Taking the Pulse of the World’s Energy Industry

A Report from CERAWeek 2017

By Richard Myers

03.19.2017
Vital Signs
Taking the Pulse of the World’s Energy Industry

A Report from CERAWeek 2017

Contents

Oil: A Questioning Precariousness 3
Natural Gas: Finally, A Contrarian 8
Is The Tide Going Out on Globalization? 14

Richard Myers is a free-lance journalist based in Washington, D.C. He worked almost 30 years at the Nuclear Energy Institute, the U.S. nuclear industry’s D.C.-based policy organization, the last 10 years as vice president for policy and planning. Before that, he spent almost 15 years as a reporter and editor with The Energy Daily.

To receive his commentary and analysis on energy and environmental issues and trends, send a request to: therichardmyers@gmail.com.

© 2017 Richard J. Myers. All rights reserved.
Oil: A Questioning Precariousness

“… at evening
As the lands darken, a questioning
Precariousness comes over everything.”

– Randall Jarrell, The Orient Express

As Robert Dudley, chief executive of BP, settled into his armchair onstage at CERAWeek last Tuesday morning, he remarked that it was nice to hear laughter from the audience. “I don’t think I heard anyone laugh a year ago,” he said.

He was right. No-one was laughing in 2016.

A Very Nasty Cycle

A year ago, crude oil prices were at, or near, the $26-per-barrel bottom of the market, a long downward slide from just over $100 per barrel in mid-2014. Petroleum has always been a cyclical boom-and-bust business, but “this cycle is very nasty,” said Abdallah El-Badri, then-Secretary General of the Organization of Petroleum Exporting Countries (OPEC) at CERAWeek in February 2016. “For three years in a row, we’ve had more supply than demand,” lamented Fatih Birol, Executive Director of the International Energy Agency.

No Better Way to Take the Pulse …

CERAWeek is inarguably the world’s premier energy event. To call it just another conference is like calling a Rolls Royce just another car. CERAWeek is a week-long feast of ideas, issues, trends, data, opinion and perspective. CERAWeek is a marathon — plenary sessions in an enormous ballroom, leavened with dozens of breakout sessions and side-events. Entire days are devoted to different sectors of the energy industry — Monday and Tuesday to oil, Wednesday to natural gas, Thursday to electric power.

CERAWeek is a five-day parade of CEOs and senior executives, mostly presided over by Daniel Yergin, the self-effacing Jedi master of energy policy. Yergin is the Yoda of CERAWeek, equally at home with CEOs and heads of state. And he is a better inquisitor than most journalists — able to coax insight out of executives and politicians who are coached to use many words to say very little. Watching his engagement with captains of industry is like being present at an unusually entertaining after-dinner conversation.

CERAWeek was conceived 36 years ago by Cambridge Energy Research Associates, which Yergin co-founded and which was long since absorbed into IHS, and more recently merged with Markit to form IHS Markit. This year’s event, which ran from March 6 through March 10 in Houston, attracted over 3,000 people from 62 countries. There is simply no better time or place to take the pulse of the world’s energy industry.
The road back to $50-or-so per barrel over the last year was an exceedingly painful Darwinian journey — paved in lost jobs, bankruptcies and defaults, massive cuts in capital spending and production cutbacks.

Globally, roughly 500,000 jobs disappeared, more than three-quarters of them in the oilfield services sector.

The U.S. rig count collapsed — from a high of about 2,000 in December 2011 to just over 400 in May 2016. (It had climbed back to 768 last week.)

Worldwide, 2015 upstream capex was slashed by about 25% from 2014 levels (from roughly $800 billion to about $600 billion), then cut by another 25% (to about $450 billion) in 2016.

In the United States, 124 exploration and production (E&P) companies sought refuge in bankruptcy since the beginning of 2015, defaulting on almost $86 billion in debt, according to Haynes and Boone, a law firm that tracks oil and gas companies in extremis. On top of this, 118 oilfield services companies have sought bankruptcy protection since 2015, defaulting on $20.7 billion in debt. Even the midstream companies were not immune — 19 of them went under, defaulting on $18.6 billion in debt.

