Dallas Fed Energy Survey

First Quarter | March 29, 2017

Momentum Builds for Oil and Gas Activity

What's New This Quarter

Starting with this quarter's survey, we will report on oil and gas executives' forecasts for year-end West Texas Intermediate crude oil and Henry Hub natural gas prices. These forecasts are presented in tables and charts. We also will report on changes in the uncertainty facing executives' company outlooks.

This quarter's special questions include an annual update to our data on breakeven prices by basin, new information on oilfield services costs and comments on the outlook for the Permian Basin.

Business activity continued to rise in the first quarter, according to oil and gas executives responding to the Dallas Fed Energy Survey. The business activity index—the survey's broadest measure of conditions facing Eleventh District energy firms—remained robust at 41.8, similar to last quarter's 40.1 reading. For a second consecutive quarter, nearly all survey measures—including input costs and selling prices—reflected expansion on a quarterly basis. Responses from oilfield services firms were particularly strong.

Oil and gas production increased for the second quarter in a row, according to executives at exploration and production (E&P) firms. The oil production index was 13.1, up from 9.0 last quarter, and the natural gas production index advanced to 17.6 from 3.1. This suggests oil and gas production is rising at an accelerating rate.

Utilization of oilfield services firms' equipment increased but at a slower pace, with the corresponding index at 26.0, down from 35.9 last quarter. The index of prices received for oilfield services jumped to 18.3 from 6.8.

Executives largely reported stable or rising wages and benefits, with the aggregate index at 17.1. Other labor market measures were somewhat mixed, however—positive for oilfield services companies but slightly negative for E&P companies. The employment indexes were –6.4 for E&P firms and 21.6 for services firms. The employee hours indexes showed a larger gap: –1.3 for E&P firms and 34.2 for services firms.

Six-month outlooks continued to improve quarter-over-quarter, especially for oilfield services firms. Nearly 70 percent of services firms reported an improved outlook, while 50 percent of E&P firms reported an improved outlook. Capital expenditures continued to increase in the first quarter, and most E&P firms upped their expectations of 2018 capital spending.

On average, respondents expect West Texas Intermediate (WTI) oil prices to climb to $53.49 per barrel by year-end despite recent price declines, with responses ranging from $30 to $65 per barrel. Respondents expect natural gas prices to remain close to recent levels: on average, they believe Henry Hub prices will end the year at $2.95 per million British thermal units (MMBtu). For reference, WTI spot prices averaged $47.73 per barrel and Henry Hub spot prices averaged $2.94 per MMBtu during the survey collection period.

Next release: June 28, 2017

Data were collected March 15–23, and 153 energy firms responded to the survey. Of the respondents, 78 were E&P firms and 75 were oilfield services firms.

The Dallas Fed conducts the Dallas Fed Energy Survey quarterly to obtain a timely assessment of energy activity among oil and gas firms located or headquartered in the Eleventh District. Firms are asked whether business activity, employment, capital expenditures and other indicators increased, decreased or remained unchanged compared with the prior quarter and with the same quarter a year ago. Survey responses are used to calculate an index for each indicator. Each index is calculated by subtracting the percentage of respondents reporting a decrease from the percentage reporting an increase. When the share of firms reporting an increase exceeds the share reporting a decrease, the index will be greater than zero, suggesting the indicator has increased over the previous quarter. If the share of firms reporting a decrease exceeds the share reporting an increase, the index will be below zero, suggesting the indicator has decreased over the previous quarter.

