

Horizontal Wolfcamp

Steve Toon April 1, 2012

Like Indiana Jones silhouetted by the sun as excavators shovel sand into the air, seeking the treasured Lost Ark of the Covenant, Pioneer Natural Resources Co.'s Paul McDonald stands atop a rare outcropping in an otherwise flat West Texas expanse. A rig frames the rising sun behind him 100 miles south of Midland in Upton County. Visible for miles, like a beacon on the plains, this horizontally drilling rig too is seeking long-buried treasure—the Wolfcamp shale.

“It has the potential to be the largest resource play in the U.S.,” says McDonald, vice president of Pioneer’s Permian asset team. “The geology is consistent over miles and miles of exposure. This play is going to be massive.”



Fisher Lease Services workers construct the free-water knockout for a tank battery downhill of Patterson-UTI Rig #208 drilling for Pioneer near Rankin, Texas.

The story of the Permian Basin spans nearly a century as one of the oldest and most prolific hydrocarbon-producing basins in the U.S. But in a world in which oil is cash-flow king and gas is bust, the heretofore overlooked Wolf-camp oil shale in the southern Midland Basin is fast garnering attention.

Why now? Until recently, Permian operators believed the Midland Basin ended at the Ozona Arch uplift in southern Upton and Reagan counties, and certainly before Crockett County below. The Wolfcamp formation, the source rock across the expanse of the Permian, has long been believed to be nonexistent here, a bald spot, so to speak, in geological journals. And while operators for decades have drilled into the deeper Canyon, Strawn and Ellenburger gas formations, they simply bypassed logging the middle intervals, believing them nonproductive. Some called the hard shale a trick zone. Data were sparse.



leading the charge into the southern Midland Basin Wolfcamp shale, Approach Resources president and chief executive Ross Craft says, “We think we’ll be here for a long time.”

It was a small public Permian E&P—Approach Resources Inc.—that revealed in a late-2010 analyst day report in New York that the Midland Basin extended further south into Crockett County. The company came armed with mud logs on more than 200 air-drilled wells with real-time shows that the Wolfcamp column was there, and thick. Very thick—up to 1,200 feet.

“We saw you could correlate this zone over a very large interval, and it didn’t change,” says Approach president and chief executive Ross Craft. “That was the beauty of it. It was a no-brainer at that point—the southern Midland Basin did extend down into Crockett County.”

That revelation, combined with still-fresh technology to effectively tap tight oil shale, opened the curtain to a new horizon. In addition to Approach, EOG Resources Inc. and El Paso Corp. soon followed, leading the charge in exploring the southern Midland Basin Wolfcamp oil shale. Other operators now testing the play include ConocoPhillips, Pioneer, Laredo Petroleum Holdings Inc., BHP Billiton, Apache Corp., Devon Energy Corp. and Highmount Exploration & Production LLC, among others. The neighborhood is mostly set with acreage held by existing production or by recent lessors at the University of Texas land sales. UT is a major mineral holder here.

With data on more than 60 wells to date, results have not disappointed. Initial production (IP) rates often exceed 1,000 barrels of oil equivalent (BOE) per day with a 90% oil and liquids mix, very

styling today. “We’re at that inflection point whereby our understanding of the Wolfcamp shale play will grow significantly,” says Irene Haas, an analyst with Wunderlich Securities. She follows both Approach and EOG in the play.

Global Hunter Securities analyst Dan Morrison, in a November research report, recognized the unfolding drama as well. “We expect the horizontal Wolfcamp in the southern Midland Basin to emerge as a major new unconventional oil play in the U.S.,” he said.

Growing expectations

To hear operators talk about it, Wolfcamp geology in this part of the Midland Basin is just about perfect for an oil-shale wish list: high in total organic content; filled with silica and therefore brittle; having good porosity and natural fractures; and in the optimal thermal maturity window to produce oil.

“It is the ideal package when it comes to fracability and productivity,” says Tim Dove, president and chief operating officer for Pioneer Natural Resources. Adds Haas, “It has the right combination of key ingredients.”



