



West Texas Regional District Meeting

ValTek Industries

June 28, 2018





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PESA West Texas Regional District Meeting

Energy Market Analysis

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Source: Atwood

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“The Pause That Refreshes” – Apologies to Coke

- ~60% of global production growth this year is expected to come from the Permian Basin
- Except we didn't build enough takeaway capacity to let that happen
- So production growth has to stall, in the world's most critical oil basin, but only for a year or so
- And then activity growth will resume
 - And we actually know when, who, and how much
- With a rig count up ~255% off the May 2016 bottom, we need a break
 - People inflation calms
 - Urgency is reduced
 - And we can all get ready for Round #2!

Easing On In – Macro View

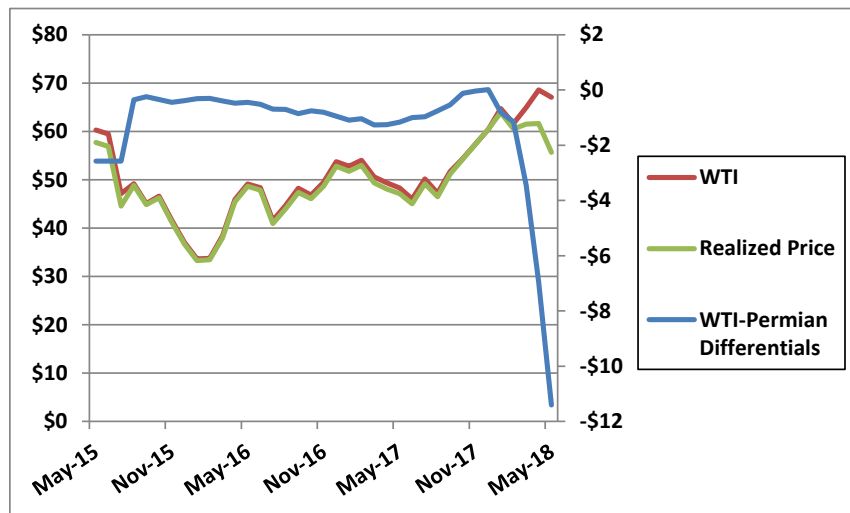
- The potential “price shock” to oil prices when the OPEC/Russia accord unravels has been alleviated.
- How to drop 1-1.5 million barrels of oil back on the market without upsetting price has been the next big issue in the drama.
- Enter Venezuela, stage left.
- Production is down ~700,000 bopd and will not be ramping up anytime soon almost regardless of oil prices
- Venezuela’s barrels are off for some time
- We NEEDED OPEC/Russia to put 1mm bopd back on the market
- If it were US unconventional, we could ramp it up ourselves in less than a year

The timing is ideal. Russian/OPEC barrels come into the market as Permian production stalls, but picks up in a year after the Russia/OPEC wraps up. Stable oil prices ~\$70?!?!?

Impact of the Pause Button

1. The Permian is famously hitting a wall on production growth with takeaway capacity expected to reach its limit next quarter
 2. No pipeline relief for at least a year after that, and
 3. production growth resuming into late 2019 and beyond.
- Investors see a disaster
 - Pricing is the key
 - Completion activity down 10%-15%
 - Urgency certainly has eased
 - Several companies are putting incremental equipment into the market a bit more aggressively than others
 - \$\$'s will move to other basins, but visiting, not living there.
 - Consolidation, with more visibility on US activity duration than in years

The Latest Roadblock – Take-away Capacity

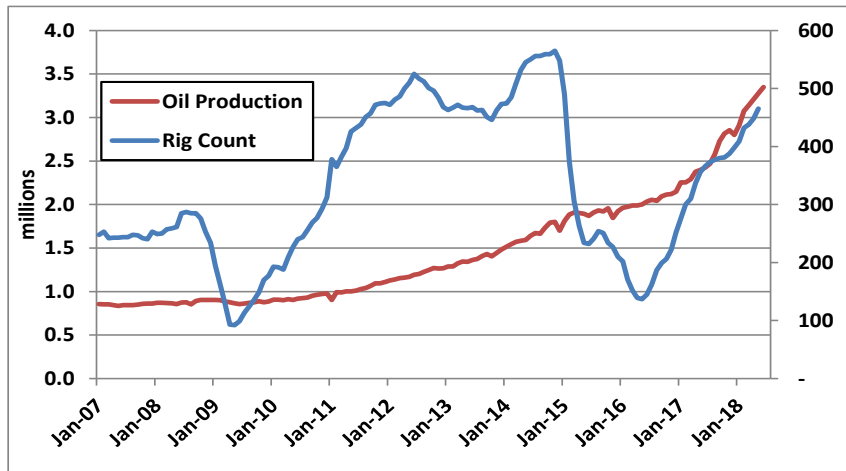


Source: the BLOOMBERG PROFESSIONAL™ service

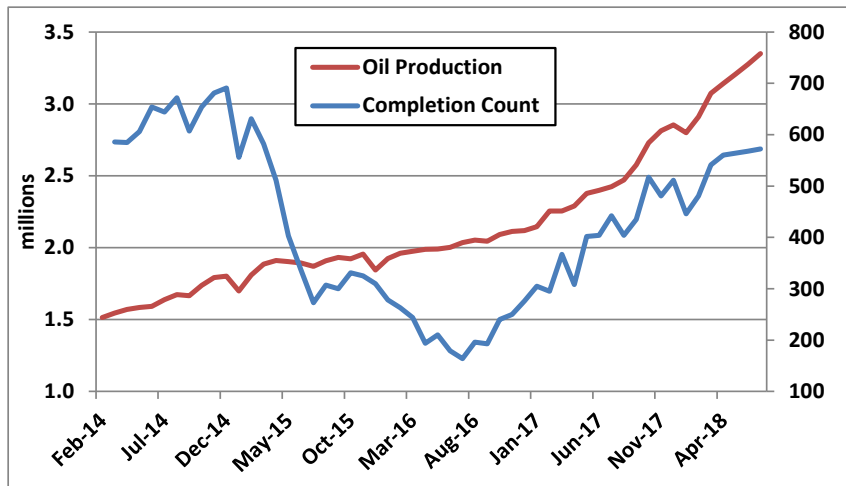
While no fun near-term,
there are positives

- Oops. Too Much, Too Soon, Not Enough Room
- “Transitory”, like “Unsustainable” of last cycle can last a bit
- How much does activity slow down as a result of the wide differentials??
- It puts OPEC/Russia back on the market sooner, clearing the price
- Increases the duration of the cycle, since Permian is needed for future demand growth

Permian Activity and Production



- The top chart shows the Permian rig count up ~255% off the May 2016 bottom, and the acceleration of production growth
- It also shows the challenge in getting that red line to go flat, which didn't even happen at that bottom

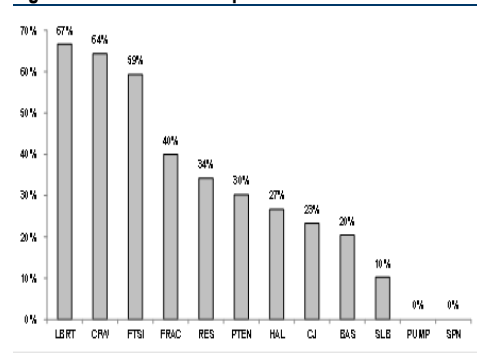


- The lower chart shows completed wells, with increasing efficiency (skewing lines)
- DUC inventory will continue to grow