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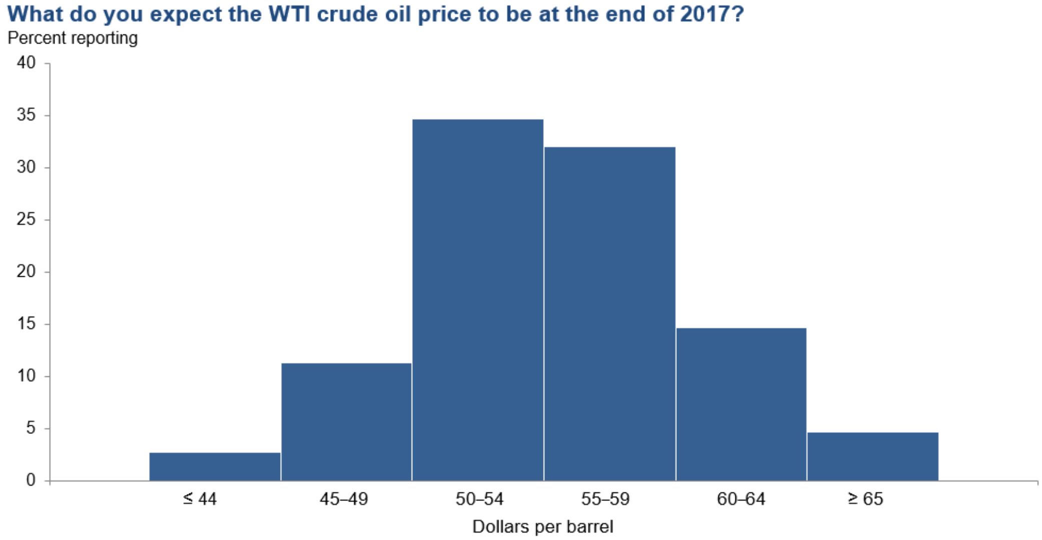
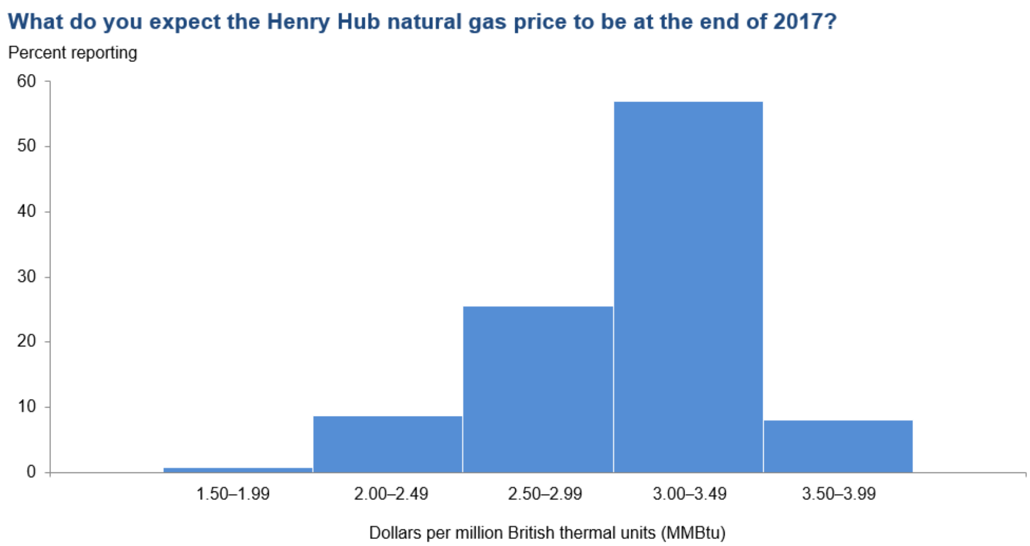


NOTES: One hundred fifty oil and gas firms answered this question from March 15–23, 2017. For reference, WTI (West Texas Intermediate) spot prices averaged $47.73 per barrel during the survey collection period.
SOURCES: Federal Reserve Bank of Dallas; Energy Information Administration (reference price).



NOTE: One hundred thirty-seven oil and gas firms answered this question from March 15–23, 2017. For reference, Henry Hub spot prices averaged $2.94 per MMBtu during the survey collection period.
SOURCES: Federal Reserve Bank of Dallas; *Wall Street Journal* (reference price).

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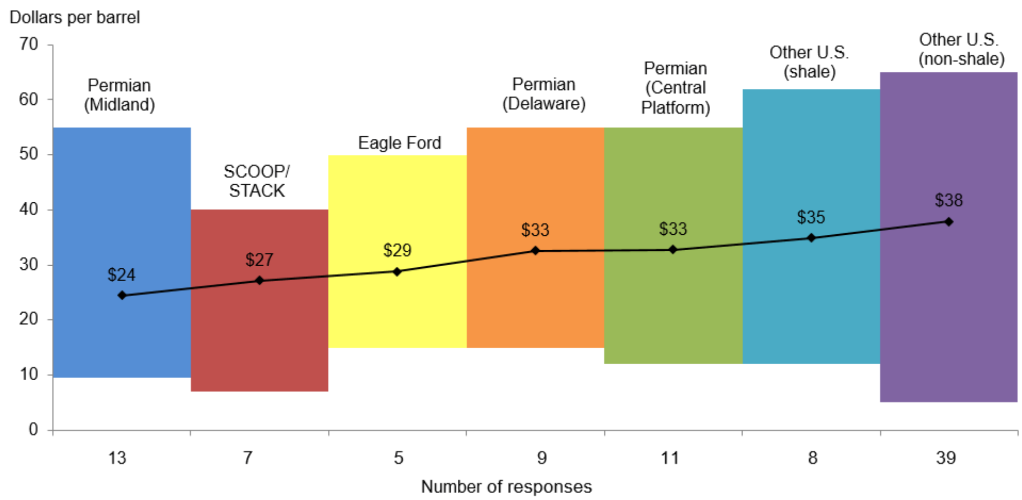
Special Questions

Data were collected March 15–23, and 153 oil and gas firms responded to the special questions survey.

E&P Firms

In the top two areas in which your firm is active: What WTI oil price does your firm need to cover operating expenses for existing wells?

