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ENERGY INVESTMENT BANKING

MUSINGS FROM THE OIL PATCH

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Note*: Musings from the Oil Patch reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating and planning for the future. The newsletter is published every two weeks, but periodically events and travel may alter that schedule. As always, I welcome your comments and observations.* Allen Brooks

When Is History Not A Guide For The Future Of Oil Prices?

People have built careers by following history and seeking patterns that might offer guidance about the future

"History doesn't repeat itself, but it does rhyme," American humorist Mark Twain once said, a quote many people use to justify pointing out how current similarities compare with the past and can be used to predict the future. People have built careers by following history and seeking patterns that might offer guidance about the future - think of technical stock market analysts, economists, bankers and historians. We admit to following history and the patterns it might show. However, our approach focuses more on the forces shaping those past patterns as current similarities or differences may influence the probability of similar scenarios unfolding.

In the first three weeks of January, WTI dropped by nearly 28%, sending the price to the mid-$20s a barrel and near multi-year lows

The path of oil prices so far this year is an example of where examining the factors behind a similar trading pattern as in the past may bring you to a different conclusion. Volatility of crude oil prices has been a hallmark of the first ten weeks of 2016. This year started with West Texas Intermediate (WTI) priced slightly under $37 a barrel. Sentiment about the industry and the global economy at that time was negative as Christmas retail sales had been weak, winter weather in the U.S. and Europe was warmer than normal, and financial markets were punishing energy debt and equity issues. As a result, in the first three weeks of January, WTI dropped by nearly 28%, sending the price to the mid-$20s a barrel and near multi-year lows. Surprisingly, oil prices jumped up nearly 27% within the next week! February and early March brought equal volatility as WTI dropped by 22% in the following two weeks before soaring 47% through the end of the first week of March.

After all this volatility, over January 4 to March 11, 2016, WTI rose 4.8%. That increase was smaller than the gain over the first five months of 2015 when WTI climbed by 16.3%. The specific period changes – on a percentage and dollars per barrel basis – are shown

in Exhibit 1. We would draw the reader's attention to the fact that the percentage changes are very similar as are the changes measured in dollars-per-barrel. What is different is that the 2016 moves have been more violent, if one assumes that volatility is a direct reflection of the amount of time required for each period's price move.

Exhibit 1. Oil Price Moves In 2015 And 2016

2015 WTI Futures Price Volatility				
Date	Price	Pct. Chg.	Period Pct. Chg.	$ Change
1/2/2015	$52.69			
		16.2%		($8.54)
1/26/2015	$44.15			
		-21.2%		$9.38
2/17/2015	$53.53		16.3%	
		18.8%		($10.07)
3/17/2015	$43.46			
		-41.0%		$17.80
6/2/2015	$61.26			

2016 WTI Futures Price Volatility				
Date	Price	Pct. Chg.	Period Pct. Chg.	$ Change
1/4/2016	$36.76			
		-27.8%		($10.21)
1/20/2016	$26.55			
		26.6%		$7.07
1/29/2016	$33.62		4.8%	
		-22.0%		($7.41)
2/11/2016	$26.21			
		47.0%		$12.31
3/11/2016	$38.52			

Source: EIA, PPHB

You can see how the shape of the trading action of the two years is quite similar

Before we assembled the table in Exhibit 1, we had constructed a chart of the daily closing price for WTI during the first ten weeks of 2016 and the first six months of 2015. A review of last year showed that the oil price recovery in 2015 peaked at the start of June so that marked the end of the relative measurement period. When we examined our chart, we were surprised to see the visual similarity between the oil price movements during the two different time periods. It requires a little imagination, however, if one looks at the 2016 trading pattern and visualizes it being pulled to the right to match the five month period of 2015, you can see how the shape of the trading action of the two years is quite similar. That doesn't mean we can draw any conclusions from the similarity of the two trading periods other than to suggest we should examine what factors moved oil prices up and down then and whether similar forces are at work now.

As prices approached the mid-$40s, investors and industry forecasters began focusing on the likelihood of a V-shaped recovery because of the spending cuts

In 2015, the first period of price decline reflected a continuation of the industry's response to OPEC's Thanksgiving Day decision to no longer support oil prices but rather to let them be established by market forces. From the mid-$70s in late November 2014, at the time of the OPEC meeting, oil prices fell by about $30 a barrel, taking prices into the mid-$40s. The magnitude of that decline, especially when one realizes that the peak in June 2014 was over $100 a barrel, was driven by the oil companies who were openly vowing to cut their capital spending plans for the year in response to the oil price drop, but still drilling and producing more oil. As prices approached the mid-$40s, investors and industry forecasters began focusing on the likelihood of a V-shaped recovery because of the spending cuts. As a result, on a dollars-per-barrel basis, WTI futures recovered almost as much as they had lost in the prior decline, but due to a lower starting price, the percentage rise in oil prices was greater than earlier percentage loss.

Exhibit 2. Is History Repeating Or Merely Just Rhyming?

