

# Permian and Eagle Ford Well Intervention Demand

Offshore Network

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## INTRODUCTION:

Increases in onshore oil & gas activity have been widely reported in both industry and mainstream press throughout 2018. Since May, North America has seen a significant rise in rig counts which can be attributed to greater onshore operations, specifically in Texas's Permian and Eagle Ford basins.

On May 29, Zacks Equity Research published that "The number of onshore rigs totalled 1036, up from 1023. Four rigs operated in the inland waters last week, in line with the count for the week ended May 18. The tally for offshore rigs was 19, also in line." This gives some perspective into the onshore activity in comparison to offshore activity.

In the Permian basin for example, we are now approaching levels of activity that have not been seen since the booming shale plays of 2012 – 2014, as illustrated in the below chart and graph.

### PERMIAN BASIN RIG COUNT BY TYPE AND TARGET<sup>1</sup>

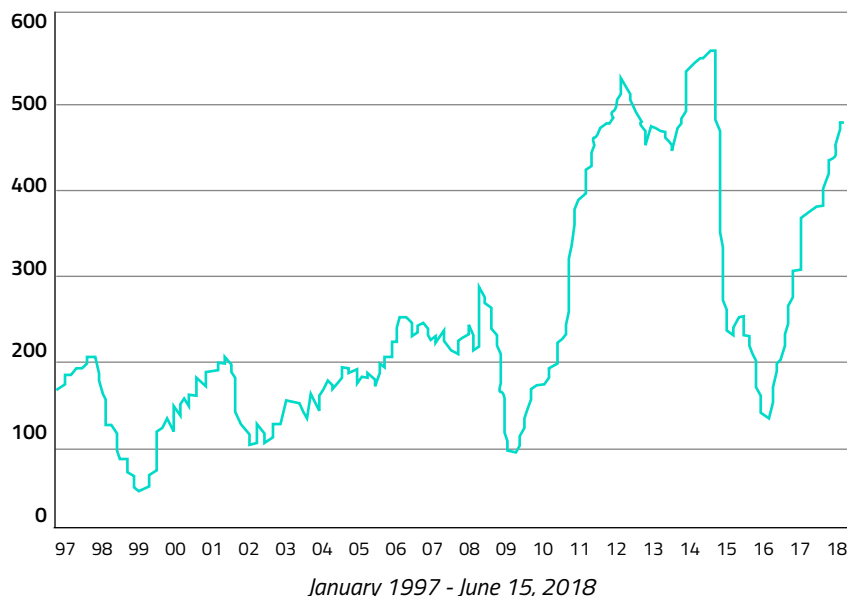
**Texas Counties:** Andrews, Borden, Coke, Crane, Dawson, Ector, Gaines, Glasscock, Howard, Reeves, Stering, Terrell, Upton, Ward and Winkler

**New Mexico Counties:** Chaves, Eddy, Lea and Otero

PERMIAN Basin Rig Count				CHANGE		PERCENT CHANGE	
	06/15/2018	06/08/2018	06/16/2017	Weekly	Annual	Weekly	Annual
<b>Total</b>	476	480	368	(4)	108	-0.8%	29.3%
<b>Oil</b>	475	479	368	(4)	107	-0.8%	29.1%
	99.8%	99.8%	100.0%	-0.0%	-0.2%		
<b>Gas</b>	1	1	0	0	1	0.0%	n.a
	0.2%	0.2%	0.0%	0.0%	0.2%		

<b>Vertical</b>	42	44	43	(2)	(1)	-4.5%	-2.3%
<b>Directional</b>	8	6	4	2	4	33.3%	100.0%
<b>Horizontal</b>	426	430	321	(4)	105	-0.9%	32.7%

### ROTARY RIG COUNT - PERMIAN BASIN<sup>2</sup>



<sup>1</sup>Zacks Equity Research: <https://www.zacks.com/stock/news/305492/oil-rig-count-continues-to-tick-up-in-permian-basin>

<sup>2</sup>Energy Economist, Permian Basin Rig Count: [http://www.energyeconomist.com/a6257783p/exploration/detail/permian/Permian\\_Basin\\_Overview.html](http://www.energyeconomist.com/a6257783p/exploration/detail/permian/Permian_Basin_Overview.html)