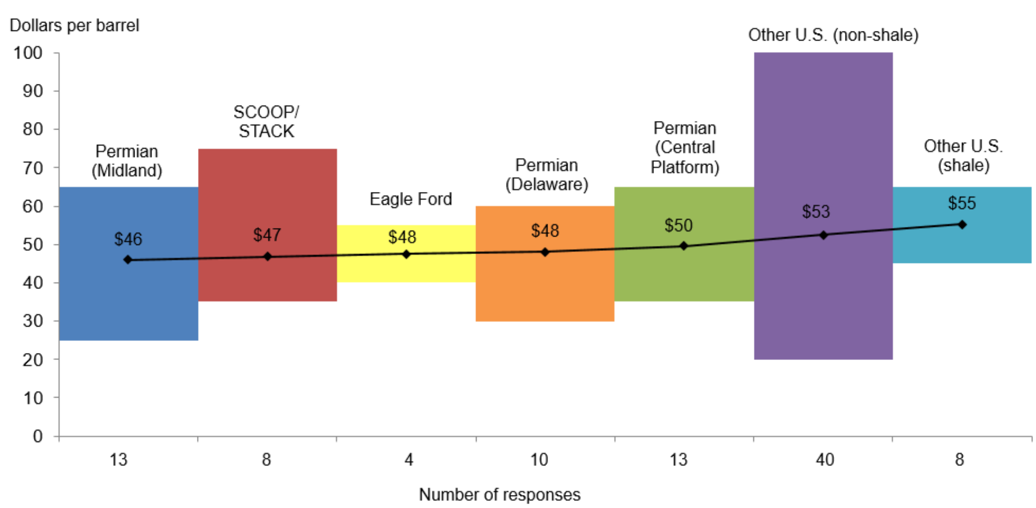
Individual responses varied, but average prices needed to cover operating expenses across regions fell in the fairly narrow range of $24–$38 per barrel. Most respondents are able to cover operating expenses for existing wells at current oil prices. Overall, operating expenses were similar to those observed in last year's first quarter survey.



NOTES: Lines show the mean, and bars show the range of responses. Sixty executives at exploration and production firms answered this question March 15–23, 2017.
SOURCE: Federal Reserve Bank of Dallas.

In the top two areas in which your firm is active: What WTI oil price does your firm need to profitably drill a new well?

Average breakeven prices to profitably drill a new well ranged from $46-$55 per barrel, depending on the region. For the entire sample, firms need $50 per barrel on average to profitably drill a new well, down from $54 per barrel when the same question was asked last year. Average breakeven prices in the Permian Basin were down to $48 per barrel this year from $51 per barrel last year.



NOTES: Lines show the mean, and bars show the range of responses. Sixty-two executives at exploration and production firms answered this question March 15–23, 2017.
SOURCE: Federal Reserve Bank of Dallas.

Oilfield Services Firms

For the top two services or products your firm provides: Do you expect average selling prices to increase, not change or decrease in 2017 vs. 2016?

More than half of respondents who drill, complete or work on wells expect selling prices for those services to increase this year. Responses for other types of services were mixed, with many predicting no change in prices.

	Percent reporting			
	Increase	No change	Decrease	No. of responses
Completions	62	33	5	21
Drilling	75	25	0	12
Oilfield transportation	44	56	0	9
Well work	64	29	7	14
Other services	31	46	23	48
All responses combined	48	39	13	104

NOTE: Sixty-six executives at oilfield services firms answered this question from March 15–23, 2017. Percentages may not sum to 100 due to rounding.
SOURCE: Federal Reserve Bank of Dallas.

For the top two services or products your firm provides: If you expect average selling prices to change, by what percent do you expect they will change?

On average, executives expect selling prices for drilling and completions to increase between 8 and 9 percent this year. Well work and oilfield transportation prices are also generally expected to increase between 5 and 6 percent. Prices for other services are expected to remain relatively flat. Across all responses, oilfield service selling prices are expected to increase 4 percent this year.

	Average	High	Low
Completions	8.8	35	-10
Drilling	8.3	25	0
Oilfield transportation	5.2	25	0
Well work	5.6	35	-50
Other services	0.1	20	-30
All responses combined	4.0	35	-50

NOTES: Sixty-four executives at oilfield services firms answered this question March 15–23, 2017. Averages include zeroes for respondents who expect no change.
SOURCE: Federal Reserve Bank of Dallas.

All Firms

Permian Basin production recently climbed over 2 million barrels per day (mb/d), and many expect production to continue growing for the foreseeable future. Where do you see Permian production levels next year, five years from now and 10 years from now?

Panelists wrote in responses about the future production potential of the Permian Basin. Responses varied, with some expressing that production would increase into the foreseeable future, others commenting that production would plateau, and a few noting that it would be tough to maintain current levels. Many executives discussed the nuances of trying to predict future production levels, with some noting that production is directly related to crude oil prices and the amount of takeaway transportation capacity. Predictions became more varied looking further into the future. A year from now, expectations ranged from 2 to 4 mb/d; five years out, they ranged from 2 to 5.5 mb/d; 10 years ahead, they ranged from 2 to 7 mb/d. Select responses are shown below by theme. A full list of 60 responses is available online.

Comments suggesting that Permian production will increase into the future:

> "There's little doubt the Permian will continue to grow. The amounts of capital the big firms are putting in out there is unbelievable. You read $35-50 thousand per acre in some areas. They are going to drill projects to try and recover that, no doubt."
>
> "We expect Permian production to be increasing, increasing, increasing. Too many people have too much money invested to stop drilling. And drilling is getting more efficient."
>
> "Unfortunately, due to the relatively low drilling cost, it looks like the Permian is likely to continue to be exploited over the next 10 to 15 years, resulting in a continued increase in production."