Source: EIA, PPHB

Lots of volatility without much real progress in oil prices

As Saudi Arabia raised its output and was subsequently joined by Russia, the oil market began to focus on the growing oversupply that would depress oil prices by the spring when oil storage facilities began filling up during the traditional March/April refinery turnaround season. As a result, oil prices fell back to near where they had bottomed in January. Lots of volatility without much real progress in oil prices. This prompted commodity technicians to start suggesting that maybe crude oil futures had established a double-bottom, which often indicates a technical trading support level from which prices may then begin rising on a sustained basis. That is exactly what happened. Starting on St. Patrick's Day in 2015, crude oil futures prices moved steadily higher, eventually climbing above $61 a barrel by early June, for a 41% increase. At that point, however, the reality of exactly how oversupplied the global oil market was beginning to

set in. As industry forecasters examined the monthly data, they discovered that Saudi Arabia had boosted its output on a sustained basis above 10 million barrels a day, a level seldom ever reached before. Russia's output also was increasing, but the most troubling market force was the dramatic rise in U.S. oil output and the fact that it appeared production was not slowing despite the fall in oil prices. This should not have been a surprise, if forecasters had listened to the oil company executives and more thoroughly examined their financial needs. Ever-hopeful forecasters, on the other hand, were counting on the oil company spending cuts to derail domestic production growth. However, since the oil production data collected and reported by the Energy Information Administration (EIA) runs about two months in arrears, the ever-growing output scared forecasters and investors into thinking that the shock of the low oil prices earlier in the year had not dealt the knockout blow to production they had anticipated. Crude oil futures prices struggled throughout the month of June to digest the latest production data and the rhetoric of oil company execs before concluding that there had been, and might not be, a meaningful decline in U.S. oil output. At that point the market said, "Adios, $60 oil."

Ever-hopeful forecasters, on the other hand, were counting on the oil company spending cuts to derail domestic production growth

The second half of 2015 marked a period when oil companies went back to the drawing boards to figure out how they could further adjust their cost structure and to reassess their financial positions – just how bad was it? Spending cuts projected at the end of 2014 or early in 2015 were clearly insufficient. The strategy of hunkering down was tossed aside in favor of retrenchment. For managers, the thinking shifted from: If we can surgically trim our organizations and reduce our spending, i.e., drilling and development activity, maybe we can get into early 2016 in a reasonably healthy condition. The projected first half of 2015 recovery had been pushed back into the second half of 2015 and was now sliding into early 2016, although some radical thinkers were beginning to suggest a recovery might not come before 2017 or even 2018!

The strategy of hunkering down was tossed aside in favor of retrenchment

The early 2016 drop in oil prices was caused by the continued persistence of high global oil output, including in the United States, and weak oil demand due to both global economic weakness and a lack of winter demand in the Northern Hemisphere. Falling oil prices created an almost unanimous recognition that only by shutting down the entire industry would production stop rising. Of course, there is always the prospect that low oil prices are hurting the large oil export-dependent economies sufficiently that they will act in their self-interest and agree to cut production. During the first quarter, we witnessed announcements of significant oil company capital spending cuts and massive staff layoffs as the companies struggle to adjust to the prospect of "lower for longer" actually coming true. As the latest production data from the EIA shows, U.S. oil output fell in December compared to the prior year for the first time in about four years. Moreover, the EIA in its monthly forecast updates is now projecting that U.S. oil output will decline by between 500,000 and

Falling oil prices created an almost unanimous recognition that only by shutting down the entire industry would production stop rising

The prospect of lower U.S. oil output is creating a scenario of falling global oil inventories during the second half of 2016

800,000 barrels a day by the end of 2016. Coupled with prospects of an upcoming agreement among leading Middle East producers and Russia to cap their output at January 2016 levels, almost regardless of whether Iran participates in that agreement, the prospect of lower U.S. oil output is creating a scenario of falling global oil inventories during the second half of 2016 and throughout 2017, thus supporting higher oil prices, possibly sooner rather than later.

If any one of these scenarios occurs, we could be looking at a long, hot summer for the oil business

The risks to this scenario happening, besides a fall-off in global oil demand due to weaker than anticipated economic activity, is that U.S. oil output remains persistently higher than anticipated, that a bounce in oil prices takes oil prices to levels that restart shale oil drilling, and that the agreement among OPEC and non-OPEC producers to freeze production fails. If any one of these scenarios occurs, we could be looking at a long, hot summer for the oil business, in which case history will repeat and not just rhyme.

Struggling Economies, Stimulus, Cheap Money And Energy

Mr. Rattner suggests that global economic competition and weak productivity growth have contributed to more money flowing to the rich who are less likely to spend it

Increasingly, academics and politicians recognize that as we finish the seventh year of a recovery following the 2008 financial crisis, economic growth remains well below historic levels. Economic growth is below long-term growth rates, but importantly it remains well below the pattern of increases from previous economic recessions. Everyone is groping for an explanation. A recent opinion article in *The New York Times* by Steven Rattner, head of private equity firm Quadrangle Group and a former investment banker, journalist and the head of the auto bailout efforts of the Obama administration during the 2008 financial crisis, tries to identify who should be blamed for the slowing economy. Governments are his prime target, but not exclusively. Mr. Rattner suggests that global economic competition and weak productivity growth have contributed to more money flowing to the rich who are less likely to spend it. A lack of business confidence due to weak retail sales and final demand is keeping businesses from investing. Businesses are further challenged by the rise of capital-efficient and service-oriented businesses that mean less spending on machinery and buildings. Lastly, the reforms instituted for the financial system in response to the 2008 crisis has put banking in a straitjacket, discouraged lending and reduced liquidity on investment firms' trading desks, which has contributed to the increased volatility of markets that has generated fear among ordinary Americans.

He points to European governments lurching from crisis to crisis as a challenge for economic policies

Mr. Rattner also points to the problem of governments who have failed to address tax reform and would rather rely on a meat-ax for cutting federal spending. He points to European governments lurching from crisis to crisis as a challenge for economic policies. China holds a special place for criticism over its manhandling of its financial sector problems, the country's rapidly rising debt, and the government's lack of transparency that escalates fear about its

reaction to future challenges. In Mr. Rattner's mind, the responsibility for the next economic crisis – either a global recession or merely failure to break out of the current stagnation – will rest with governments.

