

Zuckerman: Shale Revolution Led By Unlikely Visionaries

Author of *'The Frackers'* tells the improbable tale of how America changed the world's energy outlook.

BY **FRANK NIETO** | SENIOR EDITOR, MIDSTREAM BUSINESS

In 1997, Apple Inc. famously introduced an ad campaign titled "Think Different" that helped the then-struggling brand regain a foothold in the computer market. Indeed just over a decade later the company had gone from the brink of bankruptcy to the most valuable company in the world thanks to that very credo that led it to enter the cell phone, digital music and nascent tablet markets.

A series of ads connected to this campaign hailed the "Crazy Ones" and focused on people such as Albert Einstein, Ted Turner, Alfred Hitchcock, Thomas Edison and Mahatma Gandhi, all of whom made major impacts on society through various means, primarily new inventions or making improvements that hadn't previously been considered.

Today, these ads could easily include men like George Mitchell, Harold Hamm and Aubrey McClendon. These men helped revolutionize the energy industry by thinking differently. It was known for decades that the Permian and Appalachian basins held large reserves of oil and gas, but they were considered unrecoverable due to the extreme difficulties in bringing them to the surface in a cost-effective way. Not only were these reserves considered nearly impossible to access, but their actual size was also well off target, as it turned out.

That is, until outsiders such as Mitchell, Hamm, McClendon and Bob Simpson found a way to unlock this potential and turned it into



The Wall Street Journal's Gregory Zuckerman delivered the closing keynote at Hart Energy's DUG Permian conference and hailed the industry's visionaries that created the shale gale. (Source: Hart Energy)

a reality that flipped the script on the world's energy story. Similar to how Apple was not expected to be the company that would discover the way to take the music industry from selling its products in strictly physical formats to a digital format, Mitchell Energy, Continental Resources Inc., Chesapeake Energy Corp. and XTO Energy Inc. were not expected to be the companies that would discover how to get oil and gas from shale plays in a cost-effective manner.

"The people who led the energy revolution in this country are not who you would think would have. It should have been any of the big

HIGHLIGHTS FROM TODAY'S EDITION



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Pulling Ahead

New data suggests that Canada is ahead of the U.S. when it comes to building pipelines for crude exports.

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LEAD STORY | Continued

majors, but all of the experts got it wrong and didn't believe in shale," Gregory Zuckerman, special reporter for *The Wall Street Journal* and author of *The Frackers: The Outrageous Inside Story of the New Billionaire Wildcatters*, said at Hart Energy's DUG Permian Conference in Fort Worth.

"ExxonMobil was literally headquartered on top of the Barnett Shale, but they were drilling anywhere but there, and had pretty much given up on U.S. deposits. Chevron actually had a group in the late 1990s doing what they called nonconventional drilling, but they were too early and closed shop on the group," he continued.

He noted that in the late '90s and early 2000s, the major players were focused on plays in Africa, Asia and offshore as all of the experts agreed that the U.S. was running out of natural gas and oil. "They didn't believe in horizontal drilling, hydraulic fracturing or shale," Zuckerman said.

They say necessity is the mother of invention and that is the case with the story of shale development. While companies such as Exxon Mobil Corp. and Chevron Corp. certainly had the financial power and engineering prowess to discover the key to Barnett Shale production, the fact is they didn't need to.

George Mitchell is recognized as the father of shale, but he only received this designation after decades of persistence trying to find a way to produce gas out of the Barnett since he had no other alternatives. Unlike the majors, Mitchell didn't have the financial wherewithal to move production to foreign shores.

His company, Mitchell Energy, had a large contract to supply the city of Chicago with natural gas, but the company's wells were running dry. There was the very real possibility that unless they could develop the Barnett, they would go broke.

Instead of losing his shirt in the Barnett, Mitchell wound up selling his company for more than \$3 billion to Devon Energy Corp. in 1998 after Mitchell Energy discovered how to produce large volumes of natural gas out of the Barnett through happenstance.

The company had been experimenting with fracking fluid that used expensive gels, as was the standard practice. By chance, Nicholas Steinsberger, a Mitchell engineer, discovered slickwater fracks when testing a well in the play. Due to a mistake in mixing the gel, sand and other components, the fracking fluid used a larger composition of water.

This mistake proved to be the company's lifeline, as it both lowered costs and increased production. "This dramatically changed the Barnett Shale and eventually the country and the world. It showed how you could get remarkable amounts of natural gas from shale," Zuckerman said.

Horizontal drilling was becoming more of an industry standard, but the technology wasn't used in combination with fracking and 3-D seismic mapping on a widespread basis until McClendon and Ward at Chesapeake Energy and Hamm at Continental Resources, respectively, began to combine them in shale plays.