Comments suggesting that Permian production will plateau into the future:

> "I expect production to increase but not substantially. The Permian will be constrained by infrastructure. Another influencing factor is storage in Cushing, which stands at 91 percent of capacity, ironically significantly higher than the levels experienced in the past when we were 'running out of storage.'"
>
> "I believe Permian levels will continue to increase over the next 24 to 36 months. At that point there may well be a leveling off for a while as we see how these new finds play out and as we see what increased infrastructure projects will do to the overall market."
>
> "At the current strip price, I expect to see Permian production continue to increase for the next few years, but as the core is drilled up and longer laterals reach their physical limits, production will begin to drop over the longer term."

Comments noting that Permian production could decline into the future:

> "Two million barrels per day is a tough number to maintain in this price environment. Decline curves for shale production are steep, so I believe that this number probably holds fairly constant over the next five or more years. It will take steady drilling programs just to hold it flat."
>
> "I do not believe that the ultimate projected recoveries from the non-conventional wells currently being drilled in the Permian Basin will measure up to expectations. They will thus prove uneconomic at oil prices below $50 per barrel. The indicated decline curves are exponential rather than hyperbolic. Forecasting future production levels is a function of price expectations. I believe that $85 per barrel will be needed for sustained production increases from these non-conventional resources at current cost levels."

Comments noting the difficulty of predicting future production levels:

> "It depends on the WTI [West Texas Intermediate crude oil] price. If the price stays at or above $50 per barrel, I would expect a modest increase in drilling/production activity in the Permian. If prices happen to move above $75 per barrel, we could see a substantial increase in drilling/production."
>
> "If I knew that, I would be in Vegas."
>
> "No idea, but they better not increase too much or we'll see $25 per barrel—again."

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Historical data are available from first quarter 2016 to the most current release quarter.

Business Indicators: Quarter/Quarter

Business Indicators: All Firms

Current Quarter (versus previous quarter)

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Level of Business Activity	41.8	40.1	54.9	32.0	13.1
Capital Expenditures	31.3	27.4	46.0	39.3	14.7
Supplier Delivery Time	6.1	0.7	14.3	77.6	8.2
Employment	7.2	3.4	19.7	67.8	12.5
Employee Hours	15.9	13.7	29.8	56.3	13.9
Wages and Benefits	17.1	10.3	25.7	65.8	8.6

Indicator	Current Index	Previous Index	% Reporting Improved	% Reporting No Change	% Reporting Worsened
Company Outlook	45.6	57.1	57.7	30.2	12.1

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Uncertainty	15.9	N/A	33.8	48.3	17.9

Business Indicators: E&P Firms
Current Quarter (versus previous quarter)

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Level of Business Activity	35.9	40.3	50.0	35.9	14.1
Oil Production	13.1	9.0	34.2	44.7	21.1
Natural Gas Wellhead Production	17.6	3.1	36.5	44.6	18.9
Capital Expenditures	27.3	31.8	42.9	41.6	15.6
Expected Level of Capital Expenditures Next Year	44.9	41.8	56.4	32.1	11.5
Supplier Delivery Time	5.4	3.1	14.9	75.7	9.5
Employment	−6.4	−1.5	9.0	75.6	15.4
Employee Hours	−1.3	1.5	12.8	73.1	14.1
Wages and Benefits	19.2	4.5	26.9	65.4	7.7
Finding and Development Costs	13.3	−1.5	25.3	62.7	12.0
Lease Operating Expenses	2.7	14.0	18.9	64.9	16.2

Indicator	Current Index	Previous Index	% Reporting Improved	% Reporting No Change	% Reporting Worsened
Company Outlook	38.2	67.2	48.7	40.8	10.5

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Uncertainty	19.7	N/A	34.2	51.3	14.5

Business Indicators: O&G Support Services Firms
Current Quarter (versus previous quarter)

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Level of Business Activity	48.0	40.0	60.0	28.0	12.0
Utilization of Equipment	26.0	35.9	39.7	46.6	13.7
Capital Expenditures	35.6	23.8	49.3	37.0	13.7
Supplier Delivery Time	6.9	–1.3	13.7	79.5	6.8
Lag Time in Delivery of Firm's Services	2.8	0.0	5.6	91.7	2.8
Employment	21.6	7.5	31.1	59.5	9.5
Employment Hours	34.2	23.8	47.9	38.4	13.7
Wages and Benefits	14.8	15.2	24.3	66.2	9.5
Input Costs	23.6	13.1	31.9	59.7	8.3
Prices Received for Services	18.3	6.8	28.2	62.0	9.9

Indicator	Current Index	Previous Index	% Reporting Improved	% Reporting No Change	% Reporting Worsened
Company Outlook	53.4	49.4	67.1	19.2	13.7

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Uncertainty	12.0	N/A	33.3	45.3	21.3