And U.S. lower-48 oil production slipped by a little over 6% from 2015, to about 8.4 million b/d, a 550,000 b/d decline.

A very nasty cycle, indeed.

An Uneasy Peace

Compared to last year, the mood among the oilmen in Houston at CERAWeek 2017 was much improved. Oil demand worldwide grew by almost 1.4 million b/d in 2016 and is expected to grow another 1.5 million b/d or so this year. OPEC and a group of non-OPEC producers — 24 countries in all — agreed last December to reduce production by 1.8 million b/d, in an attempt to bring worldwide inventories down and the market back into balance.

And U.S. shale oil production is climbing slowly out of last year’s purgatory — a leaner, more efficient (and possibly wiser) industry.

John Hess, CEO of Hess Corp., sees costs and the time required to drill a well down by about 50%. He sees technology improving quickly — higher proppant loadings, longer laterals, closer well spacing and other innovations that have pushed recovery of oil in place from 5-7% a year ago to 15-20% today. And he expects shale production this year to increase by 300,000 b/d. (Other forecasts are higher: IHS Markit’s experts see a 500,000-b/d increase in U.S. production.)

At best, however, this is an uneasy peace. The most recent edition of OPEC’s Monthly Oil Market Report claims 86% compliance with the agreement to cut production (although Saudi Arabia is doing more than its fair share). But the agreement lasts only
until the end of June. The 24 participating countries will meet in Vienna on May 25 to decide whether to extend it.

So the prevailing sentiment at CERAWeek 2017 may fairly be described as questioning precariousness, a blend of hope and anxiety, an uneasy peace as the industry juggles the delicate balance among production, consumption and inventories that determines price. Will the 13 OPEC producers and the 11 other countries that pledged to cut production (a) honor the agreement and (b) continue it? Will the American shale oil producers exercise some measure of restraint? Will worldwide inventories fall back into the five-year average band?

The crude oil market itself reminded everyone midway through CERAWeek how fragile is the industry’s grasp on the $50-a-barrel prize. A higher-than-expected inventory report from the U.S. Energy Information Administration, which showed an 8.2-million-barrel increase in U.S. crude stocks when the market expected only 1.7 million barrels, spooked the market. West Texas Intermediate (WTI) futures slipped below $50 a barrel.

An uneasy tension between American shale producers and the rest of the world was also on display last week in Houston.

“Shale is not the swing producer,” Hess insisted. “Saudi Arabia is. Saudi Arabia is the only country with significant surplus production capacity – able to go up several thousand barrels a day when that’s needed, and down several thousand barrels a day when that’s needed.”

It’s not clear, however, to what extent Saudi Arabia is willing to play that role. “OPEC is the only catalyst able to bring stability to the market,” said Khalid Al-Falih, Saudi Arabia’s Minister of Energy, Industry and Mineral Resources. OPEC is demonstrating “greater alignment than at any time in recent memory,” he said, and has established “a collaborative framework of production management for a restricted period of time.” But, he warned, “we have made it clear that we would not bear the burden of free riders.”

Clearly, there’s an iron fist inside the velvet glove. The Saudis have cut production below “the psychologically significant” 10 million b/d threshold, Al-Falih pointed out. This is “well below our maximum capacity of 12.5 million b/d and more than our commitment” under last December’s agreement to cut production by 1.8 million b/d. But Al-Falih warned everyone in the industry against getting “ahead of the market” and reminded his audience that “our collective efforts directly benefit the U.S. industry .... We will not underwrite the investments of others at our expense.”

At least one large independent producer recognizes that American shale producers, which can ramp up production relatively quickly, and are doing so in response to the higher $50-a-barrel environment, must demonstrate some restraint. During a session last Wednesday afternoon on North America’s E&P Future, Harold Hamm, CEO of Conti-
Continental Resources and the man best-known for unlocking the potential of North Dakota’s Bakken shale, warned: “We have the potential to oversupply the market, and a great responsibility not to do so. .. Discipline is the big factor here. This has to be done in a measured way or we’ll kill the market.”