Technological transformation within the economy and trade deals that shift industrial jobs abroad have created a new era

Another voice on the global growth challenge was former Senator and Ambassador George Mitchell (D-Me) who has been interviewed on CNBC several times. He discussed the polarization within the U.S. and elsewhere following the 2008 recession. It contributed to a collapse of middle class jobs. Technological transformation within the economy and trade deals that shift industrial jobs abroad have created a new era. The problem is that jobs haven't followed that new era. In Sen. Mitchell's view, and he admitted he had no answer, dealing with this new era, creating well-paying jobs and rebuilding the middle class are the great economic challenges for the coming decades.

Mr. Gordon believes it will be difficult for the low-growth economy of the world to accelerate as demographic changes will further drag down economic growth

To learn more about this challenge, we recently read Robert Gordon's treatise on U.S. economic growth, The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War. This is an excellent study of the development of America's economy and society driven by new inventions and technologies and how the pace of their introduction has slowed, pulling down the rate of productivity and economic growth. Mr. Gordon believes it will be difficult for the low-growth economy of the world to accelerate as demographic changes will further drag down economic growth. Interestingly, the demographic issue will have a much greater impact on world economic growth than the impact from a warming planet. According to research conducted by noted climate economist William Nordhaus, the impact of a 3^{o} C warming of the global temperature in the next 70 years would reduce global real gross domestic product (GDP) per person by only 2.5%, or an annual growth subtraction of -0.036 of a percentage point per year. That is trivial compared to the estimates of a negative effect of -0.4% for demography as a result of baby-boom retirements. Mr. Nordhaus' estimate is based on the hypothetical failure of a worldwide policy to take explicit measures to fight global warming. As a result, we should be more worried about what an aging population will have on our lives than global warming.

We have become convinced that mastery of Fed speak is a requirement to be the Fed chair

Last Wednesday, we had the opportunity to watch the televised press conference of Federal Reserve Chair Janet Yellen following completion of her organization's two-day policy meeting and the issuance of the Federal Open Market Committee's policy statement. Her responses to the first two questions from financial reports, which we thought were insightful, left us wondering what she had said. It turned out we were not the only one left in the fog of Fed speak, i.e., gobbledygook, as the questioner acknowledged that he didn't understand Ms. Yellen's answers, also. We have become convinced that mastery of Fed speak is a requirement to be the Fed chair. But the lack of clarity, which enables people to put their own

Their lack of clarity, however, contributes to increased financial market volatility

spin on the explanation, prevents people from fully comprehending exactly what the Fed is attempting to do. Maybe that is what they wanted to accomplish because the Fed actually doesn't know what to do. Their lack of clarity, however, contributes to increased financial market volatility and potentially puts our economy at greater risk in the future.

At the same time, he lowered Great Britain's economic growth outlook

On the same day the Fed released its interest policy statement, British finance minister George Osborne used his annual budget statement to warn against a vote to exit the European Union in the upcoming June referendum. At the same time, he lowered Great Britain's economic growth outlook, granted some tax reductions to small businesses, cut capital gain taxes for individuals, announced a larger budget shortfall than originally projected, and instituted a tax on sugary drinks to generate more tax revenues under the guise of reducing obesity in the country.

Now, the government sees the British economy only growing 2% this year, down from November's projection calling for 2.4% growth

The reduction in forecasted economic growth for Great Britain reflects a more pessimistic view of productivity. Now, the government sees the British economy only growing 2% this year, down from November's projection calling for 2.4% growth. The 2017 growth estimate was also lowered, cut from 2.5% to 2.2%. Moreover, the economy will be stuck at 2.1% per year growth for 2018-2020. The political interpretation of the budget message was that the public would be happy receiving big tax cuts, and that would dominate the discussion to the exclusion of the slower growth projection and the tax hike on sugary drinks.

"Financial markets are turbulent. Productivity growth across the west is too low. And the outlook for the global economy is weak. It makes for a dangerous cocktail of risks."

Mr. Osborne will miss his own target for lowering public debt's share of the British economy this year. Borrowing will be higher for the next few years than previously thought, suggesting that reducing debt's importance for the economy will be a challenge. But on the economic headwinds Great Britain faces, Mr. Osborne said, "Financial markets are turbulent. Productivity growth across the west is too low. And the outlook for the global economy is weak. It makes for a dangerous cocktail of risks."

The economic challenge is mirrored in many countries around the world

The British government's growth cut comes on the back of the International Monetary Fund that has repeatedly reduced its projections for economic growth in the developed economies of the world. The economic challenge is mirrored in many countries around the world. Interestingly, Saudi Arabia, the scourge of the west for what it has done to global oil markets, and the target of its impoverished partners within the Organization of Petroleum Exporting countries for taking away the honey pot of high oil prices, has just instructed its ministries to cut their spending. All ministries and state bodies received a document instructing them to reduce the value of outstanding contracts signed to support their operations along with cutting all construction contracts included in the 2016 state budget by "not less than 5 percent of remaining obligations." According to media reports, these measures were proposed by the

minister of economy and planning to "rationalize spending and increase its efficiency" and were approved by King Salman.

Many developed economies are looking to their central banks for monetary stimulus to help boost growth

The budgetary problems of many countries around the world are a reflection of slowing growth and low commodity prices. Governments can only do so much through their fiscal policies to stimulate economic growth. Many developed economies are looking to their central banks for monetary stimulus to help boost growth. The problem is that many central banks have already driven short term interest rates to near zero, or in some cases to negative rates. Not only do these low rates leave central bankers with little firepower to stimulate their economies, they create unusual challenges for local citizens. We were reminded of that condition by a recent Scott Burns' column dealing with the challenge faced by retirees who wish to finance their retirement in a risk-free manner.

Mr. Burns, a long-time financial journalist and the creator of the "Couch Potato" investment portfolio, authored a column recently pointing out the dilemma faced by retirees who wished to finance their retirements without assuming any risk, or as he titled it, "How to cope with the great yield famine."