While perseverance was a key for these men, luck did play a part in their success as it had with Mitchell Energy's discovery of slickwater fracking. When Chesapeake Energy acquired Canaan Energy in 2002,

the deal included 7,000 acres in the Barnett as a "sweetener" used to justify the \$118 million price tag. Chesapeake planned to sell this acreage and focus on the Anadarko Basin assets that Canaan brought to the deal. Instead it was the Barnett acreage that helped give the company a foothold in its strategy to acquire assets in the key North American shale plays. "McClendon and Ward weren't the first to bet on shale formations, but they understood their potential and moved quickly in their strategy," Zuckerman said.

Hamm was convinced that the Bakken Shale held huge reserves of crude in its rock, but without much success to show for the capital being spent in North Dakota, he had decided to sell much of his acreage in the play by 2005.

"Once again the experts weren't interested in acquiring these rights. So he said, 'If we can't sell it, let's conserve our cash and drill at a slower pace.' Hamm wasn't the first to combine horizontal drilling and state-of-the-art fracking, but he was among the first and kept working at it until they figured out how to get a lot of oil out of the Bakken," Zuckerman said.

That decision changed Hamm's life, as he is now one of the richest men in the country, worth \$17 billion, and is the largest individual holder of oil in the U.S. "He's so wealthy that, while he's unfortunately going through a divorce, his wife is going to walk away with more money than Oprah Winfrey," Zuckerman said.

Perhaps the biggest outsider that had the largest part to play in this shale revolution was Charif Souki, chairman and CEO of Cheniere Energy Inc. A former investment banker and restaurateur (he owned the Mezzaluna restaurant in Los Angeles that was attached to the O.J. Simpson murder trial), he "knew more about fajitas than fracking" when he entered the energy business, according to Zuckerman.

The energy business required little capital to enter in the mid-'90s and Souki had connections in the Middle East. He attempted to drill for oil and gas, but it didn't work out. When Souki heard the pronouncements that the U.S. was running out of natural gas, he changed Cheniere's focus from producing gas to building LNG import terminals that would make up the demand gap.

"For a while this plan worked really well with the company's stock soaring. Then lo and behold in 2008, it dawned on the world that there was a glut of natural gas in the U.S. and the stock tumbled in 2010 to \$1 per share. Under pressure from investors, he decided that if there was a glut of natural gas in the U.S. that maybe instead of importing it, we could export it. It took real guts to go back to your investors that you raised billions of dollars from and reverse course," Zuckerman said.

Cheniere became the first company to announce LNG export plans and was the first to receive government approval to do so, beginning next year, and the company's stock is once again soaring. "Now everyone loves him, including *The New York Times*, which has written editorials saying we need to export more LNG and he's a geopolitical star."

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NGL PRICES & FRAC SPREAD | Week in Review

Gas Storage Levels Struggling To Reload For Winter

BY **FRANK NIETO** | SENIOR EDITOR, MIDSTREAM BUSINESS

Natural gas storage levels remain well off the pace set last year as well as the five-year average, but injections picked up pace a month before summer starts. The Energy Information Administration (EIA) reported that storage rose by 114 billion cubic feet (Bcf) to 1.38 trillion cubic feet (Tcf) the week of May 23. This was 35% below the 2.128 Tcf reported last year at the same time and 40% below the five-year average of 2.302 Tcf. However, it was the first “triple-digit” injection of 2014 and outpaced the 90 Bcf posted during the same time last year, which is also the five-year average for this time period, according to PIRA Energy Group.

CURRENT FRAC SPREAD (CENTS/GAL)				
June 2, 2014	Conway	Change from Start of Week	Mont Belvieu	Last Week
Ethane	27.13		29.33	
Shrink	28.64		28.58	
Margin	-1.51	13.26%	0.75	244.88%
Propane	102.83		104.75	
Shrink	39.57		39.48	
Margin	63.26	5.78%	65.27	5.34%
Normal Butane	119.75		121.90	
Shrink	44.80		44.69	
Margin	74.95	2.94%	77.21	3.66%
Isobutane	183.18		129.18	
Shrink	43.03		42.93	
Margin	140.15	2.40%	86.25	6.78%
Pentane+	218.30		222.35	
Shrink	47.91		47.80	
Margin	170.39	0.88%	174.55	1.50%
NGL \$/Bbl	42.69	2.06%	41.93	1.49%
Shrink	15.78		15.74	
Margin	26.91	2.88%	26.18	4.19%
Gas (\$/mmBtu)	4.32	0.70%	4.31	-2.71%
Gross Bbl Margin (in cents/gal)	61.01	3.11%	59.99	4.41%
NGL Value in \$/mmBtu (Basket Value)				
Ethane	1.49	1.61%	1.61	1.66%
Propane	3.57	3.76%	3.64	2.16%
Normal Butane	1.29	2.09%	1.32	1.23%
Isobutane	1.14	1.99%	0.80	3.43%
Pentane+	2.81	0.84%	2.87	0.57%
Total Barrel Value in \$/mmbtu	10.31	2.23%	10.24	1.61%
Margin	5.99	3.37%	5.93	4.99%