At CERAWeek 2016, then-Saudi oil minister Ali al-Naimi reminded his audience that “efficient markets will define where on the cost curve the marginal barrel resides.” Over the last several years, U.S. shale producers have achieved remarkable gains in cost and efficiency—Royal Dutch Shell’s CEO said his company has cut operating expenses by 40% and capital cost by 50%, for example, and several companies reported breakeven costs of $40 a barrel in the Permian.

Still, despite the efficiency gains in North America, one suspects the marginal barrel is not in Saudi Arabia. The man who replaced al-Naimi as Saudi energy minister observed last week that “the Saudis always take the long view. We maintained our investment during the downturn. Our rig count remained the same,” said al-Falih. And later, asked about next year’s IPO of shares in Saudi Aramco, he said: “Our costs are lower than what you’ve seen. Our reserves are higher than booked.”

How this short-term balancing act plays out is anyone’s guess.

One fact is clear: Companies are boosting their capital spending in 2017. Some examples:

- Continental Resources plans 2017 capex of $1.95 billion, up from $1.07 billion in 2016.
- Hess’ E&P budget in 2017 will be $2.25 billion, up from $1.9 billion in 2016.
- Noble Energy’s 2017 capex is expected to be $2.3 - $2.6 billion, roughly double last year’s $1.3 billion.
- Chesapeake Energy will spend $1.9 - $2.5 billion this year, up from roughly $1.7 billion in 2016.
The majors, too, are boosting spending and looking for quicker returns. Roughly one-third of Exxon’s 2017 E&P budget will go to short-cycle projects that will deliver cash flow in as little as three years. Seventy-five percent of Chevron’s 2017 E&P spending is designed to generate cash within two years.

Lest anyone assume that all this capex will produce “new” oil that will overwhelm a market struggling to maintain its balance, remember two factors:

- This industry must spend heavily just to stay in the same place. In its 2017 Outlook for Oil and Gas, Deloitte reckons that 80% of capex goes to replace natural production declines.
- Costs are rising. Prices charged by the oilfield service companies dropped by 30-40% over the last two years, according to Deloitte, and those companies are taking advantage of higher crude prices to recover lost ground. The oil industry trade press is filled with stories about rising prices – day rates for drilling rigs up from $17,000 a day last year to $20,000 a day this year and rising; the cost of sand at about $35 per ton, 20% higher than last year, and so forth.

**Short Cycles, Long Cycles and a Day of Reckoning**

No matter what happens in the short-term, there was universal agreement at CERAWeek 2017 that the longer-term remains a challenge. Again and again, speakers returned to the theme that investment in new sources of supply is lagging, and that a day of reckoning lurks a few years out.

At the beginning of the week, the International Energy Agency released its five-year outlook. The two major conclusions:

- “We see no peak in world oil demand,” said IEA Executive Director Fatih Birol. In fact, by 2019, IEA expects world demand for oil to pass 100 million b/d, with China and India representing almost one-half of the demand growth.
- “We are witnessing the start of the second wave of U.S. shale growth,” said Birol — up by as much as 1.4 million b/d over the next five years. “But even that is not enough to make IEA feel relaxed,” he added. IEA forecasts a 5.6 million b/d increase in supply by 2020 and a 7.3 million b/d increase in demand.

“We see a supply gap as a result of lack of investment, and upward pressure on prices by 2020 and beyond … Lack of investment is the nerve center of the debate in the oil sector,” Birol said. “For two years now, in 2015 and 2016, we’ve seen huge declines in global upstream investment, so the pace of investment in 2017 is very important. And the first signals we’re getting from the oil companies is not very encouraging in terms of increased investment.”
Total upstream investment worldwide was about $450 billion in 2016. “That’s lower than it needs to be to meet demand growth, and to offset the decline from existing fields. We would like to see a 20% increase above that,” Birol said.

Birol even worries about today’s oil supply-demand balance. “Spare capacity is at a 40-year low — about 2% of global oil demand,” said Birol, and reminded his audience how volatile the market was in 2008 when spare capacity was higher (about 4% of global demand).

Birol was not a voice crying in the wilderness. Others harped on the same theme. OPEC released its long-term outlook last November, noted OPEC Secretary General Mohammad Barkindo, which sees world oil demand increasing by 17 million b/d by 2040. Meeting that demand will require $10 trillion in capital investment, Barkindo said, and “we’ve already lost two to three years of that required investment.”