The last time anyone earned 6% on a six-month certificate of deposit (CD) was December 2000

The column, published about two weeks ago, pointed out that the last time anyone earned 6% on a six-month certificate of deposit (CD) was December 2000. The lowest yield on a six-month CD immediately after the dotcom market crash was 1.01% in June 2003. The highest yield on a six-month CD since June 2003 was 5.22% in July 2006. Today, according to Bankrate.com, the highest yield on a six-month CD nationwide is 1.10%, but the vast majority of banks offer less than 0.15%.

He then went on to figure out the retiree's needs and how much capital was required to meet those needs risk-free. The monthly premium for Medicare Part B is $121.80, or $1,461.60 a year. To earn that much money from a 0.15% CD you would need to keep $974,400 on deposit. For most Americans that is a large sum, but it is not a problem since Social Security deducts the payment from your monthly check.

To finance a poverty-level retirement with a risk-free investment portfolio means you have to maintain $11,594,400 of your assets on deposit in those low-yielding CDs, which would place you among the top 1% of wealthy Americans

The official federal poverty level income for a family of two for 2016 is $15,930. To generate that income from a risk-free CD at 0.15% interest, you need to deposit $10,620,000. To finance a poverty-level retirement with a risk-free investment portfolio means you have to maintain $11,594,400 of your assets on deposit in those low-yielding CDs, which would place you among the top 1% of wealthy Americans. Think about that. If you don't want to accept financial risk in your retirement, you must be in the top group of Americans in terms of wealth. The rich are poor! In order to keep our world spinning and boost its growth rate, there are no risk-free avenues available for ordinary Americans. Recognition of this condition, coupled with the stock market's volatility, may be fueling a

portion of the anger we are seeing among the electorate today. This situation will also be an anchor on how fast our energy needs grow.

Shell And Aramco Break-up Highlights Market Share Issue

Motiva owns and operates three refineries processing 1.1 million barrels per day and 8,300 Shell-branded gasoline stations

Last week, in a surprise move, Saudi Aramco and Royal Dutch Shell (RDS.A-NYSE) announced that they had signed a letter of intent outlining an agreement between the two parties to end their 50-50 joint refining and marketing venture, Motiva Enterprises LLC. The partnership was formed in 1998 and began operation in 2002 as a 50-50 joint venture following Chevron's (CVX-NYSE) departure as a condition for its acquisition of Texaco. Motiva owns and operates three refineries processing 1.1 million barrels per day and 8,300 Shell-branded gasoline stations throughout Texas, the Mississippi Valley, the Southeast, the Mid-Atlantic and Northeast regions of the United States. Motiva's 600,000-barrel-a-day refinery located at Port Arthur, Texas, is rated the largest in North America.

Under the terms of the agreement, Saudi Aramco will take the Port Arthur refinery and 26 distribution terminals. It will have exclusive license to the Shell brand at gas stations in Texas, most of the Mississippi Valley, the Southeast and the Mid-Atlantic region. Shell will retain the refineries located in Norco and Convent, Louisiana along with nine terminals. It will also own the gasoline-branded stations in Florida, Louisiana and the Northeast.

The company has stated that it plans to sell $30 billion in assets over the next three years in addition to the $20 billion it sold in 2015

The rationale for ending the 14-year joint venture is to simplify Shell's businesses. The company has stated that it plans to sell $30 billion in assets over the next three years in addition to the $20 billion it sold in 2015. Some of the money raised from these asset sales will help finance the $50 billion purchase of BG Group completed earlier this year. These moves are consistent with the strategy set out by new Royal Dutch Shell CEO Ben van Beurden when he assumed the helm in January 2014. At that time, he offered a brief but important list of priorities. First was to improve Shell's financial results as the company had failed to earn its dividend in recent years forcing it to increase its debt load. As part of that focus, Mr. van Beurden targeted improving profitability in Shell's unconventional oil and natural gas business along with its downstream oil-products division. His second priority was to achieve better capital efficiency, something he accomplished when he ran Shell's chemicals operation. Lastly, he wanted to strengthen operational performance and project delivery across the company. He even told the editors of *The Wall Street Journal* he was prepared to shrink Shell if necessary to boost financial returns.

There are some other aspects of this joint venture breakup that helps Shell's strategy. Having complete ownership over the Norco, Louisiana, refinery, which is next to a Shell petrochemical plant will enable the company to improve performance of both businesses. Additionally, Shell will have complete control over assets it could sell

to reach its asset sale target, or to be dropped down into the company's recently established Shell Midstream Partners master limited partnership. This deal offers Shell management much greater flexibility to maximize returns for shareholders.

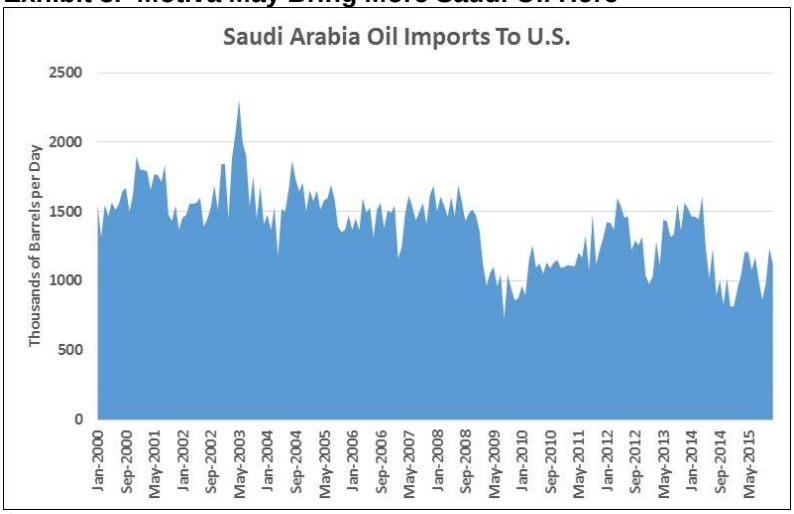
Between November 2013 and September 2015, the Port Arthur refinery cut its imports of Saudi Arabian oil by 48% in favor of oil coming from North American wells