Source: the BLOOMBERG PROFESSIONAL™ service, Baker Hughes

The Next Thing to Worry About – Parsing the Sector

Figure 1: CSe Revenue Exposure to ex-Permian Frack

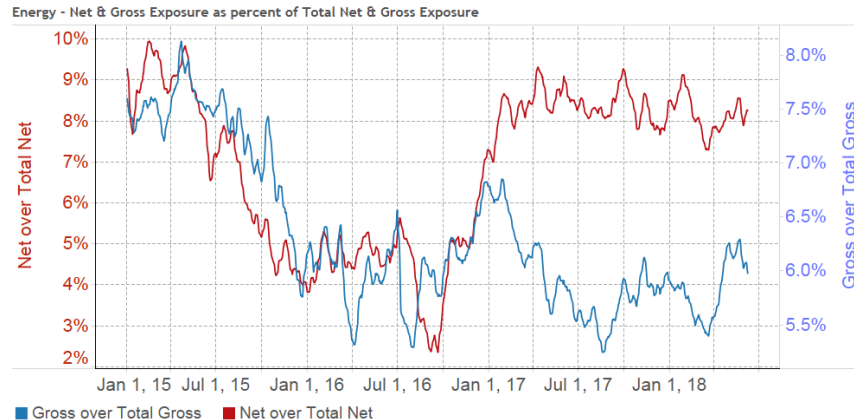


Source: Rystad

- **First Shoe Drops.** BMO today, Halcon Resources (HK) announced plans to drop its rig count to three from four in July 2018 owing to lower realized crude prices in Midland. Midland diffs have widened over the past several months on concerns around takeaway capacity constraints, which (assuming 92.5% refinery utilization and 90% pipeline capacity) look set to begin in 3Q18 and remain through end-3Q19. This was the first public announcement of which we are aware of an E&P planning to reduce activity in the Permian on the back of widened differentials.
- **Screening for Relative Winners.** Against this backdrop, we looked for which pressure pumpers have the most ex-Permian exposure. We look at Rystad data for each company's percent of active pressure pumping fleets outside the Permian basin multiplied by the company's hydraulic fracturing revenues as a percent of total to derive each company's ex-Permian frack exposure. In addition, given the focus on the Eagle Ford as a likely recipient of Permian-displaced capex spend, we look at pressure pumper market share and spare capacity in the Eagle Ford.

- Last week, the first rig reduction announcement
- Now the Question?: How low can it go?
- And after 2014, no one wants to even guess

Energy Exposure: Equity L/S Managers Globally



Source: the BLOOMBERG PROFESSIONAL™ service

The 2+ year rally in Crude since Feb '16 has done little to pull managers off the sideline and back into the Energy Equity space.

- Be it the scars felt by managers from the deep losses inflicted by Q1 2016's sharp reversal in Energy or the vacuum left by portfolio teams jettisoned in the aftermath - one thing is clear, *the space is underinvested relative to:*
- - The positioning in Crude. Until recently, Net exposure in energy related commodities was at a 6 year high and remains above average despite a shift in supply sentiment.
- - The performance of Energy stocks. Since Feb '16 Energy stocks (+29%) have underperformed the SPX (+41%) and Crude (+98%), though noting improved performance YTD (S5ENRS +5.2% vs SPX +2.3%).
- Without a new catalyst to ignite interest and given the historical price action, manager focus may very well remain on secular longs in the US and dividend/ value plays in Europe.

The Market Has Punished the Guilty

	% Change in Share Price		
	1 Month	3 Months	YTD
Seismic	4.7%	30.4%	39.3%
Offshore Drillers	-3.3%	29.2%	13.7%
Mid-Cap Services	-5.4%	10.6%	-1.8%
Manufacturing	-5.0%	13.6%	-2.2%
Large Cap	-5.7%	10.4%	-3.8%
Onshore Drillers	-8.4%	0.7%	-3.9%
Sand	-2.9%	5.5%	-9.9%
Completions	-9.7%	-4.3%	-12.2%
WTI	0.4%	3.4%	12.7%
Brent	3.7%	1.6%	-4.8%
NatGas	-0.6%	12.7%	-1.1%

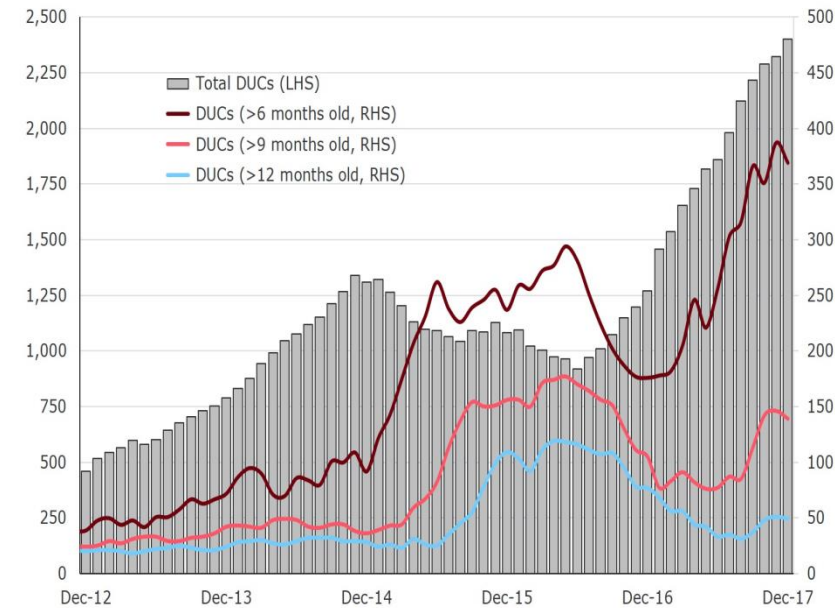
Source: the BLOOMBERG PROFESSIONAL™ service

- Onshore Drillers, Sand and Completions have been hit the most since Permian differentials blew out, down much more than the oil price but realized prices are down ~13% since early March
- The two most fundamentally challenged sectors, Seismic and Offshore Drillers, are up the most for the year, with investors seeking contrarian opportunities

Backlog of Inventory is Good and Growing

Figure 5: Abnormal DUCs in the Permian Basin

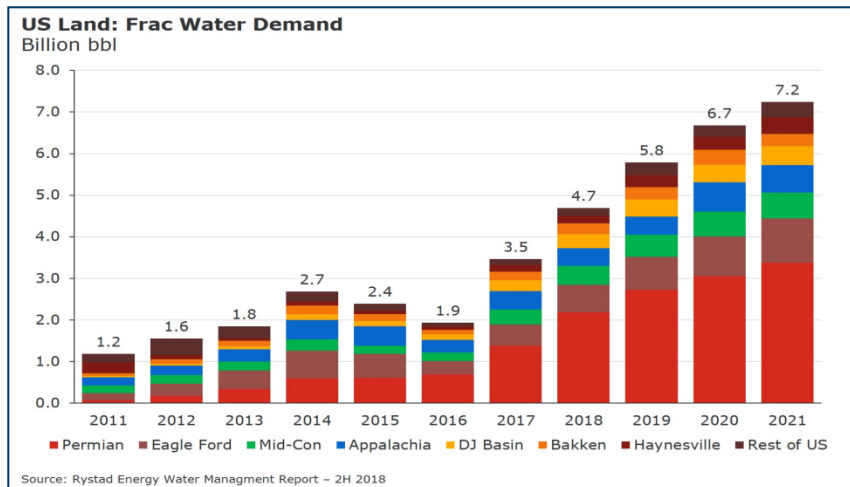
Number of wells



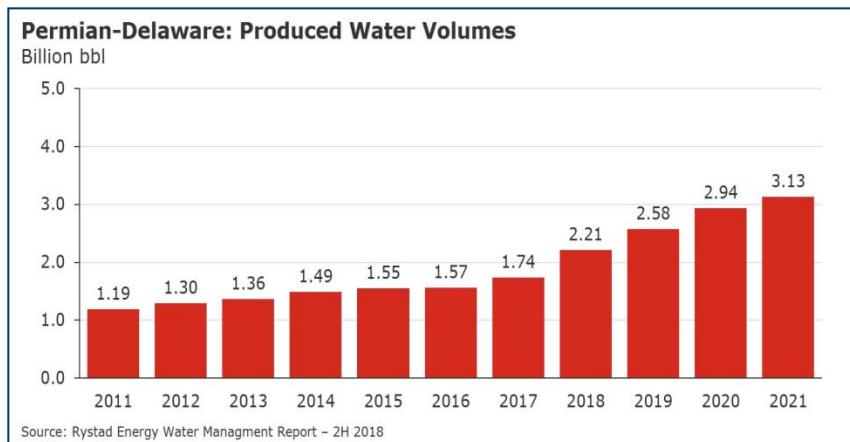
- It argues for completions being stronger than drilling for a while going forward
- It supplies visibility to future activity
- It extends the duration of Permian production growth

It is a clear positive for industry

Logistics Need Time to Catch Up

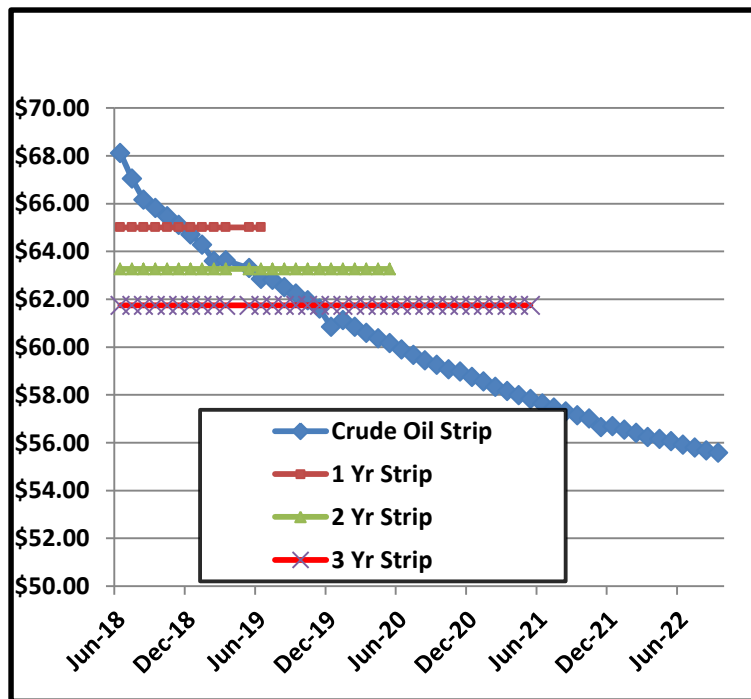


- Demand and use of both water and sand have exploded
- Lots of sand, limited water
- Sand by pipeline doesn't work
- Significant opportunities throughout the value chain

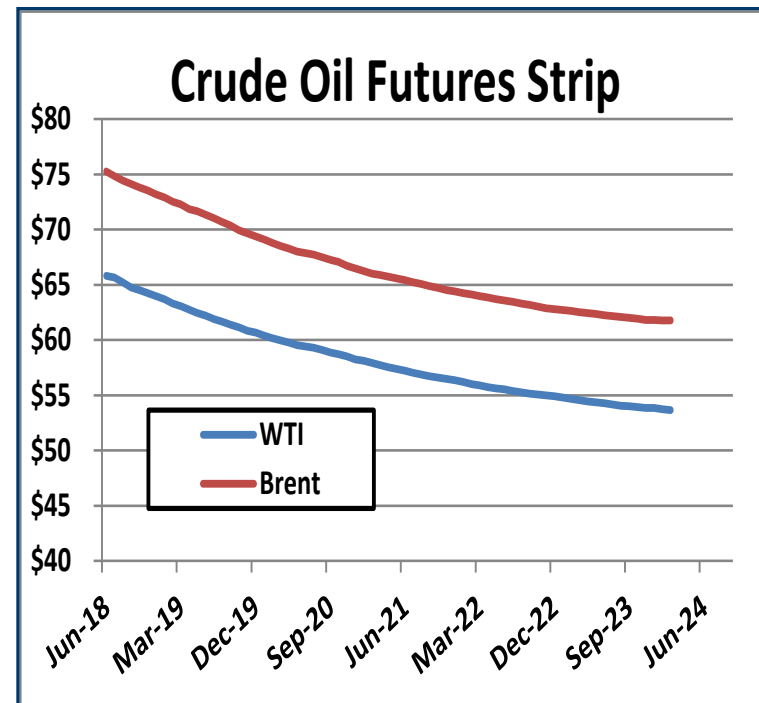


Today's Oil Price Isn't the Issue

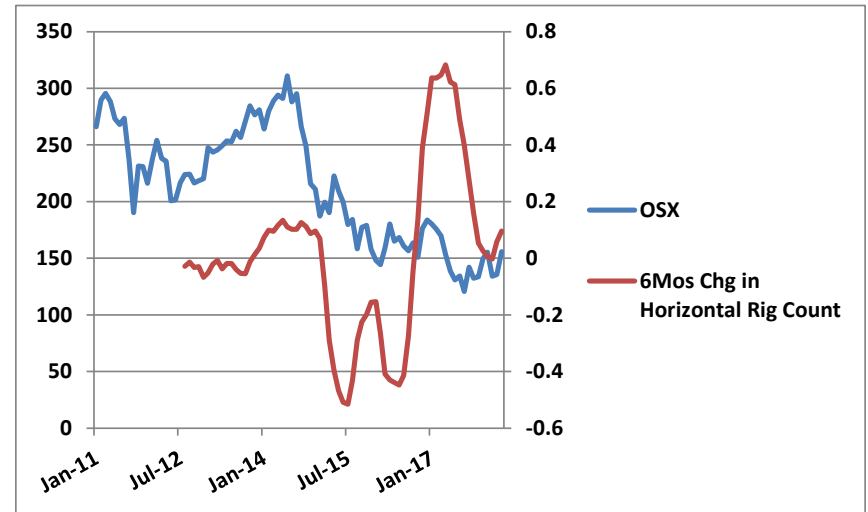
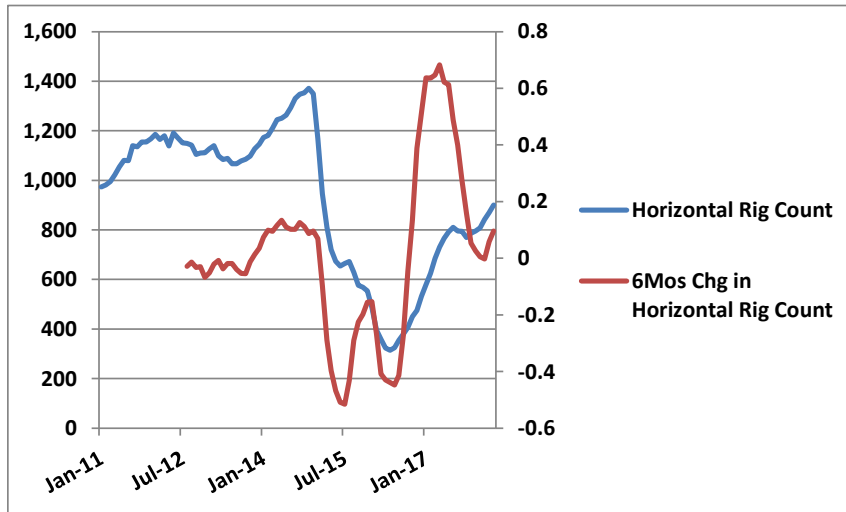
It is the Outlook. Longer dated projects remain at issue



Source: the BLOOMBERG PROFESSIONAL™ service



Cursed by a Too Fast Recovery



Source: the BLOOMBERG PROFESSIONAL™ service

The US Horizontal rig count ran up 150% in 12 months, too fast for the stocks to keep up. Now we expect several years of 15%-20% growth, discipline, which is much more positive for the industry

Welcome to the Brave New World of OFS

- Reduction of NPT, more efficient solutions, predictive analytics
- Automation, robotics, multi-skilling
- Artificial Intelligence, machine learning, simulation
- Performance payments, shared risk, bundling

All of the above are the future “buzz words” of the sector, all being used now but will soon be part of everyone’s description of

“EXECUTION”

Private Equity in the Oil Patch – They Pick Their Spots

■ OFS

- 2011 Pressure Pumping
- 2012 Directional Drilling
- 2014 Digital Data Applications
- 2015 Sand and logistics
- 2017-8 Water and logistics

5 PE firms selling Pressure Pumping, Sand over-capacity at issue. Tech???

■ E&P

- 2008 Marcellus
- 2010 Bakken
- 2010-12 Eagle Ford
- 2013-19 Permian

Now what? Gas is stranded and primary acreage is gone?

