



PESA News

Volume 65, Number 1

Winter 2011

www.pesa.org

IN THE NEWS

Save the date:

Washington Fly-In

The Washington DC Fly-In is set for Feb. 27 to March 1. This is an opportunity to make the service and supply sector's voice heard. PESA members will meet face-to-face with Congressmen, Senators, Senior Congressional Staff, the U.S. Chamber of Commerce, and other influential decision makers.

PESA will limit the event to 25 executives from member companies. Please mark your calendars and let us know your interest.

EVENT CALENDAR

Mid-Continent District Meeting

Feb. 9, 2011

11:30 a.m. to 1:30 p.m.

Petroleum Club of Oklahoma City, Devon Room

FYI: Speaker is Mark Ellis, President & CEO of LINN Energy, LLC.

Gulf Coast District Meeting

March 10, 2011

5:30 p.m. to 7:45 p.m.

InterContinental Hotel Houston

FYI: Speaker is Randy Limbacher, Chairman, President & CEO of Rosetta Resources, Inc.

SPWP Casino Night Fundraiser

April 1, 2011

7 p.m. Registration

Norris Conference Center at CityCentre, Houston

FYI: Visit spwp.org for more details.

Oil 101

April 11-12, 2011

Norris Conference Center at CityCentre, Houston

For more information on these or other PESA events, please call (713) 932-0168.



Jim Hackett, Anadarko Petroleum Corporation Chairman and CEO and American Natural Gas Alliance Chairman, spoke at November's Membership Meeting.

Right answer

Dramatic shift in gas supply finally gives energy options

Editor's note: This essay was compiled from Jim Hackett's presentation at the 2010 PESA Membership Lunch. He is Chairman and CEO for Anadarko Petroleum Corporation and Chairman of the American Natural Gas Alliance.

I believe that natural gas is the right answer for our country. It's abundant, it's domestic, and it's affordable.

We talked about expanding natural gas markets five years ago, but it was going to depend on the amount of natural gas that we could import. We viewed LNG as a baseline and domestic drilling was going to be the marginal source of supply. Over the past five years, something dramatic has happened.

Abundance

The definitive source on

natural gas is the Potential Gas Committee at the Colorado School of Mines. Their study estimates that the U.S. natural gas resource increased by nearly 60 percent between 2004 and 2008 for a total of more than 2,000 Tcf of gas. It would show a bigger number today.

The amount of gas that we have in place in the U.S. is stunning and the abundance issue has become important. It's allowed the mainstream of our industry to speak with conviction to policy makers and industrial users and say, "We have the gas. It's abundant and it's affordable with known technology."

We have to speak to price to expand natural gas markets and we have a good story to tell. The reason why renewables fail is that they're neither scalable or affordable. Natural gas has both going for it. Independent studies

■ See Hackett, Page 4

Industry tech advances a success story for the nation

That horizontal drilling and shales have changed the oil and gas business is a given for the industry.

But for Mark Papa, it represents much more for the nation—\$50 billion saved in energy costs due to lower gas prices; 1 million barrels of additional domestic oil, which reduces the importation of foreign oil by \$29 billion and creates thousands of jobs; and he says, there's more to come.

"It's an amazing success story for the nation, though you'd be hard pressed to find anything in the mainstream press. I would maintain that horizontal drilling, multi-stage fracs, and unconventional rock have dramatically changed the U.S. oil and gas supply picture, and I think it's the biggest technical change we've seen in the domestic industry in 40 years."

Papa described what he calls a new paradigm for oil and gas, the future of the industry, and implications for the country.

■ See Papa, Page 5



Mark Papa, EOG Resources.

Annual, district meetings slated; D.C. Fly-In set for next month

We have a full slate of meetings for PESA members in early 2011.

District Chairmen Paul Coppinger and Joe Winkler have announced meeting plans for Oklahoma City and Houston. Mark Ellis of LINN Energy will address PESA's membership at the Mid-Continent District Meeting at the Oklahoma City Petroleum Club on Feb. 9. Randy Limbacher of Rosetta Resources has accepted Joe Winkler's invitation to be guest speaker at the March 10 Gulf Coast District-Texas meeting at the InterContinental Hotel Houston.

In addition, PESA members will have an opportunity to visit their elected representatives in Washington, D.C. Government Relations Committee Chairman Bob Moran of Halliburton has begun putting together a rigorous agenda for Feb. 27 through March 1. "The meetings we are planning will be with allied energy trade organizations and others on Capitol Hill that share our interests in the oil and gas industry," says Moran. "This will be a great opportunity for PESA to help some of the newly elected Members of Congress understand the service and supply sector, the jobs it creates and the energy it helps produce."