Price Forecasts

West Texas Intermediate crude oil price (dollars per barrel), year-end 2017

Indicator	Reference Price	Survey Average	Low Forecast	High Forecast
Current quarter	$47.73	$53.49	$30.00	$65.00
Prior quarter	N/A	N/A	N/A	N/A

Henry Hub natural gas price (dollars per MMBtu), year-end 2017

Indicator	Reference Price	Survey Average	Low Forecast	High Forecast
Current quarter	$2.94	$2.95	$1.85	$3.75
Prior quarter	N/A	N/A	N/A	N/A

Business Indicators: Year/Year

Business Indicators: All Firms

Current Quarter (versus same quarter a year ago)

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Level of Business Activity	55.8	19.7	71.0	13.8	15.2
Capital Expenditures	37.5	13.8	57.4	22.7	19.9
Supplier Delivery Time	10.3	–1.6	23.5	63.2	13.2
Employment	2.1	–6.0	26.2	49.6	24.1
Employee Hours	19.9	4.6	36.9	46.1	17.0
Wages and Benefits	22.2	10.9	34.3	53.6	12.1

Indicator	Current Index	Previous Index	% Reporting Improved	% Reporting No Change	% Reporting Worsened
Company Outlook	60.3	47.1	72.8	14.7	12.5

Business Indicators: E&P Firms

Current Quarter (versus same quarter a year ago)

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Level of Business Activity	57.1	20.7	71.4	14.3	14.3
Oil Production	15.1	–1.7	46.6	21.9	31.5
Natural Gas Wellhead Production	21.2	–16.1	45.1	31.0	23.9
Capital Expenditures	37.4	15.8	58.7	20.0	21.3
Expected Level of Capital Expenditures Next Year	56.8	44.0	67.6	21.6	10.8
Supplier Delivery Time	12.5	3.6	25.0	62.5	12.5
Employment	–9.4	–11.9	17.3	56.0	26.7
Employee Hours	5.4	–12.3	24.3	56.8	18.9
Wages and Benefits	20.5	7.0	34.2	52.1	13.7
Finding and Development Costs	17.8	–27.6	34.2	49.3	16.4
Lease Operating Expenses	–2.8	–3.6	26.8	43.7	29.6

Indicator	Current Index	Previous Index	% Reporting Improved	% Reporting No Change	% Reporting Worsened
Company Outlook	59.1	57.4	71.8	15.5	12.7

Business Indicators: O&G Support Services Firms
Current Quarter (versus same quarter a year ago)

Indicator	Current Index	Previous Index	% Reporting Increase	% Reporting No Change	% Reporting Decrease
Level of Business Activity	54.4	19.0	70.6	13.2	16.2
Utilization of Equipment	43.9	24.3	59.1	25.8	15.2
Capital Expenditures	37.9	12.2	56.1	25.8	18.2
Supplier Delivery Time	7.8	–5.7	21.9	64.1	14.1
Lag Time in Delivery of Firm's Services	7.6	–4.4	16.7	74.2	9.1
Employment	15.2	–1.4	36.4	42.4	21.2
Employment Hours	35.8	17.5	50.7	34.3	14.9
Wages and Benefits	23.9	13.9	34.3	55.2	10.4
Input Costs	25.7	–1.4	40.9	43.9	15.2
Prices Received for Services	28.6	–19.1	41.3	46.0	12.7

Indicator	Current Index	Previous Index	% Reporting Improved	% Reporting No Change	% Reporting Worsened
Company Outlook	61.5	39.1	73.8	13.8	12.3

NOTE: Reference prices are averages of daily spot prices during the survey collection period.

SOURCES: Energy Information Administration; *Wall Street Journal*.

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Comments from Survey Respondents

These comments are from respondents' completed surveys and have been edited for publication. Comments from the Special Questions survey can be found below.

