



PLS PROSPECT CENTRE

Serving the marketplace with news, analysis and business opportunities

Mississippian Lime keeps looking better: The next Bakken? Plans suggest 100+ rigs within 18 months, up to 1,000 spuds in 2013

The Mississippi Lime is yet another in a string of “new” horizontal/fracked plays that aren’t really new at all. It’s always been there, straddling the Oklahoma-Kansas border, with over 14,000 wells drilled to date (virtually all vertical) so well drilling and production data are excellent.

QuickLook

1. Returns on revenue & profits look very good.
2. Well costs are reasonable at ~\$3 million.
3. Remaining potential is in the billions of barrels.
4. Kansas EURs may equal or exceed Oklahoma side.
5. Primary leasing race is winding down.
6. Ramp-up of activity is steep.
7. Infrastructure is in place with more coming.

What follows is an overview of why this established oil-producing area is the hottest new play in the U.S. right now, and why it may just live up to its hype.

Geology matters—

The Mississippi Lime is a continuous carbonate formation capped in some places with a slightly different

Depths vary from ~7,000 ft in western Oklahoma to 4,500 ft on the Kansas side.

carbonate “chat” layer. “Chat” is a local term, probably derived from the word “chert,” which typically has high porosity and low resistivity. More formally, the

chat is composed of chert, tripolite or spiculite carbonates. Some of these reservoir types can have high porosity or micro-porosity in the 26-52% range.

Permeabilities range from good in the shallow, chat reservoirs to not so good, especially in the ML proper, which is why the area is such a good candidate for fracking.

The chat is typically what has been vertically drilled and produced until recently. Porosity, while higher in the shallower chat layers, varies considerably with fracture density, which dominates the porosity and permeability mechanisms in the deeper ML proper.

➤ [Continues On Pg 2](#)

Interview with Tug Hill CEO Michael Radler

PLS interviewed **Tug Hill Operating** CEO Michael Radler to gain some insight into the thinking behind their push into the Kansas side of the Mississippiian Lime.



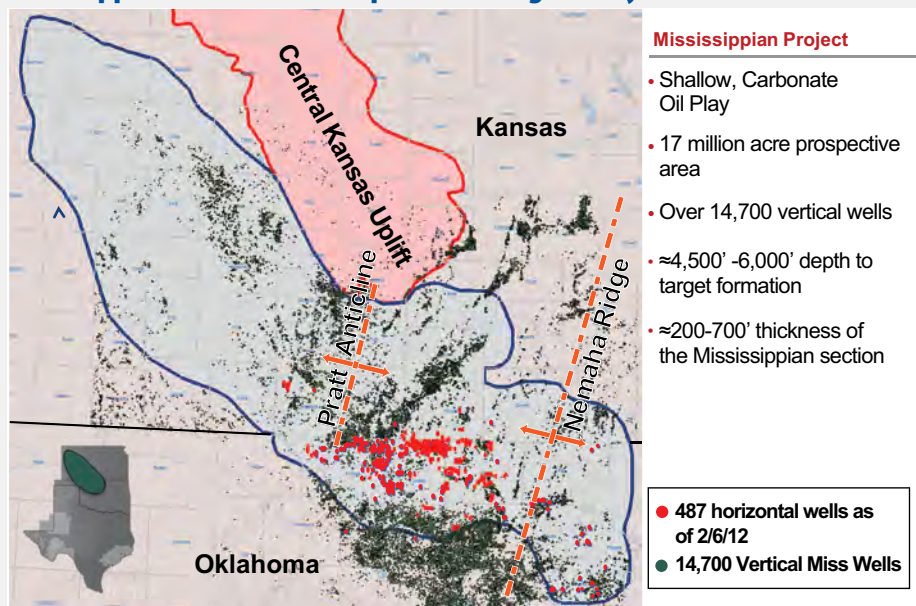
PLS: A lot of folks have never heard of Tug Hill Operating, so help us out.