Remember also that the 2011 PESA annual meeting has been rescheduled for March 30 to April 2 at the Ritz Carlton Dove Mountain Resort in Marana, Arizona. PESA Vice Chairman John Grempe of FMC Technologies is program chairman. Watch for meeting registration packets in the mail in early February.

—Sherry Stephens
PESA President

Barring double dip, 2011 looks to be fair

Editor's Note: This essay was compiled from Bill Coates' presentation at the 2010 CID Annual Meeting.

This year, our industry has found itself in the headlines. Unfortunately, we were in the spotlight for the wrong reasons.

The Macondo disaster dominated the news cycle for months, demand continued to hold steady in the best of cases, and of course, we are still dealing with the effects of the drilling ban in the Gulf of Mexico.

Though we are a global industry, North America dominated the good and bad for 2010. A great story is that despite very low gas prices, U.S. land rig activity was tremendous.

Much of the activity is artificial or temporary. At least half of all gas drilling is being done to hold acreage on leases with 3 and 5 year terms, especially in the Haynesville. That pressure to hold leases will start to wane in mid to late 2011. There's also the phenomenon of spending others' money—there are some joint ventures with foreign companies to get experience in shales, and much of it comes with a spending deadline which should expire soon.

That's why people are worried about the second half of 2011. There is fear that perhaps several hundred rigs could be going down. I think it will be a 100 to 200 rig story, which is not a precipitous drop. We will move to oil plays as that happens.

The beauty of the U.S. market is that it responds intrinsically to supply and demand fundamentals. The industry evolves. We will overbuild, because we always do. We will correct because we always do. And then the next thing will come along. This is the cyclical nature of our industry.

Many young managers feel that if they wait long enough, the sustained growth of 2007-2008 will return. But we have to remember that 2006 to 2008 was the best period in the history of the industry—the next best was 1979 to 1981. Those times are unique and happen once in a generation or career. The conditions of 2006 to 2008—when salaries were rising by 15 percent a year, everyone had more work than they could handle, and stocks were through the roof—are gone and are not coming back. There is always lots of pain and suffering between booms.



Bill Coates

2010 Redux

North America was the story for 2010, and likely will be for the first half of 2011 as well. We saw a rebound in the U.S. onshore—we won't get back to sustained growth, but it will be less volatile.

Internationally the business was sluggish as all catalysts for growth were trumped by geopolitical issues.

For 2011—and any other year—whatever happens with the global economy drives our business. If the economy is doing well, we're doing well; if not, we're in trouble. Global GDP grew 2.8 percent in 2008, fell to 0.6 in 2009, and

had decent growth by historical standards in 2010. But the economies are decelerating again.

A double-dip recession is a worry and one in four economists think it's likely. It would hurt our business badly. Uniformly right now, our customers say they will spend more money next year than this year, but a double-dip recession would collapse the commodity price and then spending.

Expenditures are expected to increase by 12 percent with a 10 percent increase in capital spending. Most of the increased spending will be in the international markets, and much of that will be in deep water. That's not a bad number, but the economy is weighing on people's confidence.

There is a tight correlation between GDP growth and oil demand growth. Based on latest estimates for the U.S. GDP for 2011 to 2013, and then correlating the oil price from 2002 to 2009 (removing the summer of 2008 as anomalous) you get a price of \$80 for next year, then \$90, and then \$100. Many agency forecasts are about the same.

If it stays in that range, it's very firm ground on which to build oil-based activity. Rig activity is now at least half oil, which is the first time in a long time that's happened. Many are worried about the second half of the 2011 gas market if the winter is warm and the gas price is still at \$3. It may not be pretty.

Macondo Effects

Having grown up in the Gulf, the Macondo incident is close to my heart. It is a tragic situation for

■ Coates' Forecast, Page 3



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PESA News is published by:
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Houston, Texas 77055
Phone: (713) 932-0168
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Howrey Co-Chair reviews lessons learned from recent mergers

The much anticipated great mergers of the past several years never really panned out.

Instead, mergers in the service and supply sector have been relatively few. But Howrey's Antitrust Co-Chair Sean Boland, says that mergers have been common in the sector for decades and will continue to be so.

He says the drivers for the mergers that occurred—and likely will occur in the future—all have common themes.

“Customers want more single source responsibility—they want, for example, the entire completion operation under one company,” he says. “A huge part of the Schlumberger / Smith deal was getting Smith Bits—Schlumberger wants to be able to offer the entire bottom hole assembly.”

Boland says that most PESA members will be before the Department of Justice with their mergers. They also will receive increased scrutiny for political reasons. He cited his interaction with the DOJ regarding the Baker Hughes / BJ Services mergers.

“It’s about three days after the Discovery Horizon explosion, and I got a frantic call from a high level person at the justice department. He said, “We want to know with a great degree of certainty whether either of these two companies had anything to do with the spill.”