Exploration and Production Firms

- I am concerned that the Saudis will not be able to hold together the production cuts. The recapitalization of the U.S. shale industry will lead to immediate production from drilled but uncompleted wells (DUCs) but no real lowering of breakeven costs. At the American Petroleum Institute Lafayette Chapter meeting last Monday, a portfolio manager from JPMorgan Chase presented breakeven costs per shale basin that were higher than 2012 breakeven costs presented by Morgan Stanley. West Texas Intermediate oil dropping below $45 per barrel will lead to lower wellhead prices and cutbacks in production. We will see some Chapter 22 bankruptcies with some of the marginal producers who have recapitalized but have not improved their basic economics. All of this presumes that the Administration does not impose some sort of import tariff, quota or a border adjustment tax.
- We're very positive about the direction we're heading from a regulatory aspect, from a business-friendly environment. We do see some bumps along the way with oil prices. While we believe we'll be higher by year-end, prices still could see some short-term downside. Increased demand, possible tensions overseas and increased liquefied natural gas (LNG) exports could help prices. Overall, we believe things are headed in the right direction.
- Earthquake-related regulatory actions and lawsuits killed the appeal of our main operating base, Oklahoma. These same actions have hurt market value of assets being sold there, too. Gas purchasers have started adding new fees to take our gas, in addition to the previous fees they charged. Access to capital remains poor and reserve based lending (RBL) is on the wane. Continuity of micro-independents is questionable. Oil field service firms are greatly increasing their prices, raising our operating costs and throwing us further into red ink.
- I am hoping to see Congress address income tax issues soon.
- Unconventional resources remain the focus of the petroleum industry.
- Tubular price increases are a concern, as is availability. Rig availability is becoming an issue in vertical wells.
- Our company is seeing small increases in frac costs and slight increases in rig rates. Most other costs are steady. This applies to the Permian and Bakken.
- Supply continues to grow and consumption appears to be stable. Price increases, if any, for crude in the near-term will have to overcome an obvious downward pressure absent either a decrease in production or an incident in the Middle East that threatens production or transport. The market continues to be perception-driven by the traders.
- Commodity pricing is a complex subject, and supply vs. demand is a basic component of how market pricing is driven. At a national level, absent implementation of some type of national proration (as to oil production), production output, and thus inventory levels, are likely to continue to increase (absent increased demand) to some point where commodity prices will soften, and production output will flatten or decline. This will perpetuate a cycle of sharp commodity price peaks and troughs. Absent the ability to balance supply/demand globally, price volatility will inevitably continue. The inability to realistically project commodity prices is one of the biggest planning challenges faced by a small upstream oil and gas producer.
- We are a bit more conservative in our outlook than last quarter owing to the warm winter and resulting lower than expected natural gas price, but believe that this is only a temporary setback to business conditions.
- Regulations being removed by this new President is helping tremendously as to future outlook. The President is business-minded and not regulation stupid. Common sense is blooming in Washington. A growing economy means more energy demand. More jobs means less entitlement which means less government which means less cost to taxpayers and debt growth. Health care laws being changed means lower cost for the responsible public.
- I am concerned that the oil market will be oversupplied this year due to the increasing production from the Permian Basin.
- The increased rig count and continuing build in crude oil inventories gives me concern about a falling oil price.
- With the majors and large independents bull-headedly continuing to drill in spite of pricing and increasing inventories, there does not seem to be any upside for prices the rest of this year and probably none for 2018.
- As a small independent, I can't recall a time when the energy business indicators seemed so mixed and uncertain.

- Others in my office are more optimistic about exit 2017 pricing, especially on crude oil. With the accelerating commitments from private equity investors, we appear to be poised to become our own worst enemies. We put money to work (other people's money), improve technology, increase efficiencies, reduce finding and development costs, and consequently supply and demand takes over. Couple this with Khalid Al-Falih's comments about not giving free rides and we could see lower for longer. As all of the commentators say, we are awash with oil.

Oil and Gas Support Services Firms

- The turnaround needs to hurry and get here.
- There is practically no business for landmen unless you move your physical residence to the Midland area. The Permian and Denver Basin are hot but the rest of the country is absolutely dead.
- Permian Basin production will easily replace the Organization of the Petroleum Exporting Countries' (OPEC) cuts by the end of the year. Meanwhile, storage continues to increase and demand is increasing slowly. All of this will exert downward pressure on the price of oil. Additionally, the recent purchases of acreage in the Permian Basin are out of line with reality. The buyers cannot possibly drill up all the acquired acreage before the primary terms of the purchased leases expire. The recent acquisitions appear to be using publicly raised money, and my guess is these purchases are to appease the shareholders. We will be seeing a new round of bankruptcies in 2018.
- Too many rigs have gone back to work. Capital investment is driving drilling decisions rather than profitability. Price recovery is too fragile and the rig count increase is an illogical response to slightly improved prices. The market has not signaled that such a return to high activity levels is justified; therefore I can easily envision a price slump headed our way and the bottom of that cycle looks increasingly low.
- Companies are moving in from surrounding states to get some of the Permian boom. Competition is greater, driving pricing down for our rentals. The Affordable Care Act has doubled our insurance premiums. Small business cannot continue to absorb rising costs. There is no room for any profit. It is getting tougher by the day. Now the Federal Reserve is going to raise interest rates, making it harder to repay debt. We need help to continue, money is still tight and there is no money available for expansion.
- The recent pullback on the price of WTI due to record inventory levels is a concern. For business to get appreciably better we need to see WTI at $60 per barrel.
- Uncertainty surrounding how OPEC will respond at the upcoming meeting combined with the actions of financial players in the commodity markets will increase uncertainty in second quarter 2017.
- Supplier allocation is starting to happen.
- The key uncertainty for the end of 2017 and 2018 is whether OPEC and Russia will maintain their production cuts or not.
- While business has improved, we are still facing various headwinds. Oil falling below $50 per barrel has worsened many customers' capital expenditure forecasts. They react quickly to shifting prices. In addition, we are now having trouble finding experienced personnel so we are having to raise wages to recruit those individuals. In many cases, we cannot offset these wage increases with rate increases so our margins get compressed. Working capital is being consumed by swelling accounts receivable balances and reactivation capital expenditures/expenses. We need steady oil prices or we will be forced to raise capital in other ways. This lack of liquidity is our biggest concern.
- Although the last few weeks have affected the overall outlook, we still believe that supply and demand are coming back into line.
- Labor costs are on the increase. Margins are still suffering.
- General short term volatility in crude will not diminish but overall the improvement in upstream activity will sustain for the next 12-18 months.
- Being a service company to the oil and gas industry, our biggest issue is trying to pass on to customers the price increases we are getting from our material suppliers, mainly line pipe. Our cost for line pipe has increased by 30 percent since October 2016. There is a great deal of uncertainty in line pipe pricing globally which of course includes the United States.
- We are disappointed to see longer lead times for heavy equipment.
- We cut back hours and wages last quarter.
- Operators continue to beat down the prices of transportation and take longer to pay. Example: 10 years ago I opened this vacuum company at the going rate of $65.00 per hour. Currently, I am charging $67-$75 an hour and the price of tires, diesel, parts and insurance remain higher.