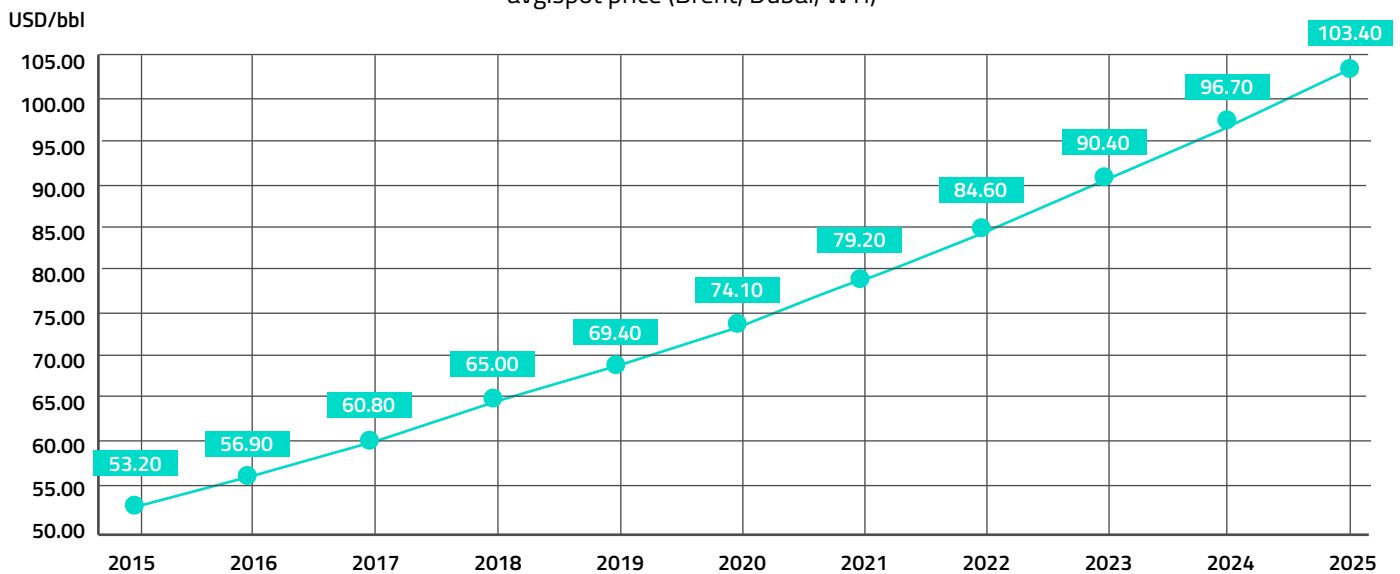
The growing demand in onshore plays between 2016 and today shows an optimism and excitement about increasing recovery from basins like the Permian. Drilling is of course part of this – but a huge portion of this recovery needs to be achieved by uplifting the existing assets through innovative well intervention services delivered across all appropriate production wells.

So how big is this opportunity? Based on the WTI increases, demonstrated by the World Bank: Crude Oil Forecast, the 2018 average is \$65 rising to almost \$70 in 2019 and almost \$85 in 2022. To put this into real world figures, Zacks' expects "Anadarko Petroleum to witness year-over-year earnings growth of 229.6% in 2018"<sup>3</sup> and value will increase proportionally year on year.

This will ultimately result in a \$2.9bn well intervention market in North America by 2022, based on the global market share calculated by Markets & Markets.<sup>4</sup>

### WORLD BANK: CRUDE OIL PRICE FORECAST<sup>5</sup>

avg. spot price (Brent, Dubai, WTI)



The basins of Midland and South Texas offer superb potential for operators to achieve significant gains through well services, creating a very exciting period for well service activity within the Permian and Eagle Ford basins specifically.

### THE MARKET:

The use of drilling alone to support onshore production targets requires a consistently high oil price which is robust and sustainable to justify the volume of rigs. At this time, investors continue to be overly cautious and somewhat pessimistic towards significant investments within the oil & gas sector as a whole. This is mainly due to investor confidence still being low following the downturn. However, as Marshall Adkins, Director of Research for Raymond James, stated at this year's ICoTA Conference in Houston, this market attitude for the onshore oil & gas business from an investment perspective is completely misplaced as "the fundamentals have never looked as good."<sup>6</sup>

The significant cost difference between well intervention operations and costly drilling campaigns means that well services remain a preferred solution. And should drilling boom again once investor confidence returns, well intervention services will still retain their integral role in meeting ever increasing production demand between now and 2025.

The main drivers for this increased demand are:

- Crude inventories tightening and the 'glut' rapidly decreasing
- Major oil producing countries outside of the US are unable to significantly add output
- Gasoline demand is steady or increasing slightly from a global standpoint <sup>7</sup>

The knock-on effect of these drivers is expected to generate a stable growth of 5% productivity gains in the Permian for the foreseeable future – but to achieve this somewhat modest sustainable increase a lot of well work is required.

<sup>3</sup>Zacks Equity Research: <https://www.zacks.com/stock/news/305492/oil-rig-count-continues-to-tick-up-in-permian-basin>

<sup>4</sup>Markets & Markets Well Intervention Market by services: <https://www.marketsandmarkets.com/Market-Reports/well-intervention-market-1099.html>

<sup>5</sup>World Bank Oil Forecast: <https://www.oilcrudeprice.com/oil-price-forecast/>

<sup>6/7</sup>Future US Onshore Growth Depends on a Higher Price: <https://www.spe.org/en/jpt/jpt-article-detail/?art=4048>

A vast amount of well integrity services, fracing and stimulation are needed. But there is also a fundamental necessity to do this work properly and avoid reservoir/frac interference of new wells impacting the profitable production of older wells.