Sean Boland, Howrey's Antitrust Co-Chair, served as counsel on three of the latest industry mergers.

Boland asked what that might have to do with antitrust issues. The DOJ official answered that the reasoning was above his pay grade. Neither company worked on the Macondo well, but he says that it illustrates a point that prospective merger companies must be prepared for pushback.

Lessons Learned

As Boland worked on the three largest recent mergers in the service and supply sector, he discussed the lessons learned from each.

Schlumberger / Smith—The merger had 20 potential product or service overlaps, some of which were significant. The initial view from the analyst report was that it looked a lot like

Halliburton and Dresser when they combined. We assumed that there would need to be a divestiture due to shared products in the LWD / MWD space, but we received clearance in the same week from the U.S. and European Commission. The deal went through because we could show that Smith was not particularly strong offshore in LWD / MWD. They were strong in onshore gas fields, but the concern was offshore.

Baker Hughes / BJ Services—The merger had only 15 overlaps, but many were significant. In the first three months, most of them were resolved, but one remained in sand control because we couldn't find a fifth competitor. We had data that the two were

not direct competitors and rarely if ever competed head to head in sand control. But the companies pursued a divestiture to close as quickly as possible, likely because Baker had negotiated a good deal in buying BJ at a 17 percent stock premium.

Cameron / NATCO—Early on, it looked to the DOJ that the companies had product overlap in more areas than it didn't—it's all separation equipment. We urged the DOJ to look at the demand side and spent months educating the DOJ, saying that “no, that equipment doesn't do the same thing as that.” We got them down to a single piece of equipment, a refinery de-salter. Instead of divesting, the company sold an intellectual property license to an aftermarket company. It took six months, but we closed on time.

Finally, he says new merger guidelines went into effect Aug. 19, and that the practical view is the mergers will be viewed with less emphasis on market definition and share.

“They'll dig into the database, checking the numbers to see how close of a competitor you are to the company you're merging with,” he says. “They want to determine what, if any, upward pricing will result with the merger. The new mantra is that you must convince the DOJ that the merger won't increase prices. The burden is completely on you.”

COATES' FORECAST

Continued from Page 2

the families of the 11 people who died, for the industry's reputation, and for the people's livelihoods that have been lost or altered. The environmental impact has been less than anticipated because of the quality of the Macondo oil—it's very light and much of it dissipated naturally.

The effect for our industry is that it basically stopped everything in the Gulf, both deep and shallow water. The moratorium was lifted, but that's just one step in the process of getting back to work. It's going to take time. If we have all of this fleet back to work at the end of 2011, I think that would be amazing progress.

The known changes are new operating rules, equipment practices, and increased difficulty to file permits and have them

approved. More changes are expected in the coming months. One issue is a new equipment testing requirement that would call for tests of the BOP every 7 days. If you're in a well where it takes two days to trip in and out, it doesn't leave a lot of time to drill.

Internationally, Macondo is practically forgotten. Deepwater production is 5.5 million barrels a day worldwide, and total production 86 million barrels a day. Deepwater will grow to 10 percent of world supply by 2020, and the GOM is a declining piece of that puzzle. In the grand scheme, the Gulf's production stoppage is not a big enough number to cause damage to any economy other than the Gulf Coast.

Looking Forward

We all know the world needs more energy, but where will it come from? The growth

will be in liquid hydrocarbons and condensates, such as the Eagle Ford play close to home.

While there will be a lot of effort to keep classic oil production at current levels, 70 percent of supply growth by 2020 is not going to come from classic oil. The big players in the next 10 years will be natural gas liquids, especially in the Middle East and Far East.

The first half of 2011 will again be a North American story, but the second half—and likely beyond—will be an international story. Overall, we're in for a moderate year, barring the double dip.

Finally, because of the stunning onshore recovery in the U.S., we've put a lot more people back to work as an industry. I'm proud to say that we've created more jobs than have been lost to Macondo, so the industry is working on a positive balance for the year.

HACKETT*Continued from Page 1*

show that with the shale resource and technology that we have now, we can fulfill a growing market over the next seven years at \$5 to \$8 per dekatherm, which equates to \$30 to \$48 per barrel oil equivalent. We can produce a lot of natural gas and serve new markets at an affordable price.

The Frac Issue

One issue we're all familiar with is trying to convey a feeling of comfort for our country on why natural gas is the answer. This paradigm shift in supply was caused in part by hydraulic fracturing improvements over the past five to ten years. Lately, there has been a lot of fiction thrown around about what fracturing does to water zones.

Those of us close to it know that there is not a single instance of actual contamination of water zones. There have been instances of intrusion due to bad casing in conjunction with water flowing up and down a tubing string, but it hasn't been because fracturing has migrated several thousand feet into the water zone. The water zones are safe.

