of OKLAHOMA

Excellent Basins

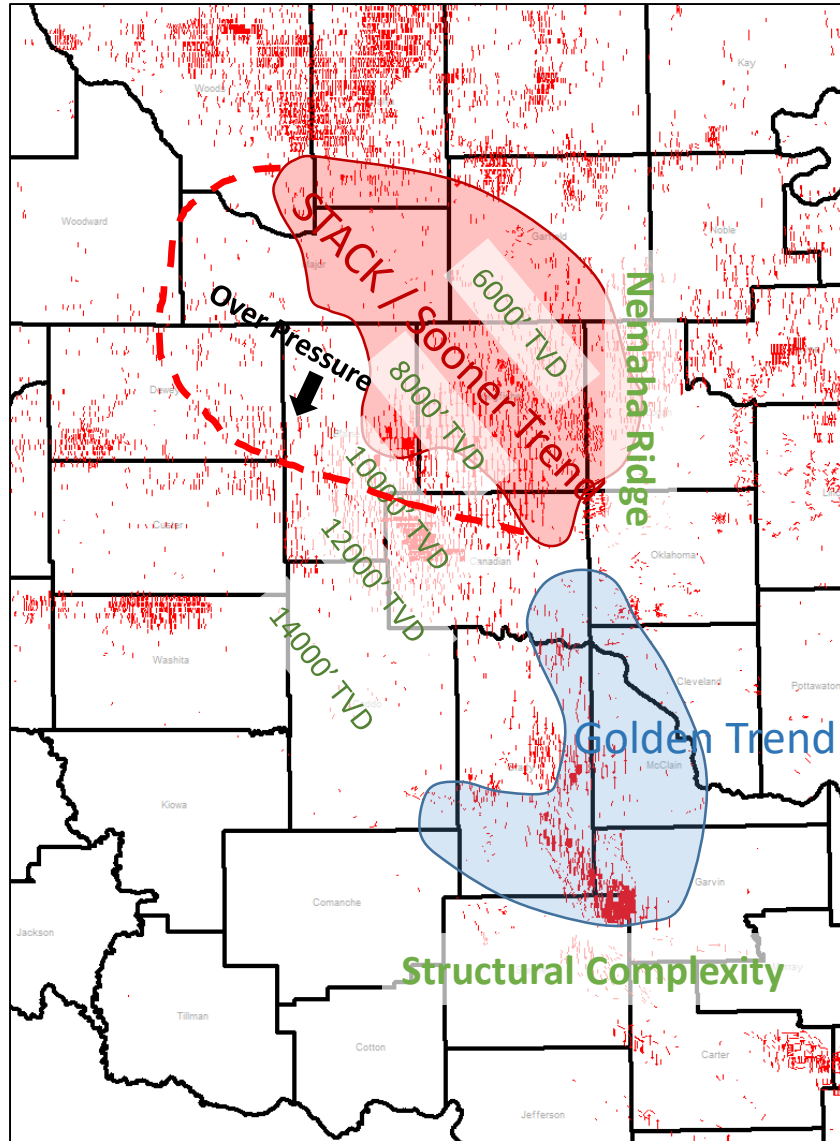
Established Infrastructure
Friendly Regulatory Setting
Pooling Process
Vertical Control/Production
Phases Delineated
Healthy Competition
Prolific Stratigraphic Section



The Anadarko Corridor Section



Horizontal Re-development of Sooner Trend



STACK Area Sets Up Drilling Inventory

- ✓ World Class Source Rock
- ✓ Stacked Targets
- ✓ Shallowing up dip to N. East
- ✓ Deeper wells are over pressured
- ✓ Technology continues to deliver upside

The Resource Plays in the Oil Business

- Capital Efficiency drives everything from EPS to ROI
- Inventory drives scale to deploy substantial capital
- Excellent execution is essential; ideas are easy

History Repeats...

- People
- Placement
- Processes



Excellent execution at all levels
solves the “impossible”