M.R.: In 2007 my company **Tug Hill Inc.** and **Chief Oil & Gas**, led by chief executive officer Trevor Rees-Jones, formed a partnership and began acquiring acreage in the Marcellus under Chief Oil & Gas. At its peak our Marcellus position reached 650,000 acres [340,000 net] and the partnership drilled and participated in more than 450 wells.

In 2009 I joined Chief Oil & Gas as chief operating officer and, soon after, Tug Hill Inc. and Chief Oil & Gas formed a joint venture partnership with **Enerplus**. Together Chief Oil & Gas and Tug Hill Inc. sold 30% of our position to Enerplus for \$425 million.

➤ [Continues On Pg 3](#)

Mississippi Lime Structural Map With Drilling Activity



Source: Adapted from SandRidge February 28 Presentation via [PLS docFinder plsx.com/finder](http://PLS.docFinder.plsx.com/finder)

FEATURED DEALS

KANSAS MISSISSIPPIAN PLAY PLS

>15,000-Acres Southern Kansas
MISSISSIPPIAN FAIRWAY
 Vertical & Horizontal Potential
 Contiguous Acreage.
 Miss., Viola, & Lansing Formations
 >100 Drilling Locations
 Defined By 3-D Seismic. MISSISSIPPIAN
100% OPERATED WI: 80% NRI
 Net Production: >100 BOPD
 Vertical Mississippian Producing Wells
 CONTACT PLS FOR MORE DETAILS
L 7350PP

OKLAHOMA MISSISSIPPIAN PLAY

2,000 Acres.
GARFIELD, GRANT, KAY & WOODS PLS
 Horizontal Mississippian Oil Play
 Accelerated Development Nearby DV
100% OPERATED WI. 78% NRI
 2.0-2.5 Years Plus Remaining MISSISSIPPIAN
 30% Of Leases --
 --- Have Option To Extend
 Avg EUR 400-500 MBOE/Well
 CONTACT PLS FOR MORE DETAILS
DV 7140

Mississippian Lime keeps looking better ➤ *Continued From Pg 1*

“Sweet spots,” assuming that they exist within the ML, will likely be affected by structural highs such as the north-south trending Nemaha Ridge, the Pratt Anticline and the Central Kansas Uplift (see figure on pg. 1). Different companies are staking out their positions—time will tell what’s sweet and what’s not. What most geologists agree upon is that earlier production east of Nemaha Ridge tended to be oilier, with gas-oil ratios in the 3-4 Mcf/bbl range (essentially oil wells) in Pawnee and Osage Cos., Okla., while west of the ridge GORs steadily increases to ~28 Mcf/bbl (essentially gas wells) in Clark Co., Kansas. However, there are many exceptions to this general trend.

So, despite the fact that the area has a lot of wells drilled and even waterflooded in many cases, most of those were shallow, most didn’t produce from the ML proper (rather, from the chat, even though the ML was slightly penetrated) and virtually all were vertical. Recovery factors were generally less than 10%—often even less as vertical depth increased. Finding untapped pay that’s responsive to unconventional techniques seems to be the plan. And thus far, the ML has responded nicely to those techniques.

Playing the numbers—

SandRidge analyzed 1,439 vertical ML wells in Oklahoma and found that the average EUR was 66,000 bbl with a “b” factor of 2.5 (meaning fairly slow, long-tail production, with a steady 5% final decline rate). Analysis of 4,032 Kansas verticals showed an average 86,000 bbl EUR, also with a 2.5 b factor. Chesapeake says it has enough data to project type-curve EURs at a mean (P50) of 415,000 boe per horizontal well, which is in line with SandRidge’s 409,000-456,000 boe estimate based on 145 horizontal wells.



Production east of Nemaha Ridge is oilier with GORs 3-4 Mcf/bbl.