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To fan the excitement, positive well results are trending northward into the basin, opening speculation as to the potential areal breadth of the play. Haas says current activity confirms economic results in Crockett, Irion, Reagan and Upton counties. Permitting data suggest results should be forthcoming from Glasscock and Schleicher counties. Counties to watch: Sterling, Midland, Martin, Dawson, Howard and Borden.

“Assuming a 25-mile-wide fairway, the trend could cover a 1,500-square-mile area, or almost 1 million acres,” she says. However, “we are convinced the play might be much larger. There’s no

reason why it shouldn't work as you go north—in theory. Drilling results will need to validate this idea.”

Acreage values are trending northward as well. At the high point, ConocoPhillips paid nearly \$6,000 per acre in September 2011 via the University of Texas lease sale, upping its holdings to 70,000 acres in Crockett, Upton and Reagan counties.

Global Hunter's Morrison dared to step out and suggest the horizontal Wolfcamp could rival the mighty Bakken oil-shale play in North Dakota. “The most recent well results in the play have indicated a potential step function shift in well performance and suggest the play may not only be economic, but wildly so.” With potential for high production rates of 1,500 BOE per day, “Back-of-the-envelope math suggests Bakken-esque potential for the play.”

Global Hunter estimates the play's potential recoverable resources range from 4.2- to 8.8 billion BOE, “and probably working higher over time.” He notes the USGS estimate for Bakken recoverable resources of up to 4.3 billion BOE.

“Indeed, things may be bigger in Texas.”

How to slice it

Approach Resource's Ross Craft is a self-described tight-sands gas man, having built and sold two such Permian-focused companies before starting Approach in 2004. So when he found himself with an unanticipated 1,200-foot column of oil-saturated Wolfcamp shale below his holdings, he knew he needed help. He called on Qingming Yang.

Yang, who holds a doctorate in geology, had been global exploration manager for Pioneer Natural Resources, and most recently the lead for Pioneer's Eagle Ford shale technical team. He understood shales from around the world. Craft tapped him in 2009 and handed him the suite of logs to develop an evaluation plan for the company's 145,000 net acres in Crockett County.

“One thing about shale plays, especially oily shale plays, is everything has to line up perfectly,” Craft says. “We had no idea if this was going to work.”

Adding to the complexity of the subsurface mystery, the Clearfork shelf sits on top of the Wolfcamp here, and the logs looked just as favorable as the Wolfcamp shows. “When we did the analysis, we realized we have more than 1,000 feet of Wolfcamp pay, and another 1,500 feet of Clearfork pay,” says Yang. “That's 2,500 feet of column.”



Tim Dove, Pioneer Natural Resources president and chief operating officer, says the Wolfcamp shale is the “ideal package” for fracability and productivity.

Other proven shale plays typically fall between 150 and 300 feet of thickness, and the whole zone can be effectively stimulated from a single lateral wellbore. Not this column. The problem of too much pay produced a dilemma: “How are we going to develop this?” Yang surmised. “This is unique.”

Like the Wolfberry fields to the north, which commingle production from formations between the Spraberry and Wolf-camp zones, Approach felt this play too could be developed vertically. “When you have 2,500 feet of column, it’s obvious you can’t drain it with a horizontal well,” Craft says. He coined the term “Wolffork,” and set about a vertical evaluation program.

Today, Approach’s vertical Wolffork wells typically IP at 140 BOE per day with an estimated ultimate recovery (EUR) of 110,000 barrels equivalent. At a cost of \$1.2 million per well, the return is 35%. “That’s exceptional,” Craft says. “At 10 to 20 acres per well, you can drill a lot of wells.” The company has moved the vertical program from pilot to development.

But...the highly fractured nature of the rock diminishes the drainage pattern, Approach discovered. “The rock is so fractured that it’s almost impossible to get out an effective distance of more than five to seven acres per well with a frac job,” he deduces. “It’s clear you’re not recovering a whole lot of reserves.”

Approach estimated resource in place per section of 118 million BOE for Wolfcamp volumes, and 182 million BOE adding the Clear-fork. The question remained of how to enhance the recovery factor.