NGL PRICES						
Mont Belvieu	Eth	Pro	Norm	Iso	Pen+	NGL Bbl
May 21 - 27, '14	29.33	104.75	121.90	129.18	222.35	\$41.93
May 14 - 20, '14	28.85	102.54	120.42	124.90	221.10	\$41.31
May 7 - 13, '14	28.91	104.22	120.48	124.96	218.50	\$41.35
April 30 - May 6, '14	29.24	107.38	123.48	127.50	219.46	\$42.07
April '14	29.66	110.44	125.32	130.16	226.07	\$43.11
March '14	30.89	106.20	124.77	129.25	218.19	\$42.21
1st Qtr '14	34.50	129.51	137.62	141.49	212.60	\$46.16
4th Qtr '13	26.76	119.81	142.56	145.02	210.66	\$44.03
3rd Qtr '13	24.87	102.65	132.06	134.86	215.56	\$41.21
2nd Qtr '13	27.12	91.38	124.01	127.46	204.12	\$38.82
May 22 - 28, '13	28.50	92.00	124.25	127.00	201.00	\$38.89
Conway, Group 140	Eth	Pro	Norm	Iso	Pen+	NGL Bbl
May 21 - 27, '14	27.13	102.83	119.75	183.18	218.30	\$42.69
May 14 - 20, '14	26.70	99.10	117.30	179.60	216.48	\$41.83
May 7 - 13, '14	26.76	102.20	117.30	169.60	214.00	\$41.77
April 30 - May 6, '14	26.40	105.46	119.66	165.20	218.96	\$42.44
April '14	26.02	110.13	122.02	170.61	228.14	\$43.83
March '14	32.20	107.10	119.02	136.50	225.70	\$43.25
1st Qtr '14	25.46	169.48	132.08	147.10	216.86	\$49.93
4th Qtr '13	20.19	122.54	144.49	147.58	205.01	\$43.33
3rd Qtr '13	20.80	99.22	129.23	142.77	209.94	\$40.07
2nd Qtr '13	20.71	85.37	116.50	123.91	204.86	\$36.89
May 22 - 28, '13	21.25	86.75	116.25	118.00	198.75	\$36.55

(Above) Data Provided by Bloomberg. Individual product prices in cents per gallon. NGL barrel in \$/42 gallons | Source: Hart Energy

(Left) Price, Shrink of 42-gal NGL barrel based on following: Ethane, 36.5%; Propane, 31.8%; Normal Butane, 11.2%; Isobutane, 6.2%; Pentane+, 14.3%, Fuel, frac, transport costs not included. Conway gas based on NGL Midcontinent zone, Mont Belvieu based on Houston Ship Channel.

Shrink is defined as Btus that are removed from natural gas through the gathering and processing operation.

The increased storage rate falls in line with Tudor, Pickering, Holt & Co.'s forecast for this fall, which anticipated a base case of 3.6 Tcf by Nov. 1. This would require an incremental 600 Bcf in total over the 32 weeks of the injection season, the company reported in a research note.

Colder spring temperatures resulted in incremental demand flowing to gas-fired power plants instead of storage; injections trended 550 Bcf total, or 6 Bcf per week, below levels needed to reach the target. “In other words, if temperatures had been normal, we would be on pace to get to approximately 3.6 Tcf to start [the winter of 2014]. The gas market has been running well-oversupplied, but in absolute terms, trending below [this] target due to temperatures,” the report said.

NGL PRICES & FRAC SPREAD | Week in Review

To bridge the storage gap, the industry needs to increase injections by an average of 21 Bcf per week over the next 26 weeks. This will require a combination of normal summer temperatures and gas-to-coal switching by power generators, according to the report. Should storage levels hit their target, the investment firm anticipates 2015 gas prices in the \$4 per million cubic feet (/MMcf) range. If summer temperatures are above normal and increase cooling demand, this would likely result in injections reaching 3.4 Tcf by the beginning of November, which would push 2015 prices to \$4.50/MMcf.

Thus far in 2014, gas prices traded in between these forecasts. For the week of May 21, the Conway price rose 1% to \$4.32 per million Btu (/MMBtu) with the Mont Belvieu price dipping 3% to \$4.31/MMBtu.

The National Weather Service is forecasting warmer-than-normal temperatures throughout most of the country for the week of June 4, which could put storage injections under pressure to maintain the high levels necessary to hit the 3.6 Tcf target.

Current prices, combined with small increases in NGL prices, saw frac spread margins improve across the board at both hubs. The largest gains were for ethane; however, ethane remains unattractive for

producers and rejection is widespread throughout the country.

The Conway price rose 2% to 27 cents per gallon (/gal), its highest price in nearly two months. This still left the margin in a negative state at the hub as the Midcontinent market for E-P mix remained thin. The Mont Belvieu margin was notionally positive after a 2% price improvement to 29 cents/gal, but once transportation costs are factored in it is also in a negative state.