Development in the oil industry has separated into short-cycle projects — like U.S. shale, where first investment to first oil takes 6-12 months — and long-cycle projects, like deepwater offshore, where the development cycle takes 3-5 years.

Saudi energy minister Al-Falih also worries about “worldwide investment falling behind supply development needs. I’m most troubled by lagging long-cycle investment needs.”

Natural Gas: Finally, a Contrarian

The conventional wisdom goes something like this: North America has about 1,400 trillion cubic feet of natural gas recoverable at a breakeven Henry Hub price of $4 per million Btu or less. That’s 50 years, give or take, at today’s U.S. annual consumption. So no worries, right?

Jeffrey Ventura, CEO of Fort Worth-based Range Resources, is not so sure.

Ventura’s company drilled the first commercial well in the Marcellus shale in 2004 and, as a first mover, is in an enviable position — 1.5 million acres of stacked potential in the southwest core of the basin. (By “stacked,” he means areas where the Marcellus shale lies between the Utica shale below and the Devonian shale above.)

(Continued on page 10)
Economic Growth and Environmental Protection: The Canadian Recipe

The United States and Canada have “the most successful economic relationship in the world,” Canadian Prime Minister Justin Trudeau told the CERAWeek audience on Thursday evening, shortly after receiving an award for energy and environmental leadership. Canada, he noted, is the number one customer for two-thirds of U.S. states and in the top three for 40 states. And “we supply more than 40% of U.S. crude oil and more electricity and uranium than anyone else.”

“One of the fundamental responsibilities of any Canadian prime minister is getting our resources to market. But getting our resources to market is not as easy in the 21st century as just slapping down a railroad. We have to build the public trust.”

Trudeau explained the compromises necessary in Canada to ensure development of Alberta’s oil sands and the pipelines necessary to move that oil to markets in the United States and around the world. “No country would find 173 billion barrels of oil and just leave it in the ground,” he said. “And we’re on our way to getting three new pipeline projects underway” — the Kinder Morgan Transmountain line to the Pacific coast, TransCanada’s Keystone pipeline to Texas, and the Enbridge Line 3 replacement (an 1,100-mile crude oil line from Alberta to Wisconsin).

Construction of these pipelines has not generated the kind of opposition in Canada that pipeline construction generally produces in America. Trudeau explained why. “Canadians will not accept that we must choose between a healthy environment and a strong economy. It takes compromise but it is possible,” he said. “We made progress both on pipelines and on a plan for carbon reduction — a plan that puts a price on carbon pollution that was worked out in cooperation with our provinces.”

“Let me be clear about this: We could not have moved forward on pipelines if we had not acted on climate, and we could not have acted on climate had we not focused on jobs.”

Canada’s climate policy is built on a $10-per-ton price on carbon that starts in 2018, and increases by $10 a year until 2023, “at which point we’ll take a look at it,” Trudeau said. None of the revenue raised goes to the federal government. “Any revenue generated will remain in the province where it is collected.” Trudeau explained that “I heard from business leaders that they needed clarity and predictability and they can work around that.”

“This is not a question of political ideology,” he added. “It’s a question of recognizing that this is where the world is going and we can either get dragged kicking and screaming every step of the way, or we can choose to lead and develop the solutions.”

Trudeau was asked about the border adjustment tax being discussed in Washington as part of a possible tax reform proposal, and he made it clear that he thinks any such approach would be enormously counterproductive. He pointed to the automobile industry in southern Ontario and northern Michigan. “An auto part might go back and forth across the border six or seven times before ending up in a car. If you plan on having bean counters track each one of those transits and lay taxes on top of each one, you’ll be hurting not just the Canadian economy but the American economy as well.”
Ventura has no doubts that the United States has enormous natural gas resources, and no doubt that the Marcellus is the largest and lowest-cost gas resource in America. But he cautioned his audience that not all gas plays are created equal.