What does the deal mean for Saudi Aramco? It does three things, two of which help it overcome the loss of market share experienced in recent years. First, as pointed out by analysts, between November 2013 and September 2015, the Port Arthur refinery cut its imports of Saudi Arabian oil by 48% in favor of oil coming from North American wells. The impact of that cut can be seen in Exhibit 3. With total control over the 600,000 barrel-a-day refinery, it could run totally on Saudi oil that would boost the country's imports into the United States. Additionally, control over the Port Arthur facility enables Saudi Arabia to gain from the increased value that comes from processing crude oil and selling refined product, especially in the world's largest petroleum market.

On January 1, 2016, Motiva began trading its own fuels

In 2015, Motiva established its own trading department for gasoline and refinery intermediate products. On January 1, 2016, Motiva began trading its own fuels. That trading team will remain with Saudi Aramco following the breakup. This will provide the company with optionality for further expanding in the downstream sector of the U.S. petroleum industry and possibly increasing imports into the country.

Exhibit 3. Motiva May Bring More Saudi Oil Here



Source: EIA, PPHB

Building its downstream business is part of the company's strategy for recovering previously lost market share

The final consideration for Saudi Aramco is that complete ownership of these downstream assets will help in completing an initial public offering by simplifying and clarifying its business. Building its downstream business is part of the company's strategy for recovering previously lost market share. It has been adding refineries around the world in large consuming markets. China has

By using its oil as feedstock, Saudi Aramco could rebuild its lost market share and ensure greater stability of that revenue stream

been the primary target but maybe the stage is set for Saudi Aramco to expand its refining capacity in the U.S. beyond what it already owns. By using its oil as feedstock, Saudi Aramco could rebuild its lost market share and ensure greater stability of that revenue stream. From a financial return point of view that strategy could come at a cost of lowered profitability as it will have the capital cost of refinery ownership.

Staying in the venture would have hurt both companies long-term

The breakup of Motiva may be unique in that it aids the long-term strategies of both partners. In reality, each partner's strategy is driven in response to the changing fundamentals of the global petroleum industry. Staying in the venture would have hurt both companies long-term. This deal is reflective of out-of-the-box thinking necessary to reshape the global oil and natural gas industry.

Outlook for The U.S. Offshore Industry Is Darkening

This is the second time that acreage in the Atlantic Ocean has been bumped from proposed five-year lease sale programs

After enunciating an energy policy in March 2012 that was based on the concept of an "all of the above" resource strategy, President Barack Obama has abandoned it in his recent energy policy actions. First, he rejected the construction application for the Keystone XL pipeline, and now he is ditching the Atlantic Lease 260 sale from the proposed five-year offshore oil and gas lease sale program for 2017-2022. Even more recently, President Obama has directed that the government tighten air pollution standards for offshore drilling. The removal of Atlantic Lease 260 is a reversal of President Obama's previous policy calling for opening up the East Coast offshore to oil and gas exploration. This is the second time that acreage in the Atlantic Ocean has been bumped from proposed five-year lease sale programs. The first time was in 2010 when President Obama was siding with including an Atlantic lease sale in the 2012-2017 sale program, only to withdraw his support after the Macondo accident and resulting oil spill.

The report pointed out that the United States is producing more oil and natural gas, is generating more electricity from renewables such as wind and solar, and is consuming less petroleum while holding electricity consumption constant

In President Obama's March 15, 2012, speech about energy policy, he stated, "We can't have an energy strategy for the last century that traps us in the past. We need an energy strategy for the future – an all-of-the-above strategy for the 21st century that develops every source of American-made energy." As explained in a report of the President's Council of Economic Advisors a little over two years following the speech, entitled "The All-of-the-Above Energy Strategy as a Path to Sustainable Economic Growth," the advantages of President Obama's policy were set forth. The report pointed out that the United States is producing more oil and natural gas, is generating more electricity from renewables such as wind and solar, and is consuming less petroleum while holding electricity consumption constant. Importantly, as the report pointed out, these developments have produced substantial economic and energy security benefits, while at the same time helping to reduce carbon emissions in the energy sector and thereby tackling the challenge posed by climate change.

Exploring the offshore oil and gas resources off the East Coast would certainly go toward fulfilling two of those critical tenants

The President's energy policy was based on three tenants: 1) To support economic growth and job creation; 2) To enhance energy security; and 3) To deploy low-carbon energy technologies and lay the foundation for a clean energy future. Exploring the offshore oil and gas resources off the East Coast would certainly go toward fulfilling two of those critical tenants. The decision to abandon the Atlantic lease sale was in keeping with President Obama's abandonment of his all-of-the-above energy policy and substituting instead an all-of-the-environmentally-acceptable energy policies.

After claiming victory over the rejection of the Atlantic lease sale, the organization turned its attention to trying to get the five Arctic lease sales excluded from the plan

When the Department of the Interior released its proposed 2017-2022 Outer Continental Shelf Oil & Gas Leasing Program, as required by the Outer Continental Shelf Lands Act, for 60 days of public comment, an email from an environmental organization arrived in our inbox declaring the success of its effort to fight the oil and gas industry. After claiming victory over the rejection of the Atlantic lease sale, the organization turned its attention to trying to get the five Arctic lease sales excluded from the plan. As a media report on the Atlantic Ocean sale rejection pointed out, it was the revolt of environmentalists and coastal communities concerned with threats to marine life, fishing and tourism along the East Coast that won the day in getting President Obama to remove the lease sale, even when the governors of most of the coastal states were in favor of the sale. The government's decision was also impacted by concern about offshore operations disrupting U.S. military and commercial shipping interests. Interestingly, the Department of the Interior sees no problem with those interests when considering offering lease sales for offshore wind energy resources, especially as we know the structures will sit above the ocean surface, however, after drilling wells, oil and gas production and transportation equipment will rest on the ocean floor.