Propane prices posted their first gains in more than a month at both hubs. It remains to be seen whether the market is really improving or if prices were merely rebalancing after falling to their lowest levels

RESIN PRICES – MARKET UPDATE – MAY 29, 2014					
TOTAL OFFERS: 20,179,720 lbs		SPOT		CONTRACT	
Resin	Total lbs	Low	High	Bid	Offer
HDPE - Inj	4,057,544	0.7	0.78	0.69	0.73
HDPE - Blow Mold	3,797,360	0.73	0.76	0.695	0.735
PP Homopolymer - Inj	3,456,876	0.79	0.82	0.745	0.785
PP Copolymer - Inj	2,338,692	0.81	0.83	0.755	0.795
LDPE - Film	1,943,680	0.78	0.81	0.765	0.805
LLDPE - Film	1,587,312	0.72	0.775	0.71	0.75
LLDPE - Inj	1,234,576	0.77	0.81	0.72	0.76
LDPE - Inj	881,840	0.795	0.81	0.74	0.78
HMWPE - Film	881,840	0.775	0.775	0.725	0.765

Source: Plastics Exchange – www.theplasticsexchange.com

in almost a year. The Conway price moved back past the \$1.00/gal threshold as it rose 4% to \$1.03/gal while the Mont Belvieu price increased 2% to \$1.05/gal.

Butane price differentials have been thin all year with only a 2 cents/gal gap between the hubs this week. The Mont Belvieu price rose 1% to \$1.22/gal with the Conway price increasing 2% to \$1.20/gal. Butane struggled due to being firmly entrenched as the second-most preferred ethylene feedstock and negatively impacted by the number of ethane crackers offline.

Its sister product, isobutane, traded within their normal range at Mont Belvieu, but experienced a significant 50+ cents/gal differential at Conway as sources indicate that ONEOK's isomerization unit has been offline for the past several weeks. This created a situation in which there remains low volatility for Conway isobutane, but prices are higher. The Conway price rose 2% to \$1.83/gal, its highest price in a month. This compared to the 3% gain posted at Mont Belvieu, which increased the price to \$1.29/gal.

The most profitable NGL to make at both hubs remained C₅₊ at \$1.70/gal at Conway and \$1.75/gal at Mont Belvieu. This was followed, in order, by isobutane at \$1.40/gal at Conway and 86 cents/gal at Mont Belvieu; butane at 75 cents/gal at Conway and 77 cents/gal at Mont Belvieu; propane at 63 cents/gal at Conway and 65 cents/gal at Mont Belvieu; and ethane at negative 2 cents/gal at Conway and 1 cent/gal at Mont Belvieu.

KEY NORTH AMERICAN HUB PRICES	
2:30 PM CST / May 29, 2014	
Gas Hub Name	Current Price
Carthage, TX	4.46
Katy Hub, TX	4.55
Waha Hub, TX	4.46
Henry Hub, LA	4.61
Perryville, LA	4.48
Houston Ship Channel	4.55
Opal Hub, Wyo.	4.48
Blance Hub, NM	4.44
Cheyenne Hub, Wyo.	4.47
Chicago Hub	4.60
Ellisburg NE Hub	3.33
New York Hub	3.39
AECO, Alberta	4.26

Source: Bloomberg

hubs. It remains to be seen whether the market is really improving or if prices were merely rebalancing after falling to their lowest levels

SNAPSHOT | Industry Insight

White: Climate Change, Energy Use Discussion Need Not Be Polarizing

BY LARRY PRADO | HART ENERGY

The human race has never before had to deal with issues such as climate change, global warming, greenhouse gases and expanding population vs. reasonably priced energy, according to professor Jim White. The big question, he asked, is “How do we manage it?”

White is a professor of geological sciences at the University of Colorado-Boulder. He is also the director of the Institute of Arctic and Alpine Research (IAAR). He said, “Calm, realistic conversations are essential. One of the things that’s really perplexed me and bothered me is the way the discussion has evolved on environmental change and climate change.

“Most of the world’s population growth has occurred over the past 100 to 200 years. The resources you need per person to live in an industrialized society can be measured by energy or water or nutrients or calories. The U.S. uses more calories than people do in Africa or Third World societies. About 2 billion of the Earth’s 7 billion people live like we do, another 5 billion want to and about 2 or 3 billion will actually get there,” he said during a recent speech in Denver.

For developing countries, such as China or India, the needs are growing, White said. “China has about 1.3 billion people, of which 300 million live like we do. In order for [China] to develop, it has to increase its [energy] use by more than a few percentage points. They have to increase their consumption by factors of three or five.”

White noted that all basic global needs—energy, water, food—have environmental impacts. “You can’t have a creature that occupies the planet to the extent that humans do and not have a footprint. It’s not about not having an impact. It’s about how we deal with that impact.”

He added, “It seems to me that there are two kinds of laws—physical laws and value laws. Physical laws are things like gravity, thermodynamics etc., and value laws are things like morals and values, things we say are good or bad, right or wrong.”