Special Questions Comments
Exploration and Production Firms

- One of my operators reported to working interest owners that they're seeing shortages of the type of down-hole pumps we are using on wells in our waterflood operations. A large conglomerate bought one manufacturer/supplier and promptly completely shut-down the manufacture of that type of pump. The remaining two competitors' pumps are of poorer quality and do not bench-test well. We've had to send them back in less than two months due to quality issues causing their premature failures.
- The rapid production increase in the Permian may lead OPEC to abandon their production cuts at the upcoming May meeting, which would lead to another price collapse.
- Companies that have been able to reorganize and come out of bankruptcy must think they can repeat the pattern now that they have new owners and less debt. With the pressure on services, companies cost increases are inevitable.
- With the majors moving into the Permian, the production from there will only increase. We anticipate that the steep decline ratios will also be arrested.
- The current President's implied policy of protectionism may serve to indirectly pressure OPEC countries to maintain production cuts/quotas, which would alleviate any significant oil price declines.

Oil and Gas Support Services Firms

- We are very concerned about the low current and future natural gas prices. Our expectation that natural gas prices will remain low for the foreseeable future materially reduces our firm's exploration and production potential to generate and develop new sources of natural gas.
- We have a great opportunity at this time to be energy independent and free of Mideast politics and events. Doing so will take immense political fortitude in the U.S., but it could happen.

Comments About the Permian Basin Production Outlook

Permian Basin production recently climbed over 2 million barrels per day, and many expect production to continue growing for the foreseeable future. Where do you see Permian production levels next year, five years from now and ten years from now?

- This depends solely upon price. Five years from now, production will have declined if relative prices remain stable. Ten years from now, production will have declined further if relative prices remain stable.
- Production will increase in five years. It's impossible to know what will happen in 10 years.
- We expect slow, but steady growth through all periods.
- There's little doubt the Permian will continue to grow. The amounts of capital the big firms are putting in out there is unbelievable. You read $35-50 thousand per acre in some areas. They are going to drill projects to try and recover that, no doubt.
- Production could grow to 5 million barrels per day over the next three to four years.
- I expect production to increase but not substantially. The Permian will be constrained by infrastructure. Another influencing factor is storage in Cushing, which stands at 91 percent of capacity, ironically significantly higher than the levels experienced in the past when we were "running out of storage."
- We expect growing production each quarter. Unfortunately, this increase and success will drive instability back into the oil markets which has already been observed.
- Two million barrels per day is a tough number to maintain in this price environment. Decline curves for shale production are steep, so I believe that this number probably holds fairly constant over the next five or more years. It will take steady drilling programs just to hold it flat.
- I don't have exact numbers but I expect them to increase substantially over both time horizons.
- If I knew that I would be in Vegas.
- We expect production to increase 10-12 percent in the next two years and decline by 20 percent five or more years out.
- By January 1, 2018, we expect to see a 0.5 million barrel per day increase. Five years from now (2022), we expect to see a 1.5 million barrel per day increase (from today). We expect 2027 production to be flat with 2022. There's a huge base of legacy conventional production that is declining and will fall precipitously in the interim, so additional capacity additions from unconventionals will be needed just to make up for depletion of older oil fields.
- Next year we expect production to be up 10 percent. In five years we expect production to be up 25-30 percent. In 10 years we expect production to be up 50 percent.