Another first mover in the play, EOG Resources, was having success with its horizontal program just four miles to the north. With two EOG wells as a guide, Approach followed suit.

Approach identifies four separate “benches” within the Wolfcamp: The A bench and B bench correspond to what other operators term the upper and middle Wolfcamp, and the C and D benches correspond to the lower Wolfcamp. Initial laterals were drilled into the B bench, same as EOG’s.

The company now has more than a dozen horizontal wells completed in the B bench. The latest two wells IP'd at 1,310 and 1,136 BOE per day, producing 94% liquids. The first was stimulated with 34 stages in a 7,750-foot lateral; the second with 28 stages and a 7,700 foot lateral. Estimated ultimate recoveries (EURs) for recent wells on production have increased to 450,000 BOE, generating a 45% rate of return.

Because the Wolfcamp is normal pressured, unlike other commercial shale plays that are overpressured, Approach pumps slickwater fluids over gels in its completions, believing the gel plugs off the complex fractures. "You don't have the temperature and pressure to break down the gel," says Craft. It has also tightened stages to 250 feet to reduce stimulation gaps based on microseismic.

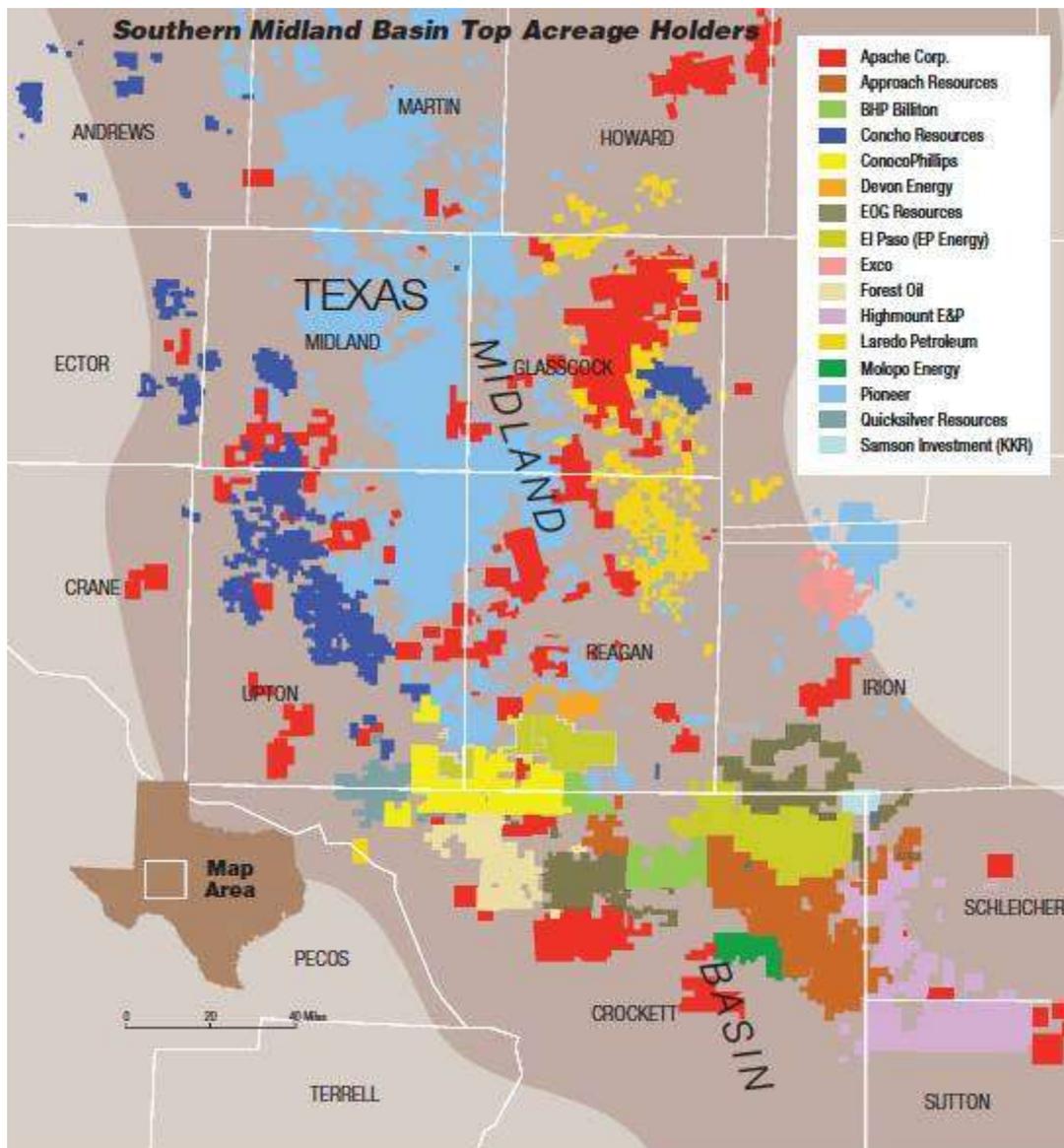
Now, "We believe we have enough data for the B bench to turn it to development," Yang says.