For the value laws, there is frequently reasonable disagreement on the application of some of those laws. For physical laws, there is generally universal agreement. White said the problem with hydraulic fracturing is that people “confuse the law types—the physical laws and the value laws. We think we have a choice on some things but we really don’t.

“Energy, according to laws of thermodynamics, cannot be created or destroyed, but it can be converted from one form to another. We require energy—a physical law—to do something like power the lights.



“You hear people saying ‘I hate coal, or gas or fossil fuels’ and this is confusing. Can you really hate that which you require? You hear people saying ‘I hate coal, or gas or fossil fuels,’ but you don’t hear them say ‘I hate food or water.’ Are we so disconnected from our planet that we can say we hate things that provide basic needs? You cannot have the energy and hate it at the same time.”

White said he has developed an analogy for the people who don’t understand thermodynamic laws. “There’s an obesity problem developing in this country. Humans require energy, and that’s a physical law. Farmers supply that energy, so why don’t we say we hate or blame the farmers? We need energy from the physical law, and from the value law we make choices of what it is we decide to eat.

“When I hear people use the word ‘believe,’ like when they say they don’t ‘believe’ in climate change, I know that those people are making a value choice. I have a problem with this because ... the physical laws occur without a choice on our part.”

White, who is a climatologist, said that “sea levels about 20,000 years ago were about 400 feet lower than they are today. About 120,000 years ago when the planet was warmer, sea level was about 50 feet higher than it is today, and if you’re living in Miami, that’s a lot of feet.”

A Miami newspaper recently interviewed the city’s mayor, who said that “Miami is too valuable to lose to rising sea levels with billions of dollars and tourism at stake,” according to White.

“Physical law says we will lose Miami Beach due to sea level fluctuations that will occur as they have in the past. It may be too expensive to lose, but we can’t change the physical laws of thermodynamics. I find this interesting because it’s a case of confusing physical laws with value laws.

“We need to keep the conversation going. I think that’s the most important thing, especially in the international arena.”

NEWS & TRENDS | Up To Date

Major Hub In The Works For Permian

BY AMY LOGAN | HART ENERGY

With all of the hydraulic fracturing activity taking place across North America, there were always likely to be some logistical issues. The U.S. is one of the few locations in the world where the infrastructure can largely support the booming shale industry, yet the industry's fracking renaissance has caused it some growing pains as well. That's where enterprising companies like Rangeland Energy come in.

At the May 27 DUG Permian Basin midstream discussion, "Rolling in pipe and proppant and rolling out the crude," Chris Keene, president and CEO of Rangeland, talked about his company's adventures in North Dakota, which led to its flagship COLT Hub and COLT Connector projects. The COLT system is the largest open-access crude marketing hub in North Dakota, according to Keene, and has been a source of pride for this self-confessed "pipeliner" ever since.

"When we set about organizing North Dakota to build a business, we thought we'd be gathering pipeline, maybe adding truck stations here and there; but we very quickly realized that wasn't what the area needed," Keene said. "What the area needed was what I call a market hub, or a point of liquidity. Think of it as a mini-Cushing, Okla., planted in the middle of North Dakota. A facility where you could have multiple inbounds of crude oil, gathering pipe as well as truck. We have the infrastructure at the hub to stage it, to store, to provide other internal service whether that's blending or whatnot, and then have multiple outbounds to multiple markets to maximize the value of the commodity, both via pipeline and via rail. That's what we built in North Dakota and it was a great success. The facility continues to grow today."

In late 2012, Rangeland sold the COLT system to Inergy Midstream, now known as Crestwood. Today, Rangeland hopes to repeat its successful venture that started in the Bakken, this time bringing the hub to the ever-expanding Permian Basin.

"We pulled back to the 50,000-foot view and looked at several areas—looking for areas preferably with rapidly increasing production and a lack of infrastructure, or an area extremely limited by the available infrastructure to service those needs," Keene said. "We identified two areas of focus: one was Western Canada and the second was the Permian Basin, in particular the western side of the Permian known as the Delaware Basin. We explored both of those options and very quickly zeroed on a project that we're developing, and it's actually in construction now in the Delaware Basin just north of Loving, N.M."



Rangeland is planning to replicate its success creating a Bakken hub by creating one in the Permian, according to the company's president and CEO, Chris Keene. (Source: Rangeland Energy)

Several other factors went into the Delaware Basin selection, Keene said. It was critical for there to be enough land to expand the hub in scale, he said. More importantly, he said Rangeland wanted to set up a hub "right in the heart" of where production would be in five to 10 years.

"So you look at where the heart of that production lay [in this case, the Delaware Basin] and on top of that, you look at where you have access to rail, where you have access to paved roads, and then preferably where you have close proximity to pipeline infrastructure—or at least proximity enough to where you can develop that infrastructure for your customers," he said.

Meeting all of those criteria was not easy, he added. But once the property was found, Rangeland began work on its RIO project. RIO is short for Rangeland Integrated Oil system. It comprises a system of terminals and pipe designed to collect crude oil and condensate production from the Delaware Basin and ship it to downstream markets in the U.S. via rail and pipeline, according to Keene.