SandRidge Hz. Well Type Curves

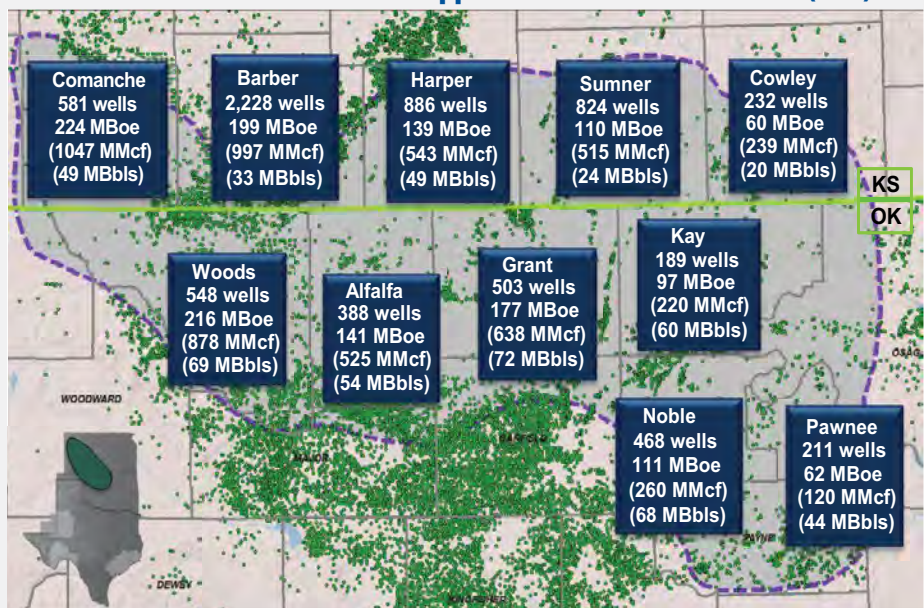
	2010	2011 ⁽¹⁾
b Factor	1.5	1.5
Initial Decline	56%	63%
30-Day Oil (bopd)	126	147
30-Day Gas (Mcf/d)	708	768
GOR	Constant	Increasing
Final Decline	5%	5%

(1) 91% IRR (as of 1/17/12 Nymex strip)

Source: SandRidge February 28 Presentation via **PLS docFinder** www.plsx.com/finder

➤ *Continues On Pg 4*

Oklahoma-Southern Kansas Mississippi Lime Vertical Performance (EUR)



Source: SandRidge February 28 Presentation via **PLS docFinder** www.plsx.com/finder

ARK-LA-TEX

EAST TEXAS OIL PROJECT

6,900 Gross; 4,206 Net Acres
HENDERSON & ANDERSON COUNTY
RODESSA (GLOYD) OIL PLAY
 Gloyd Interval Thickness ~100 Ft.
 17 Vertical Drilling Locations
 10 Horizontal Drilling Locations
 Mapped Porosity 10-16%
 EURs 250 MBO/Vertical Well
 EURs 512 MBO/Horizontal Well
 Offset Long Life Producers
 Seller Offering 75% WI For Drilling Partner
WOODBINE NONOP ALSO AVAILABLE
DV 8882

PLS

DV

LOUISIANA ACREAGE POSITION

50,000-Net Acres.
LOWER SMACKOVER
BROWN DENSE PLAY
 Proof of Natural Fracturing In Leasehold.
 Significant Activity In Area.
 75% OPERATED WI AVAILABLE (Lease)
 OPENED BID DATE. CONTACT AGENT.
L 1122

L

LEASE

GULF COAST / SOUTH TEXAS

CLARKE CO., MS PROSPECT

20,000-Acres. 130 Potential Wells.
MISSISSIPPI SALT BASIN
 Target: Brown Dense. 15,000 Ft.
 Lower Smackover Formation.
 3D Seismic Data, Subsurface Geology --
 -- & Geochemistry Used to Generate
 WI Negotiable Operations Available.
 Seller Will Deliver 75% NRI
 Est Reserves/Well: 3 MMBO
 Est Reserves/Proj: 390 MMBO
 Completed Well Cost: \$5,000,000
 CONTACT SELLER FOR DETAILS
DV 7879

DV

SMACK-OVER

COLORADO CO., TX PROSPECT

573-Acres.
EAST OF GLASSCOCK FIELD
 Wilcox-Aged Prairie Bell Sands. 11,800 Ft.
 25% NonOperated WI; 75% NRI
 Est Reserves/Proj: 40 BCF & 1.5 MMBC
 DHC: \$1,910,000; Compl: \$1,550,000
 CONTACT SELLER FOR DETAILS
DV 6965

DV

WILCOX

COLORADO CO., TX PROSPECT

630-Acres.
WILCOX TREND
 35 Miles NE of Word Field
 Obj 1: Wilcox Anderson Sand. 11,800 Ft.
 25% NonOperated WI; 75% NRI
 OffsetWellCumProd: 4.9 BCF (Anderson)
 DHC: \$1,700,000; Compl: \$1,200,000
 CONTACT SELLER FOR DETAILS
DV 8955

DV

WILCOX

ARK-LA-TEX

GUADALUPE CO., TX LEASE

1,135-Contiguous Acres. 1-Plugged Well.
 SOUTH TEXAS
 DARST CREEK
 Pecan Gap, Austin Chalk, Eagle Ford, Buda, Edwards, & Pearsall.
 Existing Plugged Pecan Gap Well.
 ACREAGE FOR LEASE
 Can Deliver 77.5% NRI.
 100% Surface & Minerals Owner.
 Accepting All Lease Offers
 CONTACT LESSOR FOR DETAILS
 L 7688

MINERALS

TEXAS LEASE SUB PKG

6,758-Gross Acres. 3,745-Net Acres.
 EAGLE FORD SHALE
 EAGLEBINE TREND
 SOUTH & SOUTHEAST TEXAS
 Leon & Madison Counties.
 OPERATED W/ AVAILABLE
 AGENT WANTS OFFERS MID APRIL 2012
 L 8281

ACREAGE

TEXAS LEASE SUB PKG

20,299-Gross Acres. 5,144-Net Acres.
 EAGLE FORD SHALE
 ATASCOSA, GONZALES, KARNES
 & WILSON COUNTIES
 OPERATED & NonOperated W/
 AGENT WANTS OFFERS MID APRIL 2012
 L 8282

ACREAGE

WALKER CO., TX PROSPECT

7,788-Gross/Net Acres.
 WOODBINE MULTIPAY
 Normal Pressured.
 Multiple Objectives Possible.
 Austin Chalk, Eagle Ford/Sub-Clarksville, Harris Delta, Dexter, Maness Woodbine Shale, Buda, Georgetown, Edwards, Glen Rose.
 SEEKING JV OR OUTRIGHT SALE
 Good Infrastructure & Access.
 Area Surrounded By Independents.
 CONTACT PLS FOR MORE DETAILS
 DV 6639L

PLS

DV

WOODBINE MULTIPAY

PERMIAN

PECOS CO., TX ACREAGE

5,120-Acres.
 WOLF BONE & WOLFCAMP SHALE
 100% OPERATED W/ 75% NRI
 3-Year Leases w/ 2-Year Options.
 PLS WILL FORWARD YOUR NAME
 CONTACT PLS FOR MORE DETAILS
 L 8036DV

PLS

PERMIAN

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Interview w/Tug Hill CEO Michael Radler ➤ **Continued From Pg 1**

M.R.(cont'd): During the next two years we continued to drill and develop our remaining position and eventually sold our central and southwestern Pennsylvania leaseholds to **Exco** and **Chevron** for about \$2.2 billion. Today, Chief Oil & Gas and Tug Hill Inc. retain 125,000 acres in Bradford, Susquehanna, Sullivan and northern Wyoming Cos. in Pennsylvania, which they continue to drill and operate under Chief Oil & Gas.

Tug Hill is the largest privately held company targeting Mississippi Lime.

When Trevor and I made the decision to enