U.S. Shale Development: The Impact of Scale, Cycle Time, and Oil Entrepreneurship

Dr. Donald L. Paul
Executive Director, USC Energy Institute
Professor of Engineering and
William M. Keck Chair of Energy Resources

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U.S. Shale Development: Discussion Themes

- Oil entrepreneurship
- The U.S. shale resource
- Factors shaping scalability and cycle-time
- Summary comments
Historical Oil Prices: 1861 to 2016

Ref. BP Statistical Review; EIA
Early U.S. oil entrepreneurship

Los Angeles City Oil Field - 1895
Early U.S. oil entrepreneurship

Los Angeles City Oil Field – 1902
200 companies and “an oil well in every yard”
Early U.S. oil entrepreneurship: Key drivers then – and now

- Private ownership of mineral resources
- Abundant private risk capital
- Established financial resolution mechanisms
- Flexible entrepreneurial supply chains
- Continuous process and technology improvements
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Oil Entrepreneurs:
- oil companies, suppliers, financiers,
- land companies, and more.....
Shales are now a major new oil and gas resource base for the U.S.
A major new oil resource base for the U.S.
Shale development factors affecting scalability and cycle-time
Shale development factors affecting scalability and cycle-time

- Geology of shales
- Private (and state vs. federal) mineral ownership
- Onshore infrastructure
- High levels of repeatability and standardization
- Specifics of cost structure for HF wells
- High initial production rates and cash flow
- Vast numbers of wells
Shale development factors affecting scalability and cycle-time

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Shale development has evolved into an entrepreneurial + manufacturing business model
Summary Comments
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- The history of U.S. oil entrepreneurship continues
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• The history of U.S. oil entrepreneurship continues
• Scalability and short-response time characteristics have evolved a “manufacturing” business model which has responded quickly to the downturn
Rapid response to the downturn in oil prices
Summary Comments

• The history of U.S. oil entrepreneurship continues
• Scalability and short-response time characteristics have evolved a “manufacturing” business model which has responded quickly to the downturn
• The downturn is resetting the cost floor, driving material improvements in well productivity and technology, and re-allocating assets and portfolios
Resetting the cost floor

Cost by year for 2014 well parameters
$ million per well

Note: Midland and Delaware are two plays within the Permian basin, located in Texas and New Mexico
Source: IHS Oil and Gas Upstream Cost Study commissioned by EIA

2016 level?
Improving well productivity

Ref. EIA 2016 Well Productivity Report
Summary Comments

- The history of U.S. oil entrepreneurship continues.
- Scalability and short-response time characteristics have evolved a “manufacturing” business model which has responded quickly to the downturn.
- The downturn is resetting the cost floor, driving material improvements in well productivity and technology, and re-allocating assets and portfolios.
- Even with more than 80,000 wells drilled in the last decade, at least that many new development locations have already been identified.
Thank You

Questions?