The broader issue is one of transparency. We're working hard to be the driver of disclosure for the chemicals and ingredients of frac fluids, and many service companies are joining us. We need to avoid federalization, keep it in the states, and create an industry standard disclosure model and we'll be in good shape.

Jobs

Another great story is that natural gas makes a real impact on the economy and jobs. We added 400,000 jobs to the U.S. economy between 2004 to 2008. We create 2.8 million total jobs and contribute \$385 billion to the economy and that's just the natural gas part.

People don't have a sense of how big the industry is—it's the largest industry in America by a huge amount. I remember sitting at a luncheon with the U.S. President about a year ago talking about job figures and it took everyone aback because they had never heard that before.

We made a lot of progress pre-Macondo getting natural gas to have a higher profile due to job creation. We're seeing that many politicians who thought they were coal state politicians are discovering that they're natural gas politicians. It's a much bigger issue for America than coal jobs, as this industry dwarfs the coal industry.

Opening Markets

We have this affordable and abundant supply, but what markets can we develop? It



Above: Bob Potter (FMC Technologies, Inc.) asked Anadarko's Jim Hackett (at left) about the future of independent Gulf of Mexico operators remaining offshore given the attractiveness of onshore plays. Hackett says that he can't give a firm answer, as Anadarko is "at the front lines" in terms of filing permits and attempting to get back to work, but he expects 6 to 12 months before work begins in the Gulf.

it's at the heart of psychology for America. I believe with all my heart that we should be driving natural gas heavy duty fleet vehicles. Every fleet with centralized fueling in our country should be on natural gas.

When you're trading over \$80 a barrel for oil, what does that mean for the future? I suspect it means we'll probably think \$3 gasoline is a pretty good deal. That's not where we should be as a country if we can do something about it, and we can.

If you look at heavy duty vehicles, they average 25,254 miles driven per year with a fuel economy of 6.2 miles per gallon and consume 4,075 gallons of fuel. These trucks need to be converted from diesel to natural gas—every converted heavy truck is an emissions reduction worth 325 cars. It's a no brainer. The trouble is that the trucking industry runs on a razor thin margin, so it's going to take something like we had in this country with seatbelts in cars and say, "we want this for America."

As a country, through direct funding or tax credits, we should provide conversion for heavy trucks to natural gas. We should put up natural gas stations every 100 miles in the highway system and refueling stations at the central dock as well. For this, I suspect the trucking industry could pay back the government via a percentage of savings between diesel and natural gas.

Consider that at the high side of where natural gas might trade in the next 7 years—\$48 oil equivalent—is less than \$2.50 a gallon. We're pretty sure that diesel will be over \$4 in the near future so there's a lot of savings with that kind of fuel intensity.

doesn't do us much good if gas is trading at \$1 per dekatherm as that means less drilling, less equipment used, and less services. We need to find a way to keep it in a sweet spot, which I think is \$5 to \$8 per dekatherm for industrial users and utilities.

Most electric generation—about 45 percent—is coal. Providers will choose coal if it's cheaper, and natural gas has been lucky to keep 23 percent of the market. A lot of electricity demand is forecast for the future and it's going to come from natural gas. If you want cleaner air you burn natural gas—it emits half of the CO2 emissions and a fraction of others such as nitrogen oxides and particulates.

I think it will come down to individual state initiatives, such as Colorado's recent move. They passed a clean air bill to replace 900 megawatts of coal fired electricity with natural gas and renewables, with gas making up most of the mix. Texas, I think, won't be far behind.

Transportation is much less of an immediate issue for natural gas demand, but

PAPA

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Natural Gas

Five years ago, the assumption was natural gas prices would rise and remain in the \$7 to \$10 range. Even at those prices, the country would need to import LNG to satisfy demand.

"Between all the shale gas we've discovered in the U.S., I believe we have enough natural gas for the next 50 years and we won't need to import any LNG at all—in fact, the probable way things are going to go is that there will be exports of LNG away from North America," he says. "EOG is involved in one of those plays in British Columbia called the Kitimat LNG project."

Never before has the industry's perception of the long-term natural gas market changed so drastically and so quickly, he says. The implication of the huge upswing in supply is that prices will be bearish for at least the next five years. However, the result of the lower prices is that the energy cost to the nation is conservatively \$50 billion lower.

"There is no press for this. It preserves more American jobs, not only upstream, but ancillary jobs that use natural gas for feedstock such as chemicals and steel," he says. "I was talking to one of the board members of DuPont, and they said that they believe that it's going to change how they view shuttering jobs in the U.S. Ammonia plants are re-opening here, chemicals are re-surfing, and steel is becoming livelier."