“Certain oil and gas plays are better than others …. The reality is that there are core areas or sweet spots. Typically, the core area of a play is 5-20% of the total area that the play covers. And the economics for core versus non-core areas are very different. For instance, in the Marcellus, the breakeven cost can vary by a factor of two or more when comparing core and non-core.”

Ventura then turned his attention to gas demand. By 2020, he said, U.S. gas demand (from the power sector, petrochemicals and exports) will likely increase by 14 billion cubic feet a day (Bcf/d). In that same period, the U.S. will see a 6 Bcf/d natural decline in production. “So by 2020, we need to add 24 Bcf/d to offset decline and 14 Bcf/d to meet new demand. By 2025, we’ll need to add about 71 Bcf/d to offset decline and meet new demand. In other words, the U.S. will have to roughly double production to meet demand.”

“Futures pricing.” Ventura added, “does not capture this …. The current futures price [for gas] of about $3 is too low. A higher price will be required to incentivize the new production that will be needed.”

Ventura was, it must be said, the contrarian in the natural gas discussion at CERAWeek — although the history of energy policy since October 1973 suggests that the conventional wisdom is often wrong and the contrarians sometimes closer to the mark.

Most of the discussion about domestic gas issues centered around the remarkable gains in efficiency and reductions in cost achieved by the industry over the last several years.

The experience of EQT Corp., a Pittsburgh-based gas producer with a large presence in the Marcellus, is typical.

In 2012, the company was typically drilling 4,500-foot laterals, tapping 1.6 Bcf of gas per 1,000 feet, at a cost of $6.1 million per well.

In 2017, the company is routinely drilling 7,000-foot laterals, tapping 2.1 Bcf per 1,000 feet, at a cost per well of $6 million.

As the chart on the next page shows, longer laterals provide exponentially higher after-tax returns.
The U.S. gas story at CERAWeek 2017 was largely familiar:

- Significant growth in demand from the power sector, petrochemicals and exports. Various speakers put demand growth between 8 Bcf/d and 14 Bcf/d in the next five years. “Do-able at today’s economics,” said one.

- Marcellus production still out-running take-away pipeline capacity by a significant amount. One speaker counted more than 20 expansion projects to move gas out of the Marcellus and Utica shales. Pipes to the west and south are easy; to the north and east, much less so. “And the pipes are filled as soon as they’re completed,” he said.

- Because pipeline infrastructure has not caught up with potential supply, “the inventory of wells drilled but not completed (DUCs in industry jargon) numbers in the thousands in Pennsylvania,” said a panelist in one session.

**LNG: Running with the Bulls**

“Cheniere broke the model … dis-integrated the supply chain,” said Charif Souki, chairman of LNG developer Tellurian (and the man who created Cheniere until he left in December 2015).

Until fairly recently, the LNG business was characterized by long-term bilateral contracts between LNG suppliers and buyers (mostly electric and gas utilities in Japan and South Korea), with the price of the LNG indexed to the price of crude oil. LNG tankers were cryogenic ferries, shuttling back-and-forth between liquefaction facilities and fixed destinations.

Then came Cheniere and broke the model. Cheniere based the price of LNG on low-cost U.S. natural gas, not international oil, added a fixed fee for liquefaction and transport, and offered potential customers unprecedented flexibility. Cheniere shipped its first cargo last February from its Sabine Pass liquefaction facility and, by year’s end, had delivered 56 cargoes — roughly four million metric tons of gas — to 14 different countries.

The customers liked it. And the world has entered a new world of LNG — shorter
contract lengths (from about 18 years on average in 2008 to about eight years on average in 2016, according to Shell’s LNG Outlook 2017); smaller average contract volumes (down from about 2.25 million metric tons per year [mtpa] in 2008 to about 0.75 million metric tons in 2016); and greater destination flexibility.