There were 51 wells drilled and hydrocarbon resources discovered, but they were not in sufficient quantities to be developed commercially

It should be noted that many of the media stories about the proposed Atlantic lease sale reported that the previous drilling off the East Coast some 40 years ago resulted in no successes. The reality is, as one story we read pointed out accurately, there were 51 wells drilled and hydrocarbon resources discovered, but they were not in sufficient quantities to be developed commercially. The key in conducting more exploration would be as an aid in determining if there were sufficient resources that could be developed commercially.

That outcome would go against two of President Obama's key energy policy tenants

While we watch the evolution of our offshore oil and gas leasing program, it is important to understand that there are other ways the offshore oil and gas business is being attacked in an effort to hamper operations and boost operating costs in U.S. waters. If successful, the efforts will reduce offshore activity and resource development. That outcome would go against two of President Obama's key energy policy tenants – to produce economic and employment growth while also boosting U.S. energy security.

BOEM's actions are described as primarily a modernization of the agency's financial assurance regulations to more closely match current industry practices

One of the recent moves impacting offshore operations that is flying below the radar screen of the industry, and Americans in general, is the effort to change bonding requirements for companies operating offshore. The Bureau of Ocean Energy Management (BOEM), under its responsibilities to oversee the Outer Continental Shelf law, has stepped forward with proposals to revise its current financial responsibility determination of operators, largely related to the costs for plugging, abandoning and decommissioning offshore wells. BOEM's actions are described as primarily a modernization of the agency's financial assurance regulations to more closely match current industry practices.

Behind this modernization effort is the explicit intent to ensure that U.S. taxpayers never have to pay to decommission an offshore facility and to protect the environment

In August 2014, BOEM published an Advance Notice of Proposed Rulemaking seeking input on "risk management, financial assurance, and loss prevention." The input desired was to assist the agency in overhauling how it determines how much money a company must pledge to tie up to ensure compliance with financial and performance obligations arising from an offshore lease. Behind this modernization effort is the explicit intent to ensure that U.S. taxpayers never have to pay to decommission an offshore facility and to protect the environment.

The new NTL increased the list of entities to which the revised policy would apply

As the process moved forward, BOEM elected not to pursue the regulatory changes through the rulemaking procedure but rather to make the changes known through Notice to Lessees (NTL), which is the traditional way for notifying lessees of violations of offshore operating rules and policies. The new NTL increased the list of entities to which the revised policy would apply. The list was expanded to include not only the lessees and operators but now also pipeline rights-of-way holders, right-of-use and easement holders, along with geological and geophysical test well permit holders. The NTL also removed restrictions that the Gulf of Mexico regional manager previously considered unacceptable such as letters of credit or production escrow accounts in lieu of surety bonds from the United States Department of the Treasury or U.S. Treasury securities.

Now the Regional Director would be able to determine whether additional security is necessary to secure compliance with lease obligations

Now the Regional Director would be able to determine whether additional security is necessary to secure compliance with lease obligations. The financial evaluation would now be based on 1) financial capability; 2) projected strength; 3) business stability; 4) reliability; and 5) record of compliance with laws and lease terms. BOEM also eliminated the eligibility for an exemption from this security review and has now established one set of criteria for determination of financial strength for independent exploration and production companies and another set of financial criteria for integrated companies.

The financial responsibility issue revolves around the determination of the estimated cost of decommissioning efforts. The key for the offshore industry is that BOEM will no longer consider the combined

financial strength and reliability of co-lessees and operating rights holders when determining an individual lessees' decommissioning liability. The net result of these changes is that each co-lessee in an offshore project will be required to maintain sufficient cash or surety bonds to cover the total costs of a decommissioning obligation. The net effect will be an explosion in offshore bonding requirements to the point that there may be insufficient bonding capacity available. That condition will drive the cost of bonding up sharply. For smaller operators who do not have the balance sheet strength (cash) to support their decommissioning costs nor are able to secure the necessary bonds, they may have to exit the Gulf of Mexico market.

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While quite possibility not a conscious effort to shut down offshore exploration, development and production activities, the impact of a bonding capacity shortage could force small operators out of the market. This will increase the cost of offshore operations for integrated companies since they will need to assume a greater proportion of the total decommissioning cost of offshore projects. Less capital, which is certainly a condition of the current petroleum market, will hurt the growth of the industry. A recent example of this problem was shown in a March 8, 2016, press release reporting 2015 year-end financial results for W&T Offshore (WTI-NYSE), an exploration and production company operating in the Gulf of Mexico. In the press release, management commented on the challenge they face in meeting bonding requirements.

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W&T Offshore stated, "In February and March, 2016, the Company received several letters from the U.S. Department of the Interior's Bureau of Ocean Energy Management ('BOEM') ordering the Company to provide additional supplemental bonding on or before March 29, 2016, in the aggregate amount of $260.8 million to cover its obligations under certain Federal offshore oil and gas leases operated by the Company. The issuance of any additional surety bonds to satisfy the BOEM order or any future orders may require the posting of cash collateral, which could be substantial. We plan to continue our discussions with BOEM regarding satisfying their requests for additional financial assurances."

"The issuance of any additional surety bonds to satisfy the BOEM order or any future orders may require the posting of cash collateral, which could be substantial"

We cannot speculate on how this particular issue will be resolved, especially since we are not completely familiar with the company's financial position. What we do know, however, is that for this issue to be reported in the year-end financial results press release, it is a serious issue.