AI applied to Geoscience??

New Frontiers: Plays, Technology & Demand

- New Plays come and go – Permian is de jure today. Next?
- Technology – computer/digital development hit Moore's Law in the OFS sector about three years ago and nothing is staying the same
 - Big data analytics for predictive analysis
 - Real-time steering based on changing reservoir characterization model
 - Optimized processes for faster RoP, hole size, well integrity
 - The “digital” oilfield, not just the reservoir
 - Broadband data speeds from downhole
 - Hyper-efficient drilling and completion operations
- Demand today is strong for anything that improves the financial return on investment by oil and gas companies.

It Will Be More Than Just Incremental Gains

- “Super Spec”, like the illusive “smart rig” are terms that evolved a great deal before the first one hit the market.
- “My rig can do everything theirs can, whatever that is.”
- Digital Output – plugged into what?
- Big Data or Data Management?
- The market has been waiting....

But optimizing individual mechanical functions on the rig is last year's technology. The future technology will revolutionize the entire process of drilling, completion and production, not just focus on the components working well.

Speed, Efficiency, Safety and Reduced NPT

- Automation and Robotics
 - Fewer people
 - Happier people
 - Safer People
- Software control and management platforms
 - Greater efficiency
 - Faster feedback
 - Greater safety
 - Lower
- Wired pipe goes from Morse code to Broadband
 - Predictive

And Who Tries on the Latest Fashion? Who is Still the Center of Attention?

- Reiterate – 60% of global production growth
- Production Peak? 5? 6? 7? 10?? Lots of Potential
- You know it's coming and you have time to get ready
- Strategic decisions love increased visibility
- We may not see revenues lost from labor issues
- Truck drivers are still the ones buying soft drinks

The honeymoon is over and time to raise the kids. One is over quickly, the other is all of your life.

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Investment principal on bonds can be eroded depending on sale price or market price. In addition, there are bonds on which investment principal can be eroded due to changes in redemption amounts. Care is required when investing in such instruments



West Texas Regional District Meeting

David Stover

Chairman, President and CEO, Noble Energy





A Transformative Journey

David L. Stover, Chairman, President and CEO

June 28, 2018



Energizing the World, Bettering People's Lives.®

The Permian Basin's Transformative Journey

The play that keeps on giving

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1923: Santa Rita oil discovery kicks off the first boom

.....

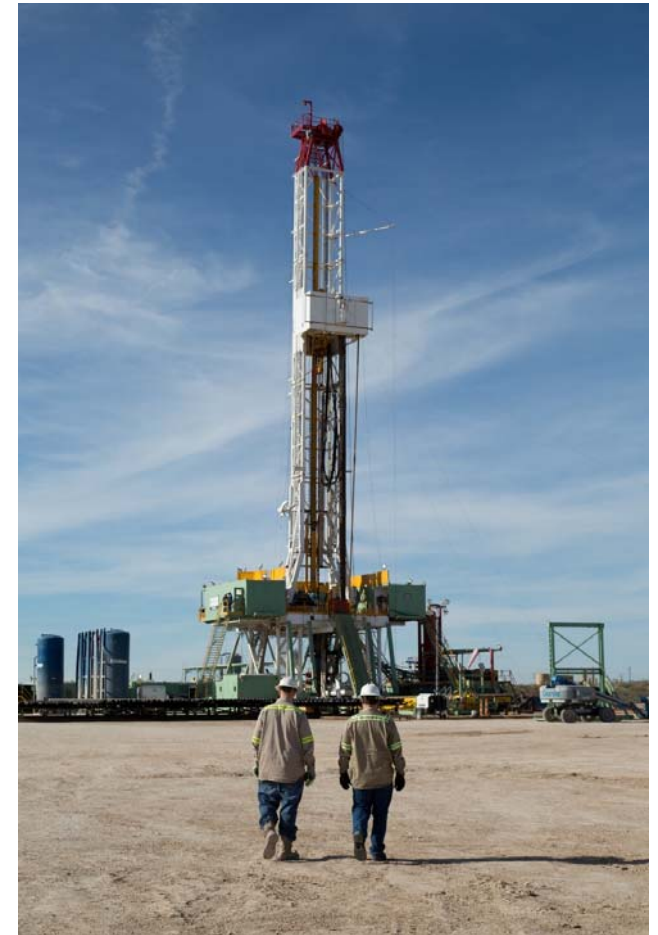
Since then, the Permian Basin has produced more than 39 billion barrels of oil

.....

Recent estimates indicate the basin still holds 60 – 70 billion barrels of technically recoverable resources

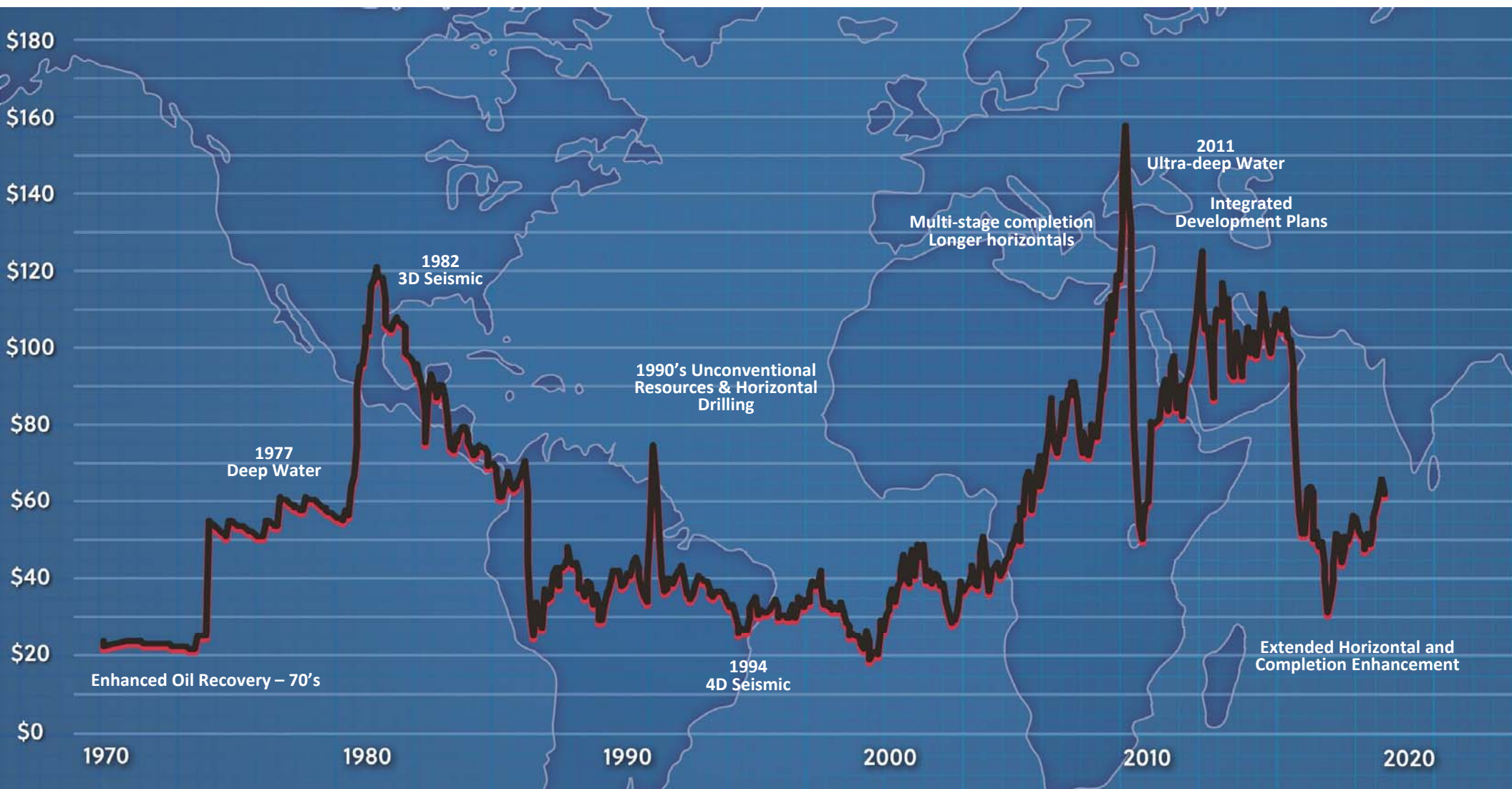
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2018: Permian Basin is producing more than 3 million barrels of oil per day