This was accompanied by enormous shifts on the buyers’ side:

- Formation of purchasing organizations like Japan’s Jera Co., which buys LNG and coal for Tokyo Electric and Chubu Electric and other large consumers outside Japan.
- The emergence of new buyers: Egypt, Pakistan and Jordan were among the five fastest-growing LNG importing countries last year (China and India were

### INbrief

**The Major Oil Companies and Climate Change: A Sample**

ExxonMobil CEO Darren Woods thinks “policies fostering transparent, uniform carbon prices that allow market forces to drive effective solutions, minimize administrative burdens and promote global participation can be effective. But policies in the form of subsidies, mandates and trade barriers only hinder progress. They are more expensive and lead to poor investment decisions.” Pressed on the issue by Dan Yergin, Woods said: “I was fortunate the last couple of years to be responsible for our technology organization so I’ve spent a lot of time going through the science. I’ve read all the IPCC [Intergovernmental Panel on Climate Change] reports. And I feel very comfortable that we understand the risk associated with climate and fossil fuels. And we think we have the opportunity to contribute and help mitigate that risk through technology.”

Royal Dutch Shell “strongly supports the overall ambitions of the Paris Agreement,” said Shell CEO Ben van Beurden. The company believes a “government-led carbon pricing mechanism, a meaningful price on carbon” is the optimum policy instrument. “We’ve advocated putting a price on carbon since the late 1990s …. The biggest contribution Shell can make is to grow the role of natural gas” to displace coal, he added. “Gas is roughly half of Shell’s portfolio.”

“I haven’t supported a carbon tax,” said John Watson, CEO of Chevron. “My background is in economics and I think of the social benefits that you get from our product — from continuous power … anyone from the developing world knows the benefits of having, or not having, continuous power. So the social benefits of our product far outweigh the costs, and particularly in the United States. In the United States there’s some irony. The United States has reduced its greenhouse gas emissions and it’s because of our industry. It’s because of hydraulic fracturing that we have cheap natural gas that has naturally displaced coal. So the U.S. is now only about 15% of the world’s greenhouse gas emissions and it’s falling.” Watson confessed some concern about “piling additional costs on top of the existing energy costs we’re paying today when it’s one of the few competitive advantages we have. I just don’t think it’s the right policy for us. There are lots of things we can do,” he noted. For example, “we can stop prematurely shutting down nuclear plants.”
The first two liquefaction trains at Cheniere’s Sabine Pass facility started commercial operation in 2016. A third is now being commissioned, two more are under construction, and another is fully permitted. When all six trains are operating, the facility’s capacity will be approximately 27 million tonnes per year (mtpa).

In addition, Dominion is close to completion on its 5.25-mtpa plant at Cove Point, MD.

In the 2018-2020 period, several more facilities will start up — another Cheniere facility at Corpus Christi (about 22.5 mtpa); Cameron LNG in southwestern Louisiana (almost 15 mtpa); Freeport LNG in Texas (about 14 mtpa), and Kinder Morgan’s 2.5-mtpa facility near Savannah, GA.

Based on Shell’s forecast for LNG demand (above), more will be needed.

Growing flexibility in infrastructure. Many new importers use FSRUs (floating storage and regasification units). These are ideal for smaller markets or as a temporary measure until permanent onshore regasification facilities can be built. According to Shell’s LNG Outlook 2017, there are 21 FSRUs in service around the world, and another 6 under construction.

And finally, a developing shift toward new buyers. Japan and South Korea were traditionally the largest LNG consumers in the world. India (with average growth in LNG consumption of about 6% a year), Pakistan (7%), and other countries in southeast Asia (11% annual growth) are coming along fast.

All this makes for a rather bullish outlook. Shell sees global gas demand growing by 2% a year between 2015 and 2030, but LNG demand increasing at twice that rate — 4-5% a year.

Tellurian’s Charif Souki, as unashamedly optimistic about LNG as ever, sees today’s market of 270 mtpa growing to 365 mtpa by 2019-2020 — “12 to 15 cargoes daily, 200 cargoes on the water at any one time.” He sees the U.S. Gulf Coast joining Qatar and Australia as one of the major LNG supply sources in the world.

And longer term? Most industry experts at CERAWeek 2017 see the market in 2030 at 500 mtpa, roughly twice as large as today.

The three nations imported 13.9 million tons in 2016.

Note on graph: New liquefaction capacity will be needed to meet demand growth after 2020.
Is the Tide Going Out on Globalization?

For an industry that operates worldwide, with a global supply chain, with interests around the world, it should come as no surprise that the rise of economic nationalism in the United States was much on everyone’s mind at CERAWeek 2017.