In addition to the bonding rule changes, the extension of offshore regulation by the Bureau of Safety and Environmental Enforcement (BSEE) to offshore service companies will also alter the economics of working offshore besides elevating the regulations to potentially criminal status. We have written about these changes in the past so we won't dwell on it, but offshore service contractors are subject to being charged for violations of rules and regulations that are still

The extension of offshore regulation by BSEE to offshore service companies will also alter the economics of working offshore

being determined by BSEE. Moreover, offshore service companies are now liable for the actions of all the other companies working on the project meaning they will need greater insurance coverage than needed prior to the regulatory change.

These actions reflect new and different considerations that petroleum company management teams must consider when evaluating their corporate strategy

What we conclude from President Obama's rejection of Atlantic Lease 260 and his administration's actions with respect to the new offshore bonding requirement, new air quality regulations and offshore service company regulation, whether all coordinated or not, is that the domestic oil and gas industry is under increased economic pressure. These actions reflect new and different considerations that petroleum company management teams must consider when evaluating their corporate strategy. We wonder how many offshore petroleum company management teams are considering these issues now, let alone are even aware of them?

Oregon Embarks On Aggressive Clean Power Move

This is the first state legislation to eliminate coal from a state's electricity mix and it puts Oregon among the top five states for its RPS mandate

On March 8, 2016, Oregon SB 1547 was signed into law requiring utilities to phase out all coal-fired power generation from the state's electricity mix by 2035 and doubling the state's Renewable Portfolio Standard (RPS) to 50% by 2040. This is the first state legislation to eliminate coal from a state's electricity mix and it puts Oregon among the top five states for its RPS mandate. At the present time, California and New York each require 50% of their electricity to be generated from renewables by 2030, Vermont utilities must reach 75% renewable power by 2032, and Hawaii is targeting 100% renewable power by 2045.

The law's boosters are unclear whether this mandate will have much impact on carbon emissions

The coal phase-out will result in the shutting down of the state's only coal-fired power generating station, but the law also restricts local utilities from importing electricity generated from coal-fired power plants located outside of the state. The law's boosters are unclear whether this mandate will have much impact on carbon emissions as it is quite possible that utilities could reallocate coal-fired power to non-Oregon customers or swap it for hydropower or natural gas-fired power. What encourages Oregon environmentalists is that the requirement calls into question the future of coal plants servicing out-of-state customers due to the loss of Oregon revenues and thus becomes another legislative and regulatory measure to reduce overall the use of coal as a power generating fuel.

This legislation is among the vanguard of new renewable fuel pushes in light of the agreement among the nearly 200 nations attending the United Nations' climate change meeting in Paris last November. They agreed to reduce their carbon emissions in an effort to limit future environmental damage from a projected increase in global average temperatures over the next 80 years.

A recent article by an environmental organization reported on the global progress to increase the use of renewable energy. The

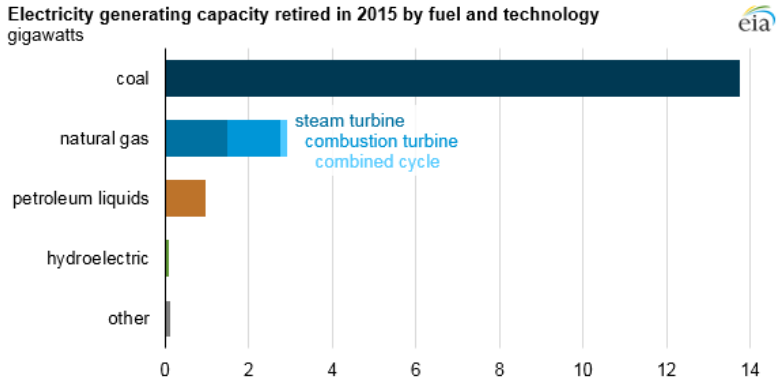
"The story of the US' energy economy has become simple: natural gas has gotten incredibly cheap, wind is catching up, and solar will be competitive"

progress of three leading countries – Germany, India and China - was described at a recent meeting of the American Association for the Advancement of Science (AASS). From the U.S. perspective, the article reported that "The story of the US' energy economy has become simple: natural gas has gotten incredibly cheap, wind is catching up, and solar will be competitive before the decade is out! All of this is driving a boom in renewable energy and pushing coal out of its dominant spot on the market."

The U.S. Energy Information Administration reported earlier this month that coal accounted for more than 80% of the retired electricity-generating capacity in 2015

Certainly the last observation is true as the pace of shutting down coal-fired power plants in the United States has grown from a trickle to a torrent in recent years as new emissions regulations have been imposed on the electricity-generating business. The U.S. Energy Information Administration (EIA) reported earlier this month that coal accounted for more than 80% of the retired electricity-generating capacity in 2015, representing nearly 18 gigawatts of electric generating capacity. Most of the plants retired were older and smaller in capacity than the coal-generating plants that continue to operate. About 30% of the retired coal capacity last year occurred in April at the time the U.S. Environmental Protection Agency's Mercury and Air Toxics Standards (MATS) rule went into effect. Some coal plants applied for and were granted one-year extensions from having to comply with the rule, so we can look for another wave of plant retirements next month. A few plants have received additional one-year extensions beyond April 2016 based on their role in ensuring regional power system reliability.

Exhibit 4. The Age Of Coal In America Ending



Source: EIA

2016 may be the first year in which natural gas-fired electricity generation will exceed coal-fired generation

The coal-fired power plant retirements are behind the EIA's recent pronouncement that 2016 may be the first year in which natural gas-fired electricity generation will exceed coal-fired generation. The emissions restrictions are key to that change but we cannot underestimate the impact of cheap natural gas as a meaningful contributor to the shift.