It gives the nation options for energy usage for the first time in more than 30 years. Using natural gas for vehicles and green field electric generation projects are now viable, economically attractive options.

"We're going to see those things happen in a big way in the 2015 to 2020 timeframe," he says. "Our job as an industry is to educate the utilities that there is a new gas paradigm, and that there is plenty of supply at reasonable prices. We're getting helped by the current administration, especially the EPA, because they're going after coal for environmental reasons."

The nation uses 15 million barrels of oil per day, of which 70 percent is gasoline or diesel for transportation. Papa says that on a technical basis, fleets can be converted to CNG, as it produces less emissions, it's cheaper, and it's domestic. The technology is there, but so far not much has happened in terms of large-scale conversion.

"The reason is twofold: one, it's only been in the last 1 or 2 years where even the industry executives have realized how much gas we have in the U.S. It takes some time to get your arms around the numbers," he says. "Two, is infrastructure. We can't convert the 18-wheeler fleet to natural gas without filling stations on the interstate."

Papa believes that some form of federal assistance, likely tax credits, will be needed to bring the conversion process.

"My estimate is that between today and 2015, not a lot will happen—I look for 2015 plus when it will become so blooming obvious to everyone on both sides of the aisle," he says. "My personal view on gas is that it has an extremely bright future. But until 2015, I think we're going to be in a chronic oversupply in North America."

Oil

U.S. oil production peaked at about 10 million barrels per day and is currently at about 5.5 million barrels. Between the peak and today, domestic oil production has declined steadily for 40 years. About one-third of the nation's oil demand is produced domestically, and in 2009 the U.S. spent \$246 billion importing crude.

"Most forecasters, even a year ago, would tell that it's hopeless, we're on a terminal decline and we'll have to import more oil," says Papa. "But now we have a couple of success cases in horizontal drilling for oil."

Even after horizontal gas was discovered in 2005, Papa says the general rule was that the oil molecules, which are bigger than gas molecules, are too large to flow through fraced pore spaces in shales. Thus, one can produce shale gas, but not oil.

"We went counter to the trend, and said we think that the pore

spaces are bigger than the oil molecules and we can produce commercial quantities."

The first success was the Bakken shale. Production was 100,000 barrels earlier in the decade and since 2007 has jumped to 300,000 barrels. Most analysts predict that it will go to 500,000 in three to four years.

"In one state alone, the industry has raised production from 100,000 barrels to 500,000 in a relatively short time," says Papa. "The effect so far is that North Dakota is a bigger oil producing state than Louisiana."

The Bakken, of course is not the only oily shale play. In Texas, there are horizontal opportunities such as the Eagle Ford in South Texas, the Barnett in Ft. Worth, the Leonard / Avalon in West Texas, and others are likely such as the Wolf Camp. EOG is an expert in the Eagle Ford play.

"We believe that in our 500,000 acres, we have over 900 million barrels oil equivalent after royalty—since most companies report before royalty, that's over a 1 billion barrel oil discovery," he says. "Nobody has found 1 billion barrels in the U.S. in 40 years excluding Prudhoe Bay. We believe that the Eagle Ford will turn out to be the sixth largest oil field in the history of the U.S. These plays are game changers."

Papa extrapolated the anticipated production decline for the U.S. from 2010 to 2015 absent horizontal drilling.

"We have new oil and a new

means of reaching it, so my reasoning is whatever production would have been, add 1 million barrels, which is the contribution of shales," he says. "It represents a \$29 billion balance of payment improvement to foreign oil. Every \$1 billion of reduced imports equals 7,000 jobs created, or 210,000 jobs for the work force in America. It's a huge net benefit for the nation."

Service Companies

Papa says that gas rig count will continue to fall throughout 2011 while oil rigs rise—likely more oil rigs will go to work than are lost in gas.

"There is a good chance for sustained long-term horizontal drilling activity unless the economy goes into a double dip recession," he says.

EOG has learned that premium connections are a must for horizontal drilling due to the stresses placed on the drill string. There will be continued dependence on fracturing—Papa says that they routinely pump 10 million pounds of sand into a frac whereas five years ago, 1 million pounds was huge.

However, he sees a need for improvements to stem casing failure and he forecasts a huge market for artificial lift.

"This is the one where we really need help," he says. "So far, a well on production is good for five years or so, but nobody has the equipment that industry will need on a broad scale in five years. It's a wide open niche."



Mark Papa (EOG Resources) spoke during the 2010 Supply Chain Meeting. Above is Marc Waco (PRTM Management Consultants), Supply Chain Committee Chairman Burk Ellison (National Oilwell Varco), Mark Papa, Mark Houser (EnerVest, Ltd.), and not pictured is Collin Gerry (Raymond James & Associates).

Explorers award goes to EOG Resources

Reinvention can be a slow and tedious undertaking. For most companies, charting a new overall strategy and instituting change takes years, if not a decade.

Not EOG Resources. Since Chairman and CEO Mark Papa took the helm ten years ago, the company has been successfully reinvented twice. EOG has shifted from a conventional natural gas, to an unconventional shale gas leader, to a first-mover in unconventional oil.

"Mark and his team have been able to not only reinvent the company twice in the past decade, but consistently make it more successful, productive, efficient, and technologically driven," says Charlie Jones (Forum Energy Technologies), Chairman of the PESA Explorers of Houston Committee.

Together with Robert Workman (National Oilwell Varco) and Galen Cobb (Halliburton), Jones selected EOG for PESA's highest award, the 2010 Explorer's Award. The award is given annually to the E&P company that has demonstrated excellence in technological innovation and leadership in the industry.

When Papa took on the challenge of becoming EOG's Chairman and CEO in 1999, 81 percent of their total wellhead revenues and 86 percent of their North American volumes were natural gas. Then came shales.

"EOG captured early-mover acreage positions in the Fort Worth Barnett, British Columbia Horn River Basin, Haynesville and Marcellus Shales," says Jones. "I think we all can attest to the fact that the EOG team has done a fantastic job of reinventing the company from a conventional gas player to a major shale gas producer."

But a few years ago, Mark and the EOG team began steering the company toward reinvention once more, this time moving the company's exploration budget away from natural gas and toward crude oil and natural gas liquids.

"This move was a calculated bet, a risk that not many others took at the time—they based their decision on their long-term view of North American natural



Top: EOG Resources Chairman and CEO Mark Papa says that "it's such a slam dunk that natural gas transportation will happen."

Above: From left to right are PESA Explorers of Houston Committee Chairman Charlie Jones (Forum Energy Technologies), Doug Runkel, Loren Leiker, Gary Thomas, Mark Papa (all EOG Resources), and PESA Chairman Bill Coates (Schlumberger).

gas and global crude oil market fundamentals," says Jones. "I think we can safely say they were right—they made the right bet at the right time."

This year, for the first time in EOG's history, revenues from liquids production exceeded those from natural gas. Revenues for the year are expected to be divided almost equally between liquids and natural gas.

Jones says that last year EOG was the epitome of agility, inventiveness, and industry leadership. The company holds a position of over 500,000 acres in the North Dakota Bakken, and crude production in the region soon exceeded pipeline capacity.

"They designed and opened a rail transportation system to

transfer 60,000 gross barrels from a crude oil loading facility in Stanley, North Dakota to an unloading facility in Stroud, Oklahoma and then a 17-mile pipeline running from that point to a terminal in Cushing, Oklahoma. That's getting the job done."

PESA Chairman Bill Coates had his first interaction with EOG in Trinidad and has watched the evolution over the past 15 years. He says their technical expertise is second to none.

"If you ever wanted to know what was going on technically in North America all you had to do was listen to a conference call for EOG," says Coates. "They gave the most fascinating scientific explanation of what

they're doing in the Eagle Ford earlier this year, discussing the molecule size of oil versus the pore space."

Papa was on hand to accept the award for EOG, along with Senior Vice Presidents Loren Leiker and Gary Thomas, as well as Purchasing Director Doug Runkel.

"It would be easy to say that EOG was a first-mover and we thought through all this and came up with these eureka moments," says Papa. "But the reality is that at least half of the credit for this discovery of gas and oil in horizontal wells is due to the service industry."

"Without the advances in the service industry, EOG would have never gotten there and neither would the rest of the industry. The ability to keep a horizontal well in zone for 10,000 feet following the structural contours is something that five years ago we dreamed that we could do. The ability to run sophisticated logging tools, hydraulic stage fracs, and the like—it wasn't EOG that invented that stuff. We just took what you built and adapted it."

Papa quickly discussed coming trends in the industry, which are a direct result of horizontal drilling and frac techniques for oil and gas.

"I think that within 5 to 10 years, we'll see a significant penetration with natural gas vehicles, probably with 18-wheelers—it's such a slam dunk that natural gas transportation will happen," he says. "We'll see a lot of large oil fields that have yet to be found in the U.S.—fields that dwarf what we thought were still available onshore. Our own calculation is that the Bakken and Eagle Ford plays are likely the fifth and sixth largest oil fields ever discovered in the U.S. including Alaska and the deepwater Gulf."

Finally, Papa thanked PESA members and the service and supply sector for their technological expertise.

"Thank you to everyone in this room for the help you've provided to us. You've made us look better than we really are, and we appreciate that very much."

2011 to be a bull market for oil, bear for gas

Much like 2010, the oil and gas markets will be a mixed bag for 2011, says Collin Gerry, an analyst with Raymond James and Associates.

Oil will be shaky in the short term and bullish for the long term, while natural gas is bad in the short term and questionable for the long term.

"For oil in the near term, markets will go up and down on nearly anything happening around the world—we call it headline risk," says Gerry. "In the long term, demand looks solid and supply looks constrained, while the exact opposite is true for gas."

Oil will be the driver for the industry and the rig count will remain strong.

Oil Forecast

Analysts generally look at U.S. oil inventories as a proxy for oil price performance—low inventories mean higher prices and high inventories mean lower prices. However, today the U.S. has very high inventories, yet prices are still strong.

The reason is there has been a reversal in oil price versus the broader market. The two were historically at odds because an increase in oil price is essentially a tax on the consumer.

"The stock market now drives oil, which I think is recognition that we're going to be in a tight oil market," he says. "People depend on the broader market to forecast the economy, and if it's good, we'll need more oil."

Demand for 2010 increased by 2.7 percent. By comparison, the decade averaged 2 percent annual increase and dipped 1.5 percent for the recession. Virtually all growth came from emerging economies.

"This isn't sustainable and we think there will be a 1.5 percent increase in demand for 2011, which equates to 1.3 million barrels a day of incremental demand. For any country to move up in terms of industrialization, it has to come at the expense of the developed world, and the balancing mechanism is price."

The supply side, says Gerry, is a critical piece for being bullish.



Collin Gerry

Non-OPEC represents two-thirds of world supply; and two-thirds of that number are from mature or declining fields. At the beginning of the decade, non-OPEC grew 750,000 to 1 million barrels per day each year.

"Now non-OPEC supply is going down. The earlier part of the decade was nearly all Russia, producing the easy stuff from the fall of communism and re-developing old fields," he says. "Now we see greenfield investment, so Russia is tapering off. There are big fields coming online in the next few years that might support their numbers better, but long term it looks like a repeat of the U.S. hitting the decline curve wall in the 1970s."

The U.S. drilling moratorium had a greater effect than expected. In 2009, the U.S. produced an incremental increase of 400,000 barrels a day; 2010 was forecast to be a further increase of 500,000.

"Now we predict a decrease of 300,000 barrels a day, which means we have a year-over-year swing of 800,000 barrels a day," he says. "Our position is that we need to get back to work fast."

OPEC's productive capacity is key to the oil model.

"OPEC says that they have 6 million barrels a day in excess capacity. We don't think so," he says. "Iran, Nigeria, Venezuela, and Saudi overstate, and we think the excess is less than 3 million barrels a day. If that's

true, and oil demand is an incremental 1.3 million barrels, and non-OPEC declining, then we're out of oil in 2 to 5 years."

Finally, he says that Iraq does not affect the oil model because their numbers are untrue.

"They say that by the end of the decade they can produce 12 million barrels a day, which would make them the world's largest producer," he says. "Their peak was under 4 million in the late 1970s when they had access to western technology and non-depleted fields. We think they can achieve 4 to 5 million per day in this decade if everything runs smoothly."

Gas Forecast

The U.S. has far too much gas at \$5 Mcf pricing, so the market needs lower prices, says Gerry.

"Supply can grow substantially at \$5, that has been proven," he says. "LNG becomes a problem at \$5, and gas to coal switching will occur at \$5. The next few years, barring a meaningful drilling decrease, look ugly for natural gas."

In 2011, Gerry says that the U.S. will increase supply by 3 Bcf per day or more. The rest of the world is increasing supply as well—scheduled natural gas liquefaction projects will increase supply by more than 5 Bcf per day in 2010 and more than 3 Bcf per day in 2011.

On the positive side, industrial

demand is coming back. It peaked in 2002 at more than 20 Bcf per day and by 2012 usage is expected to be more than 19 Bcf per day. Gas prices are now low enough to compete with coal, which drives an increase in demand for gas. Also, Gerry adds, the U.S. is shipping coal to China, which increases the coal price floor.

Raymond James' gas model places an emphasis on storage.

"Capacity is about 3.9 Tcf, and we predict about 4.25 Tcf—that's a problem and gas prices will crater as we exit summer," he says. "We have bearish sub items like coal to gas switching and industrial demand, but the oversupply is huge."

Drilling Forecast

Natural gas based drilling activity will continue to taper off, especially on conventional plays. But, the industry will double rig counts in the Bakken and other liquids rich plays.

"We think rig count will be up 5 to 10 percent next year, which is about 1,750 rigs," he says. "So why drill now? We have hedging, holding leases, pre-funded programs, oily gas plays are surging, and some gas plays work at \$4, such as the Marcellus."

The horizontal rig count is quickly climbing. In 2005 they were 10 percent of the market, now it's 55 percent and it will continue to rise.