"The key to this hub is connectivity," he said. "We've secured 300 acres with great road and rail access and the land to develop the scale we need. That's critical. We have to have the ability to grow it large."

Expanding the hub will come with time, Keene said, as production increases and the demand for additional space to store crude oil, tanks and sand grows with it.

"The demand right now is sand," he said. "I tell investors that everything we're doing here on the midstream side is driven by one thing: that's shale production. And there are three things (at the risk of oversimplifying this) that you need for that: drilling technologies, sand and water."

The only way to get sand to market from the supplier is via rail, Keene said.

"It doesn't matter what crude-price differentials are—none of that matters," he said. "It has to get in by rail and distributed out by trucks. There is a huge need for that. The demand is growing, doubling, over the next 10 years, possibly more than doubling. That's driven not only by more rigs or wells, but it's also because producers are getting more efficient. They are getting more wells per rig out of their equipment,

NEWS & TRENDS | Up To Date

and we're also seeing longer laterals and more frack stages—all of that attributes to demand.”

Construction of the RIO system began in mid-May. When it is complete it will be equipped to accommodate more than 1 million tons of frack sand per year, according to Rangeland's website. The RIO Pipeline is expected to connect the RIO Hub in Loving to market centers in Midland, Texas, and beyond.

Hess Sells Retail Business

BY **DARREN BARBEE** | HART ENERGY

Hess Corp.'s transition into a pure play exploration and production (E&P) company is nearly complete after a May 22 announcement that its retail business had gone from a spinoff to a selloff.

Marathon Petroleum Corp. said its subsidiary Speedway LLC would buy Hess Retail Holdings LLC's retail locations, transport operations and shipper history on various pipelines, including about 40,000 barrels per day (bbl/d) on the Colonial Pipeline.

Marathon will pay \$2.37 billion cash, an estimated \$230 million in working capital and \$274 million in capital lease assumptions—a \$2.874 billion purchase, all told.

Analysts had estimated that the retail business' spinoff value could be worth \$1.2 billion to \$1.5 billion.

“This acquisition will be transformative for MPC and Speedway as it will significantly expand our retail presence from nine to 23 states through these premier Hess locations throughout the East Coast and Southeast,” said Gary R. Heminger, president and CEO.

Hess is the largest operator of convenience stores along the East Coast and the fifth-largest in the U.S. by number of company-operated sites with 1,256 stores located in 16 states.

“Our strategy is focused on growing higher-valued, stable cash flow businesses, and this transaction fully supports that objective. With this significant geographic expansion, we will be able to further leverage our integrated refining and transportation logistics operations, providing an outlet for an incremental 200,000 bpd [bbl/d] of assured sales from our refining system.”

Hess had planned to spin off its retail business and in January it received notification from the Internal Revenue Service that the company could distribute the business to stockholders tax-free, according to documents filed with the Securities and Exchange Commission.

The spinoff was one in a line of divestments the company has undertaken. In 2014, the company sold assets in Thailand for \$1 billion

and 74,000 acres in the Utica for \$924 million. Previously, the company sold \$7.8 billion in the U.S., U.K., Southeast Asia and the Caspian.

“Hess gets a win,” said Roger Read, a senior analyst at Wells Fargo Securities LLC. “Our prior expectation for Hess to execute a spinoff of its retail assets would have generated considerably less cash for Hess than this direct sale for \$2.6 billion in cash.”

Read said the company would likely defer recognizing a gain on the sale, meaning it would see no immediate tax impact.

“With just a few noncore assets remaining for disposal, Hess has for all effective purposes reached its goal of becoming a pure play E&P”

Hess also increased its share repurchase program to \$6.5 billion from \$4 billion, which is consistent with prior commitments following the disposition of the retail operations.

MPC said the acquisition is expected to be funded with a combination of debt and available cash and is expected to close in the third quarter.

Mexican Energy Reform Could Face Delays

BY **VELDA ADDISON** | HART ENERGY

With more than 20 pieces of legislation and more decisions plus details to iron out, the landmark transformation of Mexico's energy sector could take longer than anticipated.

“If this package is not approved before the year ends, it's going to suffer a lot in terms of politics because there is an election in the summer of next year,” Jordy Herrera, former energy secretary for Mexico, said May 15 during the Mayer Brown Global Energy Conference in Houston. “So we're running out of time.”

Mexico agreed in December 2013 to open its energy sector, among others, to private investment—making way for licenses, production-sharing contracts and profit-sharing contracts to be initiated by the government, private investors or state-owned *Petróleos Mexicanos*, known as Pemex. Certain resource areas could call for certain types of contracts. However, the final rules and processes are still being devised.

Herrera said he expects Mexico's Congress to approve the first package of laws in June, July or August. Add this to the fact that Mexico's energy ministry has until Sept. 17 to make a decision on Pemex's entitlement request as part of Round Zero—the round in which areas are set aside for Pemex with the rest being made available to private investors—and it looks unlikely that the first bid round would come before the country's congressional election in July 2015.

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“For sure, this is not official. But I’ve been there for a while, and I think the government will not take that risk before elections,” Herrera said. But “this is the last chance for our country to become a stronger, more advanced economy.”

Addressing concerns related to the development of potential unconventional resources—which is one of two areas expected to attract outside investors, the other being the deepwater Gulf of Mexico (GoM)—could be time-consuming. “We have environmental issues; we have water issues. At the end, it’s going to take time,” he said.

Also expected to fuel debate is whether Pemex is allowed to form joint ventures (JVs) or enter farm-out agreements for assets it secures as part of Round Zero. Herrera predicts farm-out rights will be the main discussion in the legislature. Pemex, he said, wants to farm out assets or form JVs with other companies. However, “in the constitution it says clearly that that is forbidden,” Herrera said. “It is going to be, in my opinion, that Pemex is not going to be allowed to farm out the Round Zero assignments that they have.”

The company has requested 83% of the country’s proved and probable reserves, a figure that Herrera believes will drop to about 75%. Pemex has expertise in shallow-water exploration and production as well as conventional onshore hydrocarbon development. But it lacks expertise in deepwater and unconventional resources and could, as a result, lose out on blocks in these areas if bidding against companies with more experience.

“Pemex does not have technology. They don’t have money [and] the experience to develop those resources,” Herrera said after noting that the country’s first bid rounds could be grouped by region or common geology, such as a round for deepwater GoM blocks or unconventional blocks.

The U.S. Energy Information Administration estimates that Mexico has about 15.4 trillion cubic meters (Tcm), or 545 trillion cubic feet (Tcf), of technically recoverable shale gas resources. Areas with geological potential, according to Herrera, include Chihuahua, Sabinas-Burro-Picachos, Burgos, Tampico-Misantla and Veracruz.

The reform is also expected to create opportunity for other sectors including midstream, considering the infrastructure needs that could arise from the development of unconventional and ultra-deepwater resources. Unconventional resources are believed to be located near the Texas-Mexico border in the Eagle Ford, for example, where there is no infrastructure on the Mexican side, he pointed out. Such a need also exists in the upper northern part of the deepwater GoM.

Taxes related to production will be put into a sovereign fund, similar to those in Azerbaijan, Colombia and Norway, to help fund infrastructure improvements, he said.

The reform comes as Mexico tries to reverse declining production, which Herrera said has now stabilized for oil at about 2.5 million barrels per day (MMbbl/d), while gas production continues to fall. Currently, gas production is about 158.6 MMcm/d (5.6 billion cf/d).

Bloomberg reported that Pemex’s output reached its lowest monthly production levels in more than 18 years in March, falling 2.1% in the first quarter compared to a year ago. The company produced 2.48 MMbbl/d in April and aims to increase that number to 3 MMbbl/d within four years.

Hopes are high for the reform to reverse the trend.

“I think we have the potential to deliver 2 million barrels of oil per day from unconventional and 3 million barrels of oil a day in onshore known areas that were left behind because of Cantarell,” Herrera said. “I’m pretty sure that in the Gulf of Mexico we should be able to deliver more or less another 2 million barrels a day.

“It may take perhaps another decade,” he continued. “But meanwhile, new investment and fresh money is going to go into Mexico, and this is good for the economy. This is good for job creation, and I’m pretty convinced that this is our chance to transform the region.”

EIA Slashes Estimate Of Monterey Shale Reserves By 96%

BLOOMBERG

The Energy Information Administration slashed its estimate of recoverable reserves from California’s Monterey Shale by 96%, saying oil from the largest U.S. formation will be harder to extract than previously anticipated.

“Not all reserves are created equal,” EIA Administrator Adam Sieminski told reporters at the Financial Times and Energy Intelligence Oil & Gas Summit in New York on May 22. “It just turned out it’s harder to frack that reserve and get it out of the ground.”

The Monterey Shale is now estimated to hold 600 million barrels (bbl) of technically recoverable oil, down from a 2012 projection of 13.7 billion bbl (Bbbl), John Staub, a liquid fuels analyst for the EIA, said in a phone interview. The revision confirms what some in the oil industry had suspected: The bounty from California’s shale is out of reach for now, delaying an oil rush that was predicted to bring jobs and added tax revenue to the Golden State.

The revised figures, part of EIA’s annual assessment of technically recoverable reserves, were based on well-production data and new information from a U.S. Geological Survey review of the shale

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formation, Jonathan Cogan, an agency spokesman, said in an email. The data included “a lack of production growth relative to other shale plays like the Bakken and Eagle Ford,” Cogan wrote.

The geology of the Monterey isn’t as uniform as other formations and has presented technical challenges that have so far limited success for producers there, Erik Milito, director of upstream and industry operations for the American Petroleum Institute, said in a phone interview.

“Early on, the estimates were very unreliable and then they’ve learned you can’t just take what’s happening in the Bakken and then say you’re going to have the same pace of production [in] the Monterey,” Milito said. “The Monterey’s going to go through that learning curve where, over time, technology should be able to overcome some of those specific constraints.”

Those constraints have been felt by companies that have invested in the Monterey. Occidental Petroleum Corp. controls 2.3 million acres in California, including vast portions of the Monterey Shale that have so far frustrated attempts to extract commercial quantities of crude.

The company announced in February plans to spin California operations off into a separate publicly traded company, a move likely hastened by poor results in the Monterey, said Leo Mariani, an Austin, Texas-based analyst for RBC Capital Markets.

“What is lost in the conversation, at times, is the fact that all the oil is still there and we always have believed and continue to believe that the members of our association possess all the necessary experience and knowledge to figure out how to unlock that,” Tupper Hull, a spokesman for the Western States Petroleum Association, said in a phone interview. “When that happens, no one knows.”

The large revision for Monterey was somewhat predictable after the U.S. Geological Survey flagged it a year ago, Sieminski said. “The rock is there. The technology isn’t there.”

Canada Outperforms US In Pipeline Development For Crude Export

While infrastructure projects in the U.S. are delayed, Canada is building pipelines to export crude oil into the Atlantic and Pacific basins, said an analyst from research and consulting firm GlobalData in a release.

Carmine Rositano, GlobalData’s managing analyst for downstream oil and gas, said that Canada is developing infrastructure projects on both its west and east coasts, including the proposed East Energy Access Pipeline projects.

GlobalData estimated that the projects will transport about 1.2 million barrels per day (MMbbl/d) of crude oil from Alberta to refineries in Montreal, Quebec and New Brunswick, with marine terminals for potential export purposes. The projects include converting an existing natural gas pipeline for crude transport, reversing the flows of existing pipelines and building new pumping stations, tank terminals and marine facilities.

Two additional major projects have been proposed for crude oil transportation from Alberta to Canada’s west coast ports. According to GlobalData, this would add more than 1 MMbbl/d of crude oil for export to the Asia-Pacific region.

The Northern Gateway project involves a crude oil export pipeline and condensate import pipeline from Alberta to a new marine terminal in Kitimat, British Columbia. The project has an expected transport capacity of 525,000 bbl/d of oil sands crude from Alberta to the Asia-Pacific and U.S. West Coast regions.

The Trans Mountain Pipeline project is an expansion designed to increase the pipeline’s capacity from 300,000 bbl/d to 890,000 bbl/d. The project involves building 12 new pump stations, 20 new tanks and a twinned pipeline closely following the existing Trans Mountain right of way.



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Approval for the Trans Mountain Pipeline project is being sought from Canada's National Energy Board. Pending approval, construction is expected to begin in 2015, with the project entering service in 2017 or 2018.

Study Finds Bakken Crude Is Like Other Light Crudes

An independent study completed by Turner, Mason & Co. for the North Dakota Petroleum Council (NDPC) found that Bakken crude oil is similar to other North American light, sweet crudes and does not present a greater risk to rail transport than other flammable liquids. The study also found that Bakken crude is consistent throughout the basin with only minor variability in gravity.

Data from the study shows that Bakken crude has:

- An average API gravity of 41 degrees, which is similar to other light crudes;
- An average vapor pressure of 11.5 to 11.8 pounds per square inch, which is 61% below the vapor-pressure threshold limit under the hazardous materials regulations;
- A flashpoint of less than 73 F, within normal range;
- An average initial boiling point near 99.6 F, within normal range; and
- An average sulfur weight of 0.14, which indicates low corrosivity.

The characteristics found by the study all fall within specifications and design thresholds to safely transport using DOT-111 rail cars. The findings confirm that Bakken crude has been and continues to be properly classified under current regulations as a Hazard Class 3 Flammable Liquid, Packing Group I or II.

The study also found that one of the U.S. Department of Transportation tests used to determine the packing group for flammable liquids is not ideal. The test used to measure boiling point can result in the same crude sample being assigned to Packing Group I or II. The American Petroleum Institute is working to determine better, more precise classification standards for packing groups.

Two smaller studies were also completed. The first compared the quality of the crude when loaded in North Dakota to the quality when discharged more than 1,500 miles away. The data indicated no significant changes in transit. The second looked at the effects of seasonal temperature changes on crude in transit, which found the vapor pressure stayed within a narrow range despite seasonal temperature changes.

Kari Cutting, vice president of the NDPC, said in a statement, "This is the third independent study to confirm that Bakken crude does not significantly differ from other crude oils and poses no greater risks than other flammable liquids authorized for transport."

The NDPC recommends using the study results to improve current packing and classification standards.

"Since Bakken crude is no more dangerous than other products moved by rail, accident prevention efforts focused [on] track maintenance, staff training and train speeds will be the key to improving safety," said Cutting.

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