Since state power generation by fuel source is not reported consistently over time, we decided to take a quick look at how

Oregon's electricity fuel mix has changed over time. For purposes of this examination, we picked January of each year selected, fully recognizing that monthly fuel mixes may be subject to variability caused by factors other than fuel costs or emissions. We picked five-year time intervals - 2001, 2006, 2011 and 2016 - and calculated the percentage each fuel represented of total electricity generated for the month. The data is in Exhibit 5.

Exhibit 5. Oregon's Electricity Depends On Hydropower

Oregon Electric Power Fuel Sources				
	2001	2006	2011	2016
Coal	9.4%	0.0%	6.1%	7.4%
Natural Gas	20.4%	11.7%	15.6%	30.6%
Hydropower	67.6%	84.6%	71.8%	51.7%
Renewables	1.3%	3.8%	6.4%	10.3%
Total	98.7%	100.1%	99.9%	100.0%

Source: EIA, PPHB

You will note that coal provides a small proportion of the state's power, and actually contributed zero in 2006 when hydropower's contribution soared to nearly 85%. What is interesting is that for Oregon to meet its new RPS target of 50%, some portion of the natural gas and/or hydropower contribution will need to be shut down. Because the state is on a program to boost its renewable contribution, we suspect Oregon will target shutting down natural gas-fired power generation capacity to meet the RPS goal since hydropower will be too costly to give up. That benefit shows up in the December 2015 statistics on electricity costs in Oregon versus the nation.

What is interesting is that for Oregon to meet its new RPS target of 50%, some portion of the natural gas and/or hydropower contribution will need to be shut down

By category, Oregon's electricity per kilowatt-hour ranges anywhere from 0.7 cents to 2 cents per kilowatt-hour lower than the national average cost. Electricity for all sectors in Oregon last December averaged 8.87 cents per kilowatt-hour compared to a nationwide cost of 10.00 cents per kilowatt-hour. This differential is largely due to the cost advantage of having substantial hydropower available in the state. We wonder what will happen to the state's power cost as it works to shut down its coal and natural gas power plants. At the present time, wind represents nearly three-quarters of the renewable power provided in the state. Since renewable power costs more than hydropower, as Oregon adds more renewable power, one wonders just how much the cost per kilowatt-hour for electricity will rise. There are few states that have as much hydropower as Oregon, so its effort to build up a larger renewable portfolio will boost costs but not nearly as much as most other states who have little or no cheap hydropower resources. Thus, in the future, when Oregon touts how much renewable power it has and how little its electricity costs, one should not forget the huge contribution from its low-cost hydropower resources.

This differential is largely due to the cost advantage of having substantial hydropower available in the state

U.S. LNG Market Surprised By Jordan Cove Decision

With utility buyers in Asia willing to pay $15-$18 per thousand cubic feet of natural gas just a few years ago, the arbitrage between low-cost U.S. gas and high-cost Asian markets seemed like a ticket to perpetual prosperity

A long-developing application for a permit to build a liquefied natural gas (LNG) export terminal on the former site of a Weyerhaeuser paper mill on the Oregon coast was just rejected by the Federal Energy Regulatory Commission (FERC). The application, filed in 2013, was the first piece of a project that also included construction of a 232-mile, 36-inch natural gas pipeline running from east to west across four Oregon counties hauling up to 1.03 billion cubic feet per day from an interconnecting point with two pipelines bringing gas from western states and Canada to the West Coast. The Jordan Cove LNG export terminal was one of about a dozen and a half projects filed with FERC in recent years to capitalize on the growing surplus of U.S. natural gas that has driven gas prices to decade-low levels. With utility buyers in Asia willing to pay $15-$18 per thousand cubic feet of natural gas just a few years ago, the arbitrage between low-cost U.S. gas and high-cost Asian markets seemed like a ticket to perpetual prosperity.

Not only did we not need to import LNG, we also were able to cut back on the gas volumes we took from our Canadian neighbors

Jordan Cove was originally conceived as an LNG import terminal when America was desperate for supplies from beyond our shores. High natural gas prices, coupled with the successful marriage of horizontal drilling and high-pressure fracturing technologies, shifted the U.S. from being gas-short to becoming gas-rich. As a result, U.S. domestic gas-oriented drilling soared until production overwhelmed demand. Not only did we not need to import LNG, we also were able to cut back on the gas volumes we took from our Canadian neighbors.

More recently, LNG demand weaken as economic activity in China, Japan and Korea, the primary buyers of natural gas, suffered

In response to the high LNG gas prices in Asia, partially driven by the Japanese tsunami that flooded the nuclear power plant at Fukushima creating a serious accident, Japan shut down all its nuclear power plants and began burning conventional fossil fuels. Throughout Asia and Australia, companies began tapping natural gas and coal gas resources to meet the increased gas demand. More recently, LNG demand weaken as economic activity in China, Japan and Korea, the primary buyers of natural gas, suffered. As a result, LNG prices fell sharply.

In other words, the terminal's backers need to find customers for the gas to be shipped

What shocked the supporters of Jordan Cove is how quickly the global LNG outlook has changed. The companies behind the terminal and new gas pipeline failed to seek buyers for the gas export volumes thereby leaving FERC little choice but to reject the application since there was no economic benefit to be derived from the pipeline and terminal as an offset to the impact on the region from their construction and operation. FERC has indicated it could revisit its decision if the sponsors can produce evidence of public benefit to counterbalance the objections of property owners and environmental groups. In other words, the terminal's backers need to find customers for the gas to be shipped. Given current, and prospective, market conditions, it is not likely to happen anytime

soon. That is not good news for other terminal applications. It is also not encouraging for West Coast Canadian LNG. We now have the first pinprick of the LNG export bubble.

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