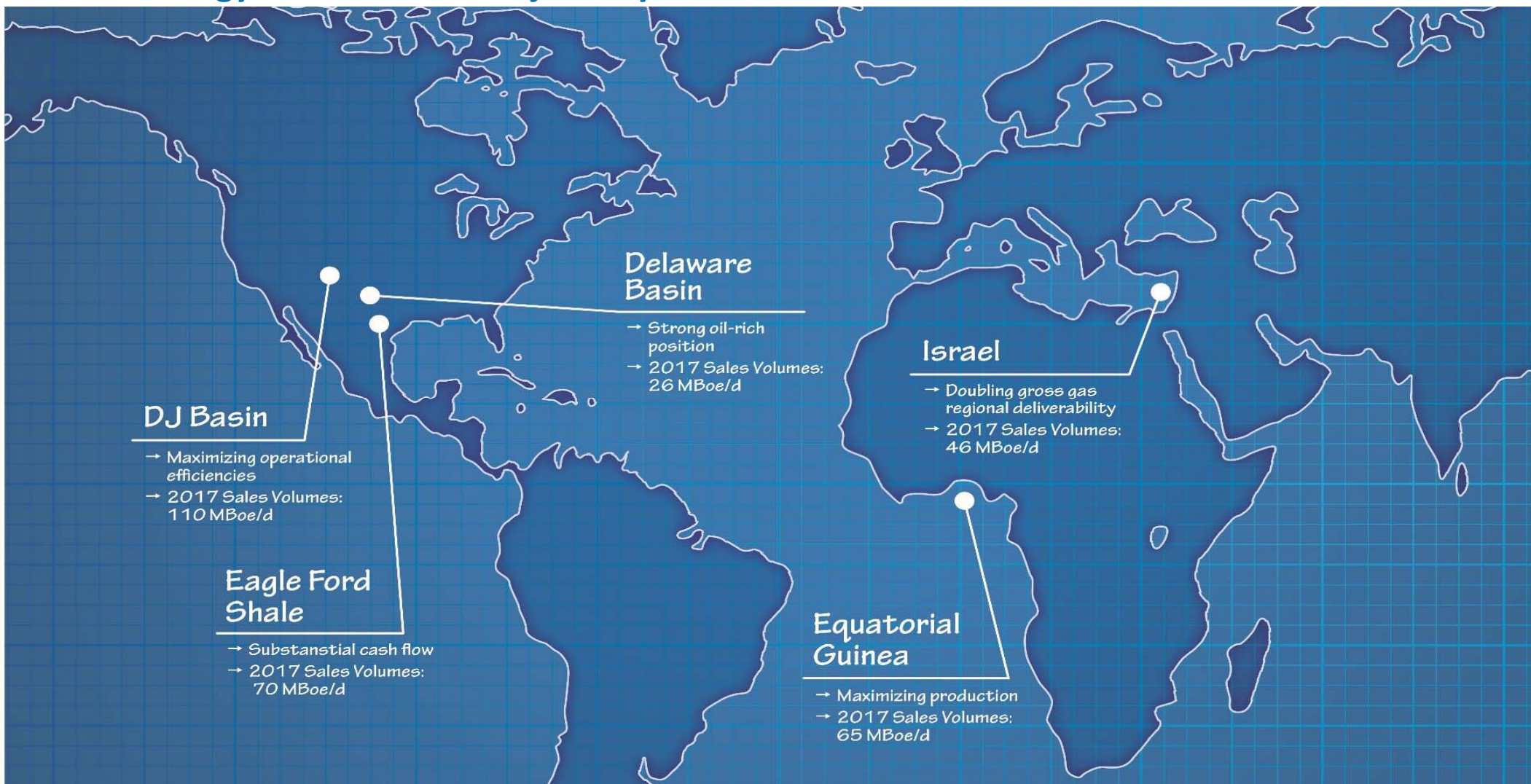


Sources: U.S. Energy Information Administration, IHS Markit

Our industry's transformative journey



Portfolio Optimization Noble Energy's transformative journey



Transforming our operations in the Delaware Basin

Enter Permian Basin Through Acquisitions

- Acquisition of Rosetta Resources in 2015
- More than doubled acreage with Clayton Williams Energy acquisition in 2017
- Consolidated acreage position in Reeves County

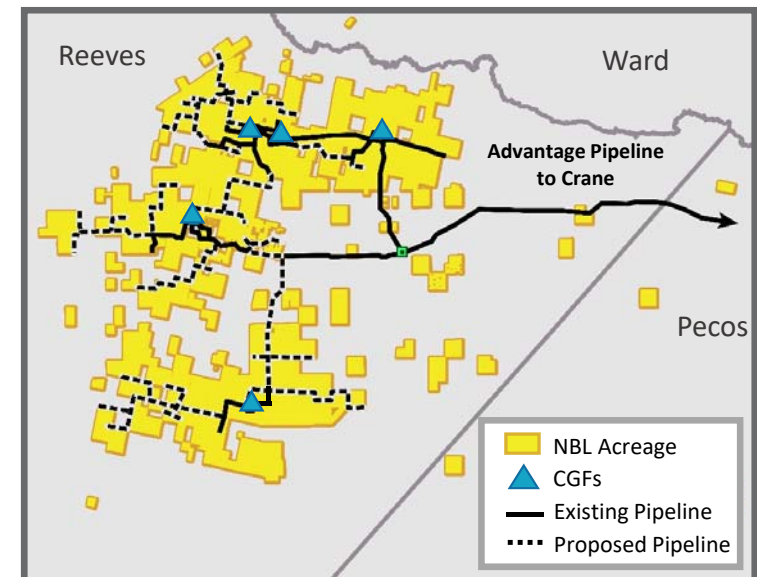
Noble Midstream Partners

- Initial public offering in September 2016
- Formed JV partnership with Plains All American and acquired Advantage Pipeline in 2017
- Provides advantages by increasing operational flexibility and value

Strategic Agreement with EPIC

- Provides long-term takeaway capacity and further diversifies our onshore marketing outlets
- Anticipate the pipeline to be in service second half of 2019

Strong Position in Oil-rich Highly Contiguous Acreage with Multiple Horizon Potential



Built to leverage shared learnings and drive efficiencies

Resource Play Assessment and Exploitation

- Big data approach to opportunity recognition
- Subsurface modeling to optimize reservoir stimulation

Operational Excellence

- Basin scale, long lateral and multi-well pads drive efficiencies
- Peer-leading safety performance

Integrated Development Planning

- Applying major project practices with integrated midstream for centralized facilities, water management and recycling
- Minimizing footprint, reducing trucks on road

Maximizing Value per Section

- Complex fractures from higher proppant loadings and stages
- Basin-leading oil productivity

Proprietary Dataset of Over 2,000 Horizontal Wells in Multiple Basins



Drilling capabilities a significant competitive advantage

Real-time Drilling Data Integration Enables Rapid Design Optimization

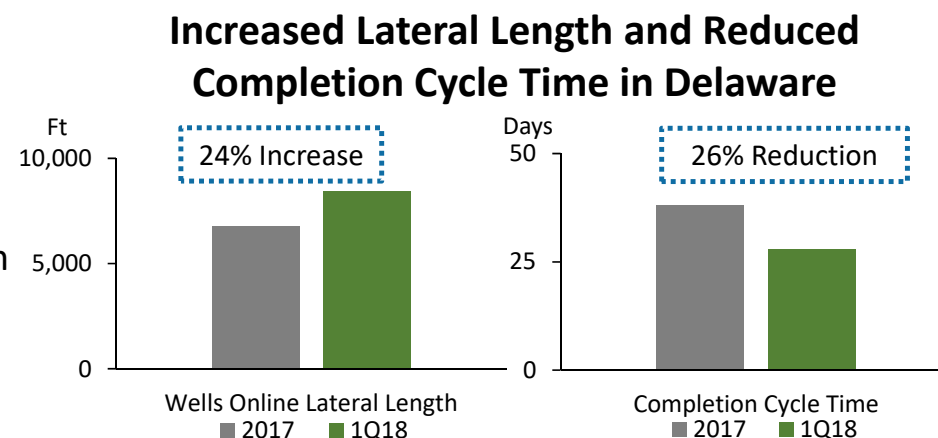
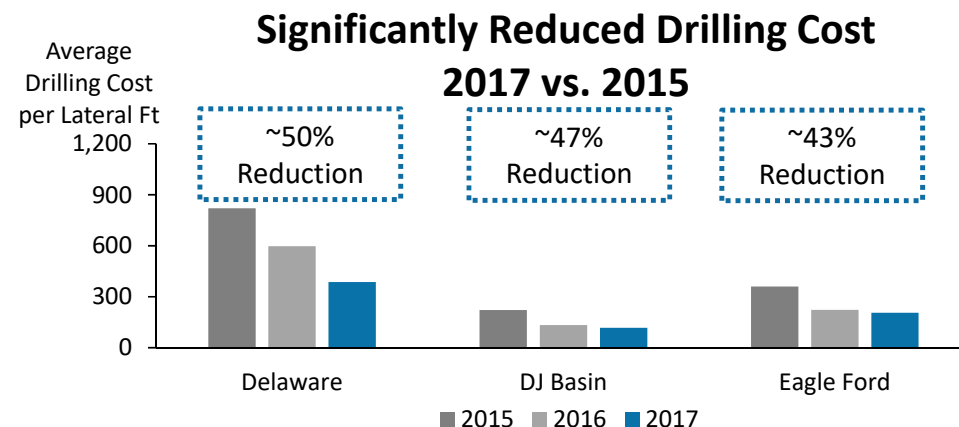
- Leveraging predictive analytics to improve drilling efficiencies and reduce down time
- Physics-based approach supplements empirical data

Advanced Drilling Precision Through Geo-Steering

- Delivering wells within 15 feet of target zone across 10,000 feet horizontal lateral in the Delaware Basin
- Integration of region mapping, 3D seismic and real-time measurements driving results

Continuing Operating Efficiencies in Delaware in 2018

- Reduced completion cycle time switching to multi-well pads from single well development
- Drilling long laterals at 10% increased rate of drilled feet per day
- Increased use of local sand driving cost efficiencies

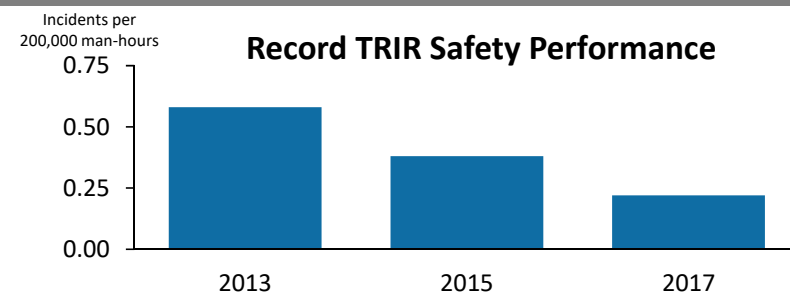


Protection of the environment is an integral part of our commitment to operational excellence



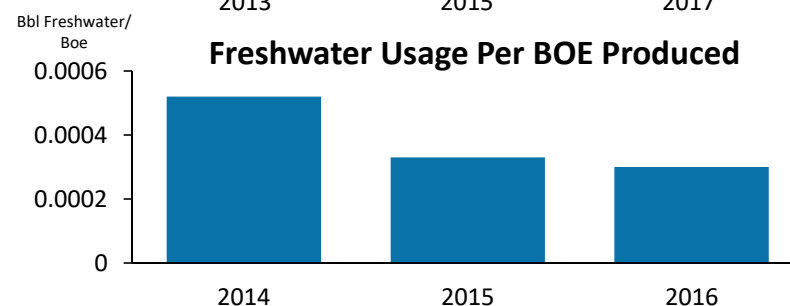
“NO HARM” Culture Integrates Safety in All Operations

- Safety of our people and communities is our top priority
- Reduced total recordable incident rate (TRIR) by greater than 60% since 2013



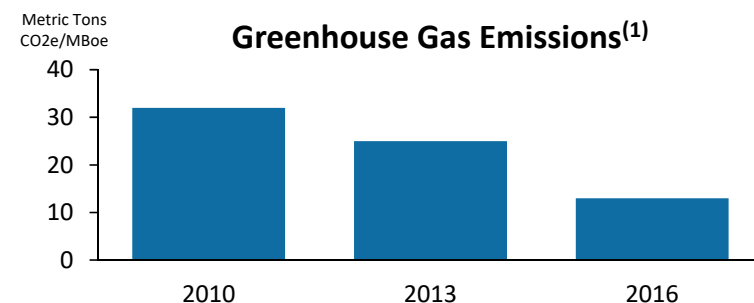
Efficient Use of Freshwater Resource: 40% Plus Reduction Since 2014

- Commitment to environmental stewardship with focus on reducing freshwater intensity
- Reduction driven by an increased use of other water sources and advancements in drilling and completion techniques



Greenhouse Gas Emissions: ~50% Reduction Since 2010

- Reduction across company primarily due to increased use of infrared cameras to detect and repair leaks
- Enhanced design and control equipment technology reducing emissions across operations due to proactive installation



For more information on NBL's environmental performance data, please visit www.nblenergy.com/our-commitment/environment.

1) Noble Midstream intensity reported independently beginning in 2015.

Delaware Basin Produced Water Management

Increasing operational flexibility and value

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Infrastructure Strategically Designed with Produced Water Recycling and Disposal Options for Flow Assurance

- NBL recycle facilities and pond storage
- Increasing NBL operated vs. 3rd party SWD capacity
- Reduces footprint and removes truck usage for water hauling

Establishing Water Pipeline Network Across Acreage Position

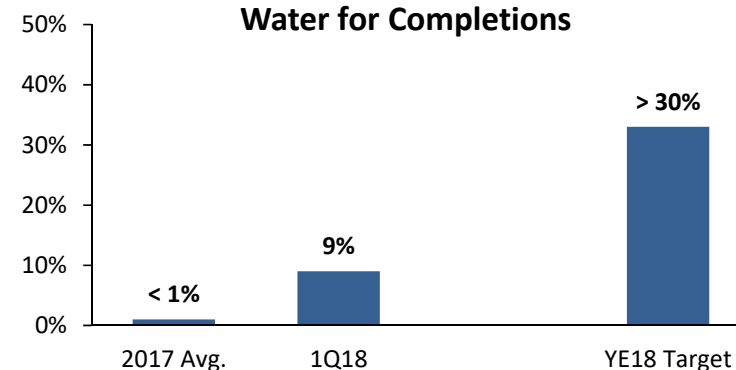
- Increasing ability to utilize recycled water in completions

Expanding Recycling Efforts in 2018

- Over 1 MMBbl produced water recycled since late 2017
- Initial wells using recycled water performing in-line with expectations
- Reduces need for disposal and use of fresh water in completions



Substantially Increasing Use of Recycled Water for Completions



Challenges and opportunities

Rapid Change in Heavy Activity Cycle

- Safety must be industry's top priority
- Local infrastructure stressed
- Hiring and retaining talent
- Working with industry and local community to resolve issues

Takeaway Capacity Tight in the Region

- NBLX provides access to extensive pipeline network
- EPIC crude pipeline expected to be online in late 2019

Managing Cost Pressure

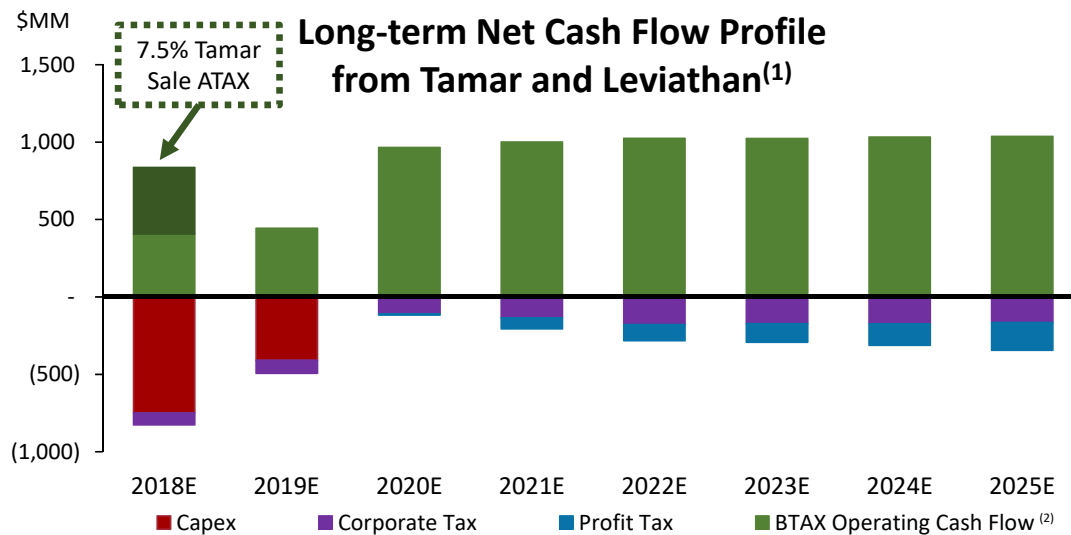
- Long-term relationships with service providers
- Driving operational efficiencies from multi-well pad and longer laterals resulting in 26% reduction in cycle time
- Transitioning from standard field fabricated production facilities to modular facilities



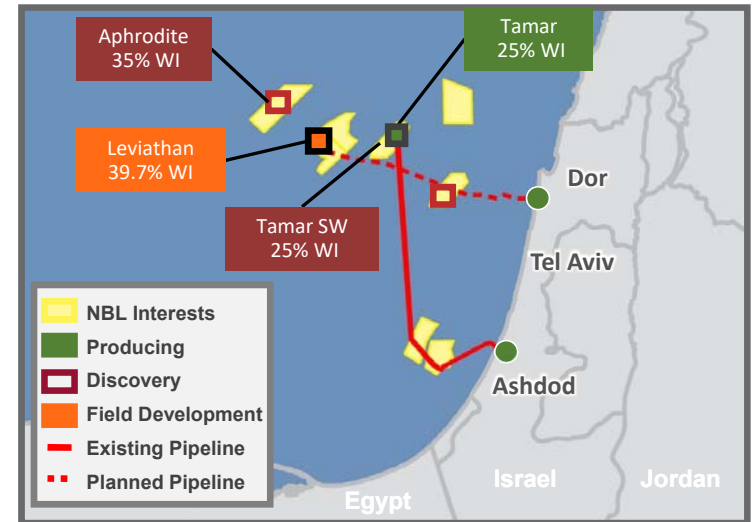
Transforming a country and a region

Tamar

- Reliably fueling ~60% of Israel power generation



(1) Working interest of 39.66% in Leviathan and 25% in Tamar.



Leviathan

- On track for first gas in 2019
- Over 900 MMcf/d total volume under contract
- Secured domestic contracts and export contracts to Egypt and Jordan
- Current contracts estimated to be > \$20 B in gross revenues or > 5x expected capital invested

Major project progressing towards first gas sales by year-end 2019

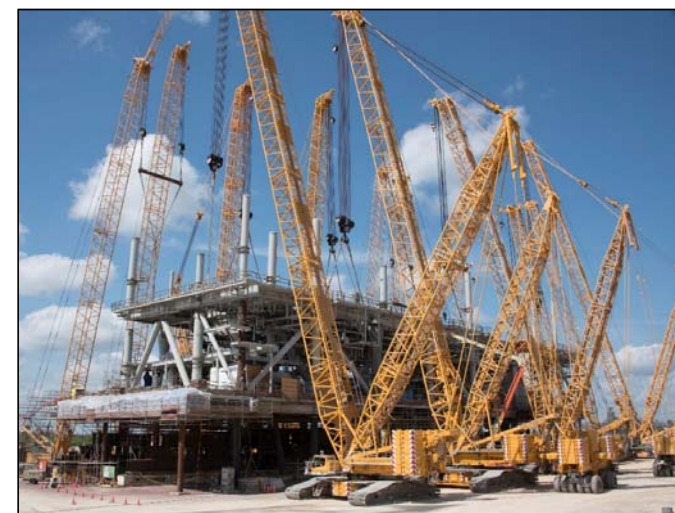
Leviathan Development On Track; overall 54% complete

- Construction of the platform is progressing
- All major equipment delivered or nearing completion
- Drilling is nearly complete – preparing to start well completions on 4 wells capable of producing more than 300 MMcf/d each
- Pipeline installation is progressing on plan
- Project remains on schedule and on budget

Project Phase	2017	2018	2019
Sanction	◆		
Order Critical Path Equipment	■		
Detailed Design & Engineering	■	■	
Equipment Manufacturing	■	■	
Drilling & Completions	■	■	
Pipeline Manufacturing & Installation	■	■	■
Offshore Platform Installation			■
Commissioning and First Gas			■ ◆



Shore Crossing

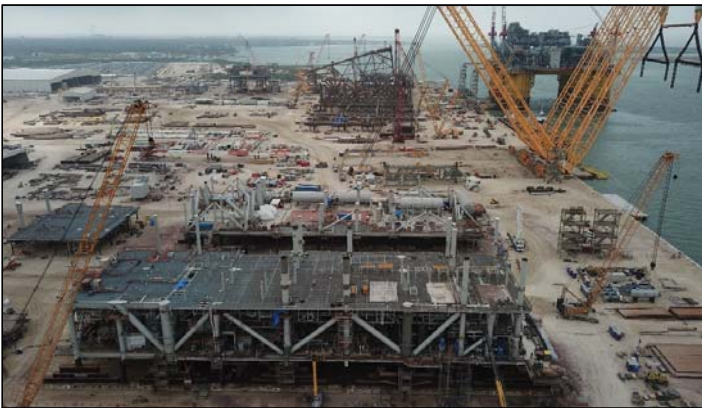


Platform Production Deck Float

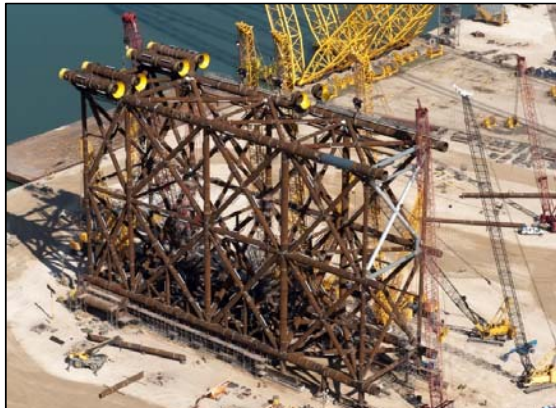
Leviathan Development

On schedule — on budget

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Platform Construction



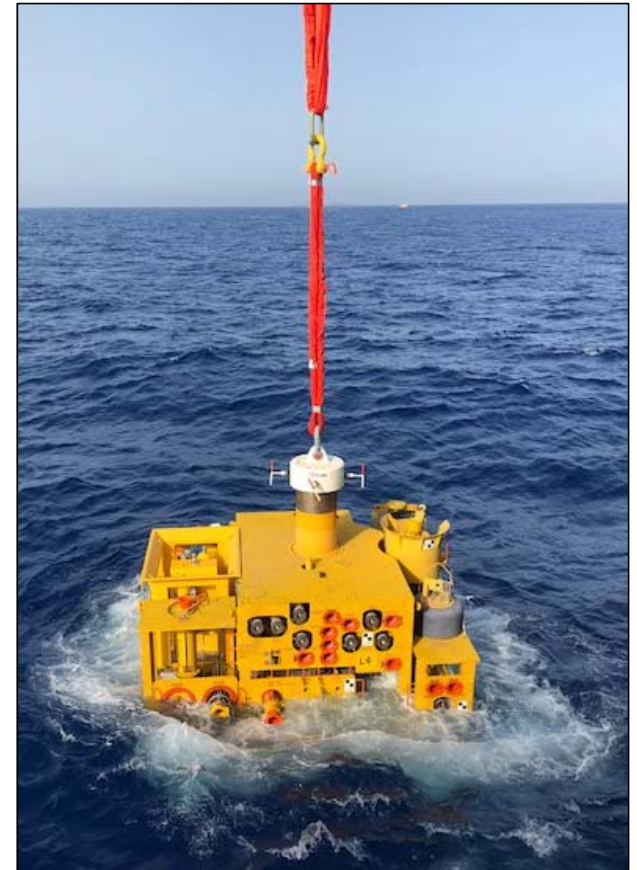
Jacket Framing



Pipeline Installation



Shore Crossing



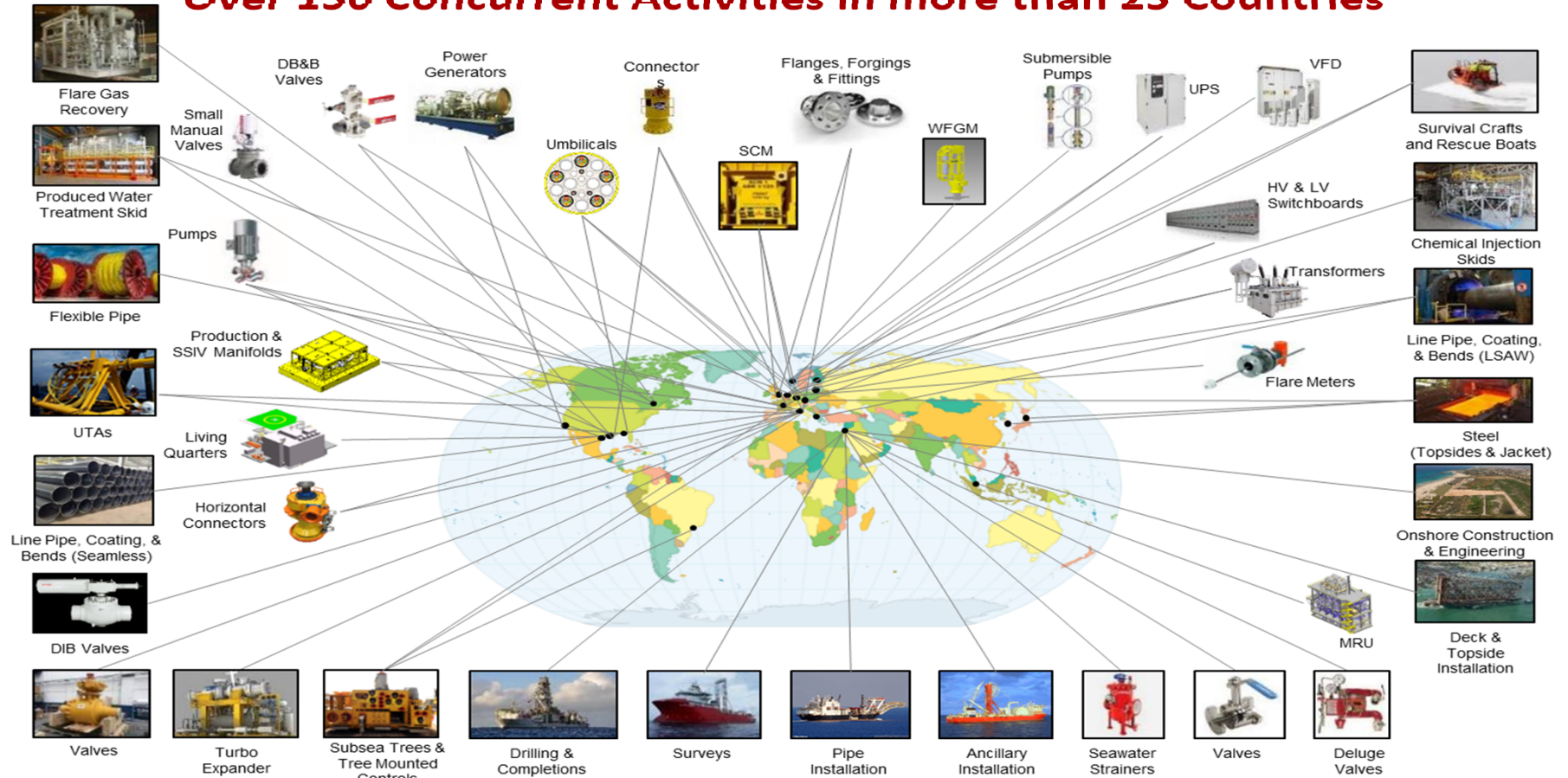
Tree Installation

Leviathan Development

Global execution — major awards

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Over 150 Concurrent Activities in more than 25 Countries



Energizing the World, Bettering People's Lives



Pecos, TX



Houston, TX



Israel



Greeley, CO



Equatorial Guinea



Dilley, TX

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