"The higher oil rig count will offset lower gas rig counts," he says. "Historically, we've had ten percent of the rigs drilling for oil and the rest drilling for gas; in two years that will switch to a majority drilling for oil."

In deepwater, Gerry sees little improvement. Though the moratorium was lifted, permits are not being issued.

"It's bad and getting worse—operators are spinning their wheels trying to figure out what will satisfy the government," he says. "Nobody knows what to do on either side. Prior to the moratorium we had about 25 deepwater rigs, set to go to 45 by 2012 because we were finding a lot of oil. Now we forecast 20 or 25 rigs by 2012."

U.S. Oil and Gas Field Equipment Exports

Top 15 Destinations for Q3 2010

(in U.S. \$1,000)

	JUL	AUG	SEPT
Korea	95,069	51,524	56,748
Brazil	56,020	62,831	44,325
Singapore	52,254	62,016	46,092
China	39,511	34,826	32,456
Russia	41,360	28,706	23,782
U.K.	27,652	27,018	26,279
Angola	28,050	17,211	28,670
Colombia	29,157	23,303	16,069
U.A.E.	26,559	20,686	17,262
Canada	18,126	20,944	20,703
Saudi Arabia	21,354	18,317	19,319
Iraq	31,141	4,678	22,970
Nigeria	8,588	7,741	19,390
Chile	1,870	3,090	28,426
South Africa	725	515	20,281
Subtotal:	477,437	383,404	422,773
All Other:	220,972	254,945	219,726
Total:	698,410	638,350	642,499

Source: U.S. International Trade Commission

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'Used car' strategy paying huge dividends for EnerVest

Don't count out conventional gas plays yet, says Mark Houser, Executive Vice President and COO of EnerVest, Ltd.

His company operates 18,000 wells that generate 400 Mcf per day with a total of 3 Tcf in reserves—all in conventional, but tight gas plays. Non-shales produced 88 percent of total U.S. gas production in 2008, and forecasts predict non-shales will still produce 66 percent of total production in 2013, while using 59 percent of the rigs.

Houser says that the long-term production profile of shales is still a big unknown, and he expects that conventional gas wells and shale wells are relatively even in the long run. He gave an example of one of his company's pumping units in a conventional well, which is situated 100 yards behind a shale well owned by another company.

"When the shale well started production, it was 5 million mcf per day and now it's 300 mcf a day," he says. "All the while our little well is still puckering along at 30 mcf, but they're more and more alike and are coming together over time. That's what we think about."

Houser describes his com-



Mark Houser

pany's operating philosophy as a used car buyer. As shales gained prominence, his company changed from a used car buyer and seller—the company traditionally bought, fixed, and sold wells—to a used car operator. They buy large numbers of operating wells in mature fields, remediate as necessary, and resume operations.

The key now is area dominance. The company holds focuses on Ohio and the Chalk outside College Station. After purchases from EXCO and Range, they're now the largest producer in Ohio

with 8,713 wells and net production of 52 Mmcf per day. In the Chalk, they bought out Anadarko, Chesapeake, Marathon and others to assemble 1 million acres with 1,679 wells and 125 Mmcf per day.

Houser says there has been a huge turnover of well properties in the past two years, giving companies like his an excellent chance to prosper. This year, they reviewed 500 deals and acquired \$1.4 billion in new acreage. Over the past five years, the company has acquired over \$3.65 billion in properties and divested \$1.5 billion in about 50 transactions.

Again citing the used car philosophy, he says that some excellent used cars are coming up in the shales. The company spent \$1 billion in 2010 to acquire a stronghold in the Barnett.

"The Barnett is now de-risked," he says. "We bought at about \$1.06 in the ground, and if you add in the development costs we think we need, we're still under \$2 Mcf so we feel pretty good about that."

Simple economics swayed Houser and his team to stray into shale. Production in the Barnett has increased from 243 to 383

Mmcf between 2008 to 2011, while expenses have gone down from \$1.99 to \$1.62 per Mmcf.

"These wells provide strong cash flow with 97 million Mcf per day with 400 wells," he says. "All of the plots are held by production and our lease operating expenses are about \$226 million, half of which is people and the other half is services."

Houser says their success is due to their belief in the discipline of dividends. The company holds about \$3 billion in capital and has generated a 24 percent annualized return to investors.

EnerVest's drilling program is split nearly equally between the eastern and western divisions. For 2011, they plan to drill 63 wells in the east—nearly all in Ohio—and 73 wells in the west, mostly in the Chalk and Barnett.

Finally, he invited all PESA members to share in their government relations activity.

"We all face challenges from new taxes to a potential frac legislation," he says. "You can sign up for action alerts at www.enervest.net/government and write letters to Congress. Participate and let them know the problems we face."