That still leaves a lot of Wolfcamp untapped. After evaluating core results, the company now believes the A and C benches show as much hydrocarbon in place as the B bench. Approach tested its first C bench well in the first quarter. With an IP of 541 BOE per day, results were inconclusive, with only 18 of 28 stages effectively stimulated. The company plans to recomplete the remaining stages. Pilot wells are also planned into the A bench this year.

"Based on early assessment, we have every reason to believe those benches are going to be successful," says Craft.

Craft sees the play being developed with a combination of vertical and horizontal wells, with a complex integration of stacked laterals. He envisions a single pad targeting the A bench with three wells each aimed north and south. The next six-well pad will target the B bench, and another, the C. Vertical Wolfcamp wells will be interspersed to capture resource between the unstimulated wellbore curves and from the Clearfork zone. This configuration maximizes return on investment, "because the time to get these wells online will be lessened."

Approach increased its capex by \$30 million to \$190 million and added a second horizontal rig with one vertical rig in the play. It plans some 25 horizontal wells in 2012, and about 50 vertical. With more than 1,800 Wolfcamp verticals and 500 horizontal Wolfcamp locations identified, "we think we're going to be in this play for some time," says Craft.



First movers

With the Wolfcamp now earmarked as a growth driver for the company, EOG is an aggressive first-mover, following into the play right behind Approach. Now with 38 horizontal wells drilled, it is doubling down this year, ramping to four rigs from two. Its 131,400-acre position straddles the Irion and Crockett county line, with additional leasehold in central Reagan County.

“EOG’s results have been great,” chief executive Mark Papa touted in a recent quarterly conference call. “I don’t know whether that’s due to better acreage or better technology, but the results speak for themselves.”

All of the company’s early wells targeted the middle Wolfcamp, with recent results producing from 700 to 1,700 barrels of oil with a gas-liquids and rich-gas mix. These wells were drilled with 7,000- to 7,500-foot laterals and completed with 30 to 34 stages. Newer wells have laterals averaging 7,600 feet.

EOG considers the play a combo, reporting a ratio of 42% oil, 30% gas liquids and 28% rich gas. Published EURs are 280,000 BOE per well, a conservative number per the company. The after-tax rate of return for a \$5.5-million well is 55%.

The company recently debuted its first well targeting the upper Wolfcamp zone, located in Reagan County. That well, described as a full-lateral upper zone test, flowed at 883 barrels of liquids. “Very encouraging,” said chief operating officer Gary Thomas. “We have plans to do additional testing this year” in the upper and lower zones.

El Paso Corp., too, recognized the potential early and racked up 138,000 acres in a 2010 university lease sale in northern Crockett, Irion and Reagan counties, paying an average \$1,500 per acre. The company drilled 13 horizontal Wolfcamp wells in 2011. The last one reportedly flowed at 1,369 BOE per day.



Andrew (Tiny) Heath mans the controls of Patterson-UTI's Rig #208 drilling Pioneer's University 3-31 #4H in Upton County, Texas.

However, due to El Paso's pending E&P spin-off to Apollo Global Management from the Kinder-Morgan pipeline merger, it has shifted from two rigs to one and is in maintenance mode until new marching orders are delivered post-acquisition. No new results have been released since August 2011.

At the time it entered the play, El Paso E&P president Brent Smolik called it “a promising new oil shale” and said, “Our acreage acquisition is the culmination of an extensive regional study by our technical team, and we expect it to become a new oil-focused core area.”

New life for idle acres

Dallas-based Pioneer Natural Resources is the monster of the midway with a 900,000-acre footprint down the axis of the Midland Basin. Here the company is in full development mode manufacturing

vertical Spraberry wells, of which it has drilled 7,000 with 20,000 more to go. The full power of its capex is deployed here at \$1.5 billion for vertical wells, 60% of its total expenditure.

So the company deems the revelation of the commerciality of the horizontal Wolfcamp play on some 200,000 idle acres on the southern end of its holdings in Upton, Reagan and Irion counties to be pure upside—with extreme potential. “It became clear there was a burgeoning new play down there,” says Dove. Seeing offset operators testing the play a bit further south, he acknowledges, “The well results were quite excellent.”

Here, where the Spraberry sands thin and are less economically viable, old shallow production has held most of this acreage in Pioneer’s portfolio for decades. A drilling rig was a distant memory to mineral holders. But with 50,000 acres picked up in a university lease sale five years past now exposed to expiration, Pioneer jumped into action. Awakened to the potential, this is where the operator is concentrating its efforts over the next two years.

“We want to make sure to preserve the value of those leases,” Dove emphasizes.

Why the urgency now? Based on his unique perspective, the horizontal Wolfcamp “could become one of the most significant plays based on our current understanding of it.” Dove even goes as far as putting the “game-changer” tag on the play.



faced with 2,500 feet of potential pay column, Qingming Yang, Approach Resources executive vice president of business development and geosciences, created a unique plan.

With thousands of cores, log data and petrophysics from its massive vertical campaign in Pioneer’s databank, Dove suggests a minimum of 400,000 company acres are prospective for commercial production from the play, and he would not be surprised if the entire 900,000 prove productive over time.

The play is immense, he declares. “The areal extent of this and the productivity potential measured in oil in place is so large that it’s going to be one of the truly burgeoning shale plays in the U.S.” And it’s oil, which, in a \$100-per-barrel oil environment, is meaningful, he says.

In third-quarter 2011, the company drilled its first horizontal well, located in Upton County, with a 5,800-foot lateral and 30 stages 200 feet apart. It produced 854 BOE on a 24-hour restricted rate and averaged 643 BOE over 30 days. Pioneer’s second well, also in Upton County and with a 5,800-foot lateral, mirrored the first: 807 BOE per day IP (75% oil, 18% natural gas liquids, 8% gas) and an average 30-day rate of 677 BOE per day. Both wells were completed pumping 220,000 pounds of sand and 300,000 gallons of slickwater fluids per stage.

“They are exceeding our expectations,” he says.

These wells—60 miles northwest of most industry activity and the first horizontal Wolfcamp test wells in Upton County—derisk the play northward.

The company is landing the lateral in the upper zone of the middle Wolfcamp, just below the Tippet shale that divides the middle and upper Wolfcamp members. Microseismic confirms the fracture stimulation is reaching the full 400 feet of thickness above and below the wellbore of each Wolfcamp zone for 800 feet of effective stimulation.

The next two wells in Reagan County to the east will be drilled with 7,000-foot laterals and 35 stages, each 200 feet apart. Beyond extending lateral lengths, Dove says the company is not experimenting with completions so as to better understand predictability. “We’ll do that after establishing the productivity of the wells.”

Pioneer projects ultimate recoveries from Wolfcamp horizontals in the range of 350,000 to 500,000 BOE, but the first two wells already look to exceed the average of those. “The first well has already made 45,000 barrels in the first 90 days,” notes Dove. “That’s a good sign.”

Dove estimates the company has exposure to more than 1 billion barrels of net resource potential from the upper and middle Wolfcamp alone. That doesn’t consider potential in the lower Wolfcamp, nor the Strawn, Atoka, Jo-Mill or Mississippian intervals that could be viable horizontal targets.

The horizontal Wolfcamp will be the fourth Texas-based growth play for Pioneer. Having just brought in a third rig for Wolfcamp, the company plans to have up to seven rigs running by year-end, going to 10 in 2013. That pace will result in up to 35 wells drilled this year, topping at 80 to 90 by year-end 2013 to successfully hold any expiring acreage. Its expected 2012 average production rate: 2,000 barrels per day.

The \$275 million budgeted this year, including a 260-square-mile, 3-D seismic program, represents just over 10% of Pioneer’s 2012 budget. “This horizontal Wolfcamp play will start taking a growing proportion,” Dove anticipates. At an average \$6.5 million modeled per well, with 2,900 horizontal locations on 140-acre spacing, he projects \$20 billion will be needed to develop just 400,000 acres.



A dramatic new day dawns at Patterson-UTI Rig #208. Pioneer's third Wolfcamp shale horizontal well will feature a 7,500-foot lateral with up to 30 fracture stages.

Taking aim

Vast resources in the Haynesville and Eagle Ford shales—packaged with an experienced shale team—prompted resources conglomerate BHP Billiton to buy U.S. independent Petrohawk Energy Corp. last year. It turns out the Australian company received a housewarming gift upon arrival as well: 325,000 undeveloped acres in the Permian Basin. Two-thirds are in the West Texas Delaware Basin where the company has four rigs testing horizontal plays, but a 50,000-acre gem lies in the southern Midland Basin in Reagan and Crockett counties.

Dick Stoneburner, the leader of Petrohawk's shale team and now president of BHP Billiton Petroleum's North America shale production division, believes the company has a sure thing in the Wolfcamp shale.

“We have had the luxury of watching results that are literally across the fence line from our acreage in some instances, and believe the play has been largely derisked without any operations on our part.”

That was until early this year. The company has just completed coring and logging operations in its first pilot hole drilled in Crockett County, and is now drilling out the horizontal. Having watched peers EOG Resources, El Paso and Approach Resources nearby, BHP Billiton's first well into the Wolfcamp straight out of the batter's box features a 7,500-foot lateral with 30 stages. And while Stoneburner did not specifically identify the location of the lateral placement within the Wolfcamp, he did confirm the initial target is the same as other operators in the area, which is the middle and upper sections of the Wolfcamp.



In Midland County, Texas, a few miles north of its Wolfcamp shale drilling, Pioneer is concentrating capex on its vertical Wolfberry program. The company-owned frac operations also service Pioneer's growing horizontal Wolfcamp activities.

“This is an area where longer laterals have resulted in proportionally increased IP rates, and we feel like increased EURs as well. It's clear the primary target by industry is a proven reservoir.”

Stoneburner, a geologist by trade, identifies all of the shale characteristics he likes to see from the logging operation: good porosity, high resistivity and brittleness. He awaits results from the core. “It's source rock,” he says. “It has all the earmarks we like to see when looking at petrophysical data.”

And the Wolfcamp is thick, some 900 feet where BHP Billiton is drilling. That presents its own challenge. “You're not going to drain that with one horizontal lateral,” he says. “You may drain 200 to 300 feet, but to effectively drain that much rock, it's going to take multiple well-bores.”

BHP Billiton's objective with its extensive petrophysical and coring operation is to identify just how many additional targets are in this section. “There is a good chance the overall Wolf-camp interval will offer multiple horizontal targets as we learn more about the rock.”



Crew members monitor hydraulic pumping of XBC Giddings Estate #1022, a Pioneer Wolfberry well.

Unlike some other tests in the play using vertical wells, Stoneburner expects horizontal wellbore economics will prove superior in BHP Billiton's model. "We're not generally sold on the vertical plays," he says.

As part of Petrohawk's former portfolio, the Permian position was cash constrained and untouched. Under BHP Billiton, financial firepower is locked and loaded. "Our current workforce, with the financial wherewithal of BHP Billiton, is providing a combination that is allowing the acceleration of the asset that we would not have been able to do at Petrohawk."

BHP Billiton is presently moving in a second new-build rig onto the acreage, with six planned by year-end. "We intend to accelerate the program significantly in the near term," Stoneburner confirms. "We're convinced it is a viable play that has proven economics. We are going to be aggressive about developing it."



Dick Stoneburner, president of BHP Billiton Petroleum's North America shale production division, believes the company has a sure thing in the Wolfcamp shale.

BHP Billiton also holds more than 60,000 acres in the northern Midland Basin primarily in Terry and Lynn counties. Stoneburner believes the Wolfcamp horizontal play remains prospective this far north of current activity. "It has a higher risk component, mainly because there has been minimal activity to date. Most of the operators are taking a wait-and-see approach." For now, BHP Billiton is doing the same.

"It's clearly a commercial play," says Stoneburner of the known target interval, but adds that upside extends far beyond EURs in that one proven member. "It's a multi-pay opportunity within one interval. The stacked component is important to upside potential. With our expertise, we're going to take that further."

The Cline

Numerous horizontal targets are emerging in the Permian Basin, which sometimes makes it hard to choose a favorite. With 135,000 acres in Reagan and Glasscock counties prospective for both the Wolfcamp shale and deeper Cline shale, Laredo Petroleum leads with the Cline.

"The Cline looks as good as or maybe slightly better than the Wolfcamp," says Laredo president Randy Foutch. "And it holds the entire Wolfcamp section by production."

Foutch formed Laredo in 2006, his third start-up, and took the company public in December. Laredo doubled its Permian position in June 2011 when it acquired Broad Oak Energy, a company Foutch knew well as he had sat on the board previously.

Laredo set out to explore the Strawn, but found the Cline in the cores and began leasing aggressively. The company prides itself on science work, and has drilled some 20 vertical test wells and collected 2,200 feet of whole core samples and 400 sidewall cores.

Horizontal Cline drilling began in 2008. Now, with more than 20 wells down in the Cline, primarily in Glasscock County, Laredo considers its central acreage in development.

The company modeled its horizontal program for 4,000-foot laterals, 10 frac stages and three perforation clusters per stage, but has since extended laterals and condensed fracs. Results have responded favorably. “We’re seeing early indications that make us want to continue to optimize, but we’re a long way from knowing the answer.”



Frac sand catches air before being pumped into a vertical Wolfberry completion in Midland County, Texas. Pioneer anticipates all of its 900,000 acres in the Midland Basin may be prospective for the Wolfcamp shale horizontal play.

Questions abound as to whether the Wolf-camp shale is prospective in northern Reagan and into Glasscock counties where Laredo resides. With four upper Wolfcamp horizontal wells drilled in Reagan County but in advance of announced results, Foutch confirmed IPs here compare favorably with other publicly announced Wolfcamp results. “It’s a program we’re going to expand,” he says. Laredo was scheduled to announce results in late March, after press time.

Foutch directly compares the Cline and Wolfcamp to geological stars the Bakken, Eagle Ford and Utica shales. “We see a lot of similarities. I think we’re going to surprise with how good this is—it may be better than those.”

Laredo's horizontal program is intermingled with its 12-rig vertical Wolfberry activity, in which it has drilled more than 600 wells on the same acreage. Technical data from these wells is evaluated for the horizontal program.

The company has four rigs dedicated to horizontal drilling moving between the two shale targets. Both horizons are deemed productive across the 80-mile-long and 20-mile-wide position. "We're going to rotate the rigs between the Cline and Wolfcamp A, B and C," Foutch says. He anticipates adding another two to four rigs to the program. The company projects 5,700 horizontal opportunities with 160-acre spacing on its holdings. This is in addition to 3,000 vertical locations woven into the grid.