Currently onshore basins in Texas are preparing for the second cycle of stimulation, fracing and other uplift work to their existing well stock, but the industry needs to work hard to mitigate risk within these operations as not to damage or kill profitable production wells.

There is a very realistic risk of over or under fracing/stimulation. This could easily result in a negative productivity in 2019 if not executed correctly.

## **WELL SERVICE DEMANDS TO SUPPORT A 5% INCREASE:**

When utilizing well intervention services to increase production, there are two main ways to achieve this:

1. Directly increase the immediate recovery from the well
2. Extend the well's profitable production life

To achieve either (or both) aspects, the philosophy of the modern land operator needs to be incredibly innovative. Many of the onshore wells in Texas are complex, having long lateral sections and high angled kick-offs for example. In addressing the production issues with these challenging wells, operators are proficient in encouraging innovation through an attitude based on growth and a greenfield mindset.

An example of this is the utilization of innovative wireline operations in place of coiled tubing (where applicable). This has mitigated risk, reduced cost and encouraged the reach of well intervention services to be extended across long horizontal sections. Lateral processes with the somewhat riskier coil tubing have been met with optimized delivery and greater technical capabilities from wire. This has given market confidence to support more well intervention programs throughout the Permian in 2019, away from a reliance on coil and the cost associated with it.

Of course, pumping and fluid operations will need coil as a conduit, however the technology scope of wire related services is continuously expanding to offer other solutions with the same or similar effect. For example, fracturing capabilities at the end of a 20,000ft lateral section simply wouldn't be tackled with coil in most cases – however with use of an advanced tractor, wireline and hydraulic frac units can offer a cost and risk appropriate solution.

The below grid outlines the services and methodology that will be utilized and required by the onshore community for well integrity and production enhancement applications:

<b>INTEGRITY APPLICATIONS</b>		<b>PRODUCTION APPLICATIONS</b>	
ADVANCED WELL DIAGNOSTICS		RE-FRACING OLDER/EXISTING WELLS	
LATERAL WELL LOGGING		RE-PERFORATION OF KEY PRODUCTION ZONES	
CEMENTING		ISOLATION OF UNDESIRABLE PRODUCTION ZONES	
SLEEVE REMEDIATION		FRACING FOR EARLY LIFE PRODUCTION	
DATA ANALYSIS		DATA ANALYSIS	
FISHING		GAS LIFT INSTALLATION	
ZONAL ISOLATION/PLUGGING			
ADVANCED CAMERA SERVICES			
<b>DESIRED METHODOLOGY</b>		<b>DESIRED METHODOLOGY</b>	
COILED TUBING		COILED TUBING	
WIRELINE		WIRELINE	
WIRELINE WITH ADVANCED TRACTORS		WIRELINE WITH ADVANCED TRACTORS	

## CONCLUSION:

Currently the oil price has risen to highs not seen since 2014, and for the most part, the 'glut' has settled and market confidence has been restored. This year we have seen peaks of \$72 for WTI, and this quarter (April – June) an average of \$66 has been realized (for WTI).

Following the streamlining and restructuring of operating companies within the 2014-17 period, it is generally felt that operators can work off a base of \$30-40 by utilizing leaner operating processes. Once again the oil & gas industry is witnessing a very profitable period (as demonstrated by Zach's Equity Research in the introduction).

Due to the profitability in the Texas basins, operators will have to execute a disciplined focus to narrow their well intervention strategies on production uplift works and critical integrity works that can extend the profitable life of their wells.

Recovery from onshore producers is expected to grow at least 5% year on year and continue to grow more rapidly in line with the increasing oil price. The US (as a whole) is one of the largest global markets for well intervention, with over 1 million producing wells, according to the EIA.<sup>8</sup> Also, the demand for new oil will be met by increased production from easily accessible basins like the Permian and Eagle Ford, which have so much more to give. However, this is only possible with a significant volume of well intervention services, so an expected increased demand for downhole tooling, rentals, fluids, chemicals, cement etc. is certain.

Technologies and materials however, have to be utilized with integrated engineering skills and processes. The downturn removed some experienced and skilled well intervention experts from the South Texas region, or from the industry all together. This means productivity and efficiency could be impacted, as expensive consumable items like frac sand for example, could be used incorrectly at great expense.

To meet production targets on tight deadlines and avoid costly overruns, it is important that service providers and operators who have experience in delivering well intervention programs or workover systems in a various environments and across varied well types share experience with the onshore US community – and are in turn utilized by this community to add value and optimize well operations within their basin.

<sup>8</sup>U.S. Oil and Natural Gas Wells by Production Rate <https://www.eia.gov/petroleum/wells/>

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