- The Permian is one of the few profitable areas in the U.S., and I expect to see production continue to grow.
- We foresee a 25 percent increase year-over-year.
- Permian production will continue to increase.
- We expect to see 3 million barrels per day in the next three years.
- I do not believe that the ultimate projected recoveries from the non-conventional wells currently being drilled in the Permian Basin will measure up to expectations. They will thus prove uneconomic at oil prices below $50 per barrel. The indicated decline curves are exponential rather than hyperbolic. Forecasting future production levels is a function of price expectations. I believe that $85 per barrel will be needed for sustained production increases from these non-conventional resources at current cost levels.
- Permian production is dependent on growth in global demand over this period. If demand remains flat, then we will essentially remain oversupplied given the ability to produce high volumes over short periods. A concern in the near-term is forced drilling to protect overly expensive position investments. More cycles like this latest will eventually erode access to capital markets. There is not enough historical data (improved well design) to accurately predict production declines during periods of reduced drilling activity.
- I believe Permian levels will continue to increase over the next 24 to 36 months. At that point there may well be a leveling off for a while as we see how these new finds play out and as we see what increased infrastructure projects will do to the overall market.
- At the current strip price, I expect to see Permian production continue to increase for the next few years, but as the core is drilled up and longer laterals reach their physical limits, production will begin to drop over the longer term.
- No idea, but they better not increase too much or we'll see $25 per barrel. Again.
- It's unpredictable.
- We expect Permian production to be up slightly per year over the next five years then max at 3 million barrels per day.
- It depends on the WTI price. If the price stays at or above $50 per barrel, I would expect a modest increase in drilling/production activity in the Permian. If prices happen to move above $75 per barrel, we could see a substantial increase in drilling/production.
- We expect to see production Increase in 2018, substantially increase five years out and have no guess for 10 years.
- In general, I expect production to increase with time until the oil price decreases to $40 per barrel.
- We expect Permian production to be increasing, increasing, increasing. Too many people have too much money invested to stop drilling. And drilling is getting more efficient.
- It's unknown.
- As long as the price remains around $50 per barrel, drilling will continue to increase daily production. The level in one year will likely be around the level today; five or ten years is hard to forecast.
- We expect production to be higher.
- We expect production to be up 30 percent next year, up 30 percent in the next five years and up 10 percent in the next 10 years.
- We expect production to increase in all time periods.
- The Permian Basin is cost-sensitive. If we overproduce, market forces will enter and production will stop due to price. Supply and demand rule. Price determines the level of activity in any commerce. The strength of our dollar can affect the price of oil here. Middle East conflict can be a factor. World demand can be a factor. Oil is a commodity. We have storage at record levels. Demand is needed. Economic growth domestically is a must.
- Next year we expect to see 2.5 million barrels per day. In five years we expect to see 5 million barrels per day. In 10 years we expect to see 7 million barrels per day.
- Depending on pipeline capacity to move oil to the Gulf, Permian production will increase.
- We foresee production holding then climbing as excess reserves level and climb.
- It's all a function of the price and it's impossible to predict that.
- In one year we foresee 2.1 million barrels per day. In five years we expect 2.5 million barrels per day. In 10 years we expect 2.5 million barrels per day.
- Unfortunately, due to the relatively low drilling cost, it looks like the Permian is likely to continue to be exploited over the next 10 to 15 years, resulting in a continued increase in production.

- As long as the price of oil stays above $50 per barrel, production could reach three million barrels per day in five years and maybe reach five million barrels per day in 10 years.
- I anticipate Permian production to grow by 650,000 barrels per day over the next nine months and to increase to 3 million barrels per day over the next two years. I do not see rates going significantly over 3 million barrels per day over the next five or 10 year periods.
- I expect production to be up significantly.
- I expect all three time frames to have increased production.
- Production numbers will be completely dependent on the price of oil. In the $40-45 range, activity will decrease. Above $60, activity will be considerable. Between $45 and $60, drilling new wells will go up and down with the price.
- We're not certain, but we expect production to most likely be increasing over the next five years and decreasing after that.
- We expect a 10 percent increase in the next 12 months and believe production is totally unknown/not knowable in five to 10 years. There are going to be competing fuel sources that could rapidly change the environment for fossil fuels.
- Any increases in production will be gobbled up in pricing. The market can only bear what demand is. As inventories are climbing, the price will certainly drop. There is a worldwide oversupply of oil, so I cannot be optimistic about the future.
- We expect production to be about the same or higher. There will be ongoing production increases, but also ongoing production declines that will likely offset each other. However, the declines may overtake the increases.
- Production will continue to grow if the price of WTI remains at $50 per barrel or higher. If we see WTI drop back into the $30s, rigs will drop and activity will slow. Based on current WTI, my prediction of production is 2.5 million barrels per day in 2018 and 4 million barrels per day in 2022.
- 2018: up 2 million barrels per day. 2023: up 1.5 million barrels per day. 2028: down 2 million barrels per day.
- 2018: 2.2 million barrels per day. Five years from now: 3 million barrels per day. Ten years from now: 3.5 million barrels per day.
- 2018: 3 million barrels per day. Five years from now: 4.5 million barrels per day. Ten years from now: 4 million barrels per day.
- Next year: 2 million barrels per day. Five years from now: 3 million barrels per day. Ten years from now: 3.5 million barrels per day.
- Five years from now: up 20 percent. Ten years from now: up 15 percent.
- Five years from now: 3.5 million barrels per day. Ten years from now: 5 million barrels per day.
- Next year: 2.5 million barrels per day. Five years from now: 4.25 million barrels per day. Ten years from now: 6 million barrels per day.
- Next year: 2.25 million barrels per day. Five years from now: 3 million barrels per day. Ten years from now: unknown.
- Next year: 2.3 million barrels per day. Five years from now: 3.5 million barrels per day. Ten years from now: 3 million barrels per day.
- Next year: 3 million barrels per day. Five years from now: 5 million barrels per day. Ten years from now: 7 million barrels per day.

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