No-one actually came out and said that Donald Trump and his staff don’t know what they’re talking about, or what they’re doing, or that they had better be careful lest they damage the U.S. economy. After all, the speakers at CERAWeek are chief executives and senior management. Even if they felt that way, they’re too polite, too well-trained in circumspection, possibly too afraid of being the target of a tweet to be so blunt.

In fact, some of the executives clearly like Trump’s approach. Harold Hamm of Continental Resources was one of Trump’s earliest supporters and remains an unabashed apostle. David Farr, CEO of Emerson, and Andrew Liveris, CEO of Dow, both serve on one of Trump’s business advisory councils. Both applauded the focus on reducing regulatory burden, addressing tax reform, driving investment in infrastructure, and ensuring America has the workforce it needs for the 21st century. “This Administration is very much a business enterprise,” said Liveris. “It feels a lot like what I do at Dow. I’ve never ever had that feeling before. We’ve developed over 100 actionable ideas. We have an action register. We have follow-up.”

But still, economic nationalism and the antipathy to globalization troubled a number of the executives present. Dan Yergin asked Liveris: Is the tide going out on globalization? “Dow has manufacturing in 45 countries. We understand global trade flows,” Liveris replied. “I see this as less a backward step and more a moment of pause … hopefully, not too long a pause.”

Others felt similarly.

“I can’t think of any example in history where protectionism works,” said Tom Fanning, CEO of Southern Co. “You end up hurting quality and/or raising prices.”

Ryan Lance, CEO of ConocoPhillips, acknowledged that the “economic barriers seem to be coming up. But this is a global business. You can’t isolate one market and expect the system will continue to work. I hope the economic barriers

INbrief

The Red Tape is Fighting Back

During a session on globalization, Jesse Norman, the U.K.’s Minister for Energy and Industry, mentioned that Her Majesty’s government had instituted a policy some time ago under which imposition of one new regulation must be accompanied by the retirement of two existing regulations.

This took several participants by surprise. They believed that the idea was unique to the Trump Administration.

Not so, said Norman. “We have had a red tape challenge for some time. But I must say, the red tape is putting up a helluva struggle.”
Some warned against unnecessarily damaging America’s relationship with Mexico. In 2010, the U.S. exported 2 Bcf/d of natural gas to Mexico. “Today it’s north of 4 Bcf and going to 6,” said James Fitterling, President and COO of Dow. Implication: American jobs depend on those exports. Fitterling noted that low-cost natural gas is stimulating a massive petrochemical investment boom along the Gulf Coast — $160-billion-worth of projects announced, of which $50-billion-worth would be operating by the end of next year. In petrochemicals, he said, the U.S. balance of trade has moved from “a $10-billion deficit to a $19 billion positive and headed to $50 billion.” Same implication: American jobs hang in the balance.

And economic nationalism is not as simple or easy as just building walls around Fortress America. Many non-American companies have a major presence — manufacturing facilities and jobs — in the United States. Take Siemens. Siemens’ presence in America is larger than its presence in any other country — twice as big as its presence in Germany, its home country. “We have 47 factories in America … 50,000 jobs … soon to be 60,000 … in 50 states,” said Joe Kaeser, Siemens CEO. Siemens’ U.S. operations generate about $22 billion a year in revenue “and we export about $6 billion to other countries.” Kaeser acknowledged any country’s right to secure its own economic interests. “So America first is OK. America only is not OK,” he said.

Kaeser also put his finger on the issue that clearly consumes a great deal of CEO bandwidth — the workforce. The post-industrial revolution clearly brings “massive change to society. Millions and million of jobs will be lost. Millions and millions will be created, too, but they’re not the same jobs.”

**Making Sure No-One Gets Left Behind**

Several sessions at CERAWeek 2017 looked behind the trend toward economic nationalism and protectionism, seeking to understand the reasons for it, and the corporation’s role in addressing the causes.

CERAWeek 2017 devoted a session to “Whatever Happened to Globalization?” One of the speakers — Jesse Norman, the U.K.’s Minister for Energy and Industry — put the issue bluntly: “We’ve always had a broad view that trade is good, that it generated gains and that we could share those gains with people who didn’t do well with globalization. That view has been shown to have real deficiencies.”