Rates of return, while as-yet undisclosed, are in line with industry, he says. "Laredo began doing science in these intervals in 2008. We expect there to be a significant future pay-off from knowing what's out here."

To date, Laredo has zone tested the lower Wolfcamp in three vertical wells, and the middle Wolfcamp remains untested, although the company has analyzed 38 cores.

"I don't know how long it is going to take us to define the true value, but we're not going to stick to just the Cline or just the upper Wolf-camp. We are going to try diligently and methodically over the next several years to test these other zones," including the B and C benches.

A 30-year veteran, Foutch nonetheless is awed. "I don't think I've ever seen an opportunity set like Laredo has captured in the Permian. I've never seen that much potential in my career. We're very excited."

One shale of many

To Houston-based Apache Corp., advanced horizontal drilling technology opens up a feast of new resource opportunity on its 1.5-million-acre Permian position, to be high-graded by economics. In the Midland Basin, motivated by ticking leasehold and like counterpart Laredo, the company identified the Cline shale in which to target its first horizontal foray here.



An eclectic mix of oilfield paraphernalia adorns the walls of KD's Bar -B-Q in Midland, Texas, a popular lunch stop for industry workers.

Apache came by its 100,000-acre Deadwood property in Glasscock County when it acquired Mariner Energy in 2010. With lease expirations looming, it dedicated half of its \$1.2-billion Permian budget here in 2011. Thirteen rigs descended on the play, churning out 200 wells last year with vertical columns commingling Wolf-camp, Cline, Strawn and Fusselman.

Amidst the vertical flurry, the company landed four horizontal wells into the Cline formation.

“When we analyzed which zones were contributing more, the Cline shale emerged as a potential horizontal target,” says John Christmann, Apache regional vice president for the Permian.

Of the three Clines completed, 30-day stabilized production rates were 300 barrels of oil and 200 Mcf (thousand cubic feet) of gas per day on 5,500-foot laterals, with expected EURs of 300,000 BOE per well. Four more are planned this year, with further horizontal tests into the Wolfcamp and Atoka Barnett shales.

Multiple horizontal targets are not a conundrum, he says, but an opportunity. “We’re going to rank those and do our best projects.” With 565 locations identified, he envisions weaving the horizontals amongst the verticals and skipping frac stages where they overlap.

Looking south, Apache is indeed building a Wolfcamp shale position at present in Irion and Reagan counties. It now has a concentrated 25,000-acre core in Irion, “right where industry is located,” in which it has drilled and is completing its first well. The Scott-Sugg well in the Ketchum Mountain area will debut with a 7,000-foot lateral, 24 stages, 6 million pounds of sand and 200,000 barrels of fluid (or 250,000 pounds of sand and 8,300 barrels of fluid per stage). The target is the upper portion of lower Wolfcamp with 500 feet of zone.

Apache’s second and third Wolfcamp wells, currently drilling, will sport 9,000-foot laterals. The company has two rigs here with plans for at least six wells in 2012, likely more, Christmann suggests. He sees 150 locations here.

Next door in Reagan and Upton counties, Apache has announced a 31,000-acre position, a number Christmann reports is “very conservative.” The company map shows plenty of acreage swatches with “potential exposure that we’re still looking to qualify,” he says.

“We’re going to have a big Wolfcamp shale position,” Christmann assures. “We see a tremendous resource here. When you look at the amount of capital and the number of horizontals, it doesn’t take many acres with potentially multiple zones to have an area that is going to be significant.”

With a broad international portfolio, what significance might the Wolfcamp play have to Apache? “The numbers are going to compete well, but it’s just one of many plays in this basin we’re exposed to that will create hundreds of locations. It’s one of many target zones out there.”

Wunderlich’s Haas says it is just a matter of time before operators ramp up activity targeting the Wolfcamp shale. Permitting activity suggests 2012 will see an explosion of drilling.

“We expect another 100 to 200 horizontal wells will be drilled in 2012,” she predicts. “By year-end, we’ll be in a position to have a better assessment of what is the real potential.

“It’s a ubiquitous play,” says Pioneer’s Dove. “It’s going to be very prolific.”

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