Asked why Brexit happened, Norman said: “Because many people felt left out in parts of the country that had not received investment.”

It was a theme to which Dow CEO Andrew Liveris returned later in the week: “We’ve left people behind as we’ve done this [globalization]. If the economic
pie is not well distributed, then the market-based economies have not done their job … and I mean all of us, including Dow. It’s so important not to leave a substantial portion of humanity behind … There may have been a time when market capitalism was good enough. In this country, it enabled everyone to do well in the main. But whenever we don’t do that, when people don’t have access to the best of a country, then the playbook has to change.”

The global supply chains are very complex and “changing as we speak,” said Ulrich Spiesshofer, CEO of ABB Group.

Spiesshofer thinks it’s instructive and useful to go back to the beginning. In the Mid-

INbrief

“Permania” — A 100-Year-Old West Texas Oil Field Comes Into Its Own

In the long history of the world’s oil industry, certain fields have acquired almost mythical status. In North America, the Prudhoe Bay field, at 25 billion barrels, probably belongs in that category. But the Ghawar field in Saudi Arabia, discovered in 1948, puts all others to shame. Saudi Arabia is notoriously secretive about its fields, but it’s believed that, even today, Ghawar produces about 5 million b/d, roughly one-half of the kingdom’s production. Estimates put total production to date at about 66 billion barrels, with remaining reserves at over 70 billion barrels.

But the Permian Basin in west Texas looks likely to give Ghawar a run for its money as the world’s largest super-giant field. The Permian is characterized by multiple stacked plays, with producing zones each more than a thousand feet thick. (Contrast this with the Eagle Ford field in east Texas, with producing zones only 200-300 feet thick.) Scott Sheffield, Executive Chairman and CEO of Pioneer Natural Resources, a major player in the Permian, thinks the Permian will be bigger than the Ghawar field when all’s said and done. His numbers: 75 billion barrels of reserves in the Spraberry and Wolfcamp plays, 40 billion barrels in the Delaware, and “we’ve produced already 35 billion barrels. So you can get to 160-170 billion barrels, and that’s without the new zones like the Wolfcamp C” that are just being discovered. “There’s a lot of upside still there.”

“We came out in 2014 [when Permian production was less than 2 million b/d] and said the Permian was going to 5 million b/d in 10 years, by 2024. Several analysts since then have said they can easily see 8-10 million b/d out of the Permian by 2027 …. Because of efficiency gains and improvements, rig productivity is over two times what it was in 2014,” Sheffield said. “In 2014, we said we’d need $60 oil to grow the company. Today, we need $40 oil.”

So an oil field that first started producing in the early 1920s is coming into it’s own, almost 100 years later. There’s even a word for it: “Permania.”
dle Ages, craftsmen traveled from village to vil-

dge, town to town, doing individual jobs as

needed. Then these jobs were moved into facto-

dries. Supply and demand were thus separated,

and logistics was born. Then came a period when

companies took advantage of labor arbitrage —

moving production to where labor was cheaper —

and logistics became even more complex.

“Today we are combining 3-D printing and ro-

botics. That allows supply and demand to come

back together. The value added is being

‘reshored’. Factories are becoming smaller, more

automated, more local, more flexible.”

At the same time, however, this places an enor-
mous premium on retraining and re-educating the

workforce. “The pace of job change is very fast,”

said Spiesshofer. “It’s the business of govern-

ment and industry to take the anxiety out of job

change. We have a massive, massive requalification

program to ‘reskill’ workers. It’s much better for the employee, for the company,

for the economy … People are afraid of technology, of robots, worried that they’ll take

jobs away. The three countries with the highest robot density — Germany, South Ko-

rea and Japan with about 300 robots per 10,000 workers — also have the lowest un-

employment rates.”

“We are creating alternative career paths for the workers of the future,” Liveris said,

pointing to IBM’s P-TECH (Pathways in Technology Early College High School) pro-

gram as a model. “This is not about white collar or blue collar,” he said. “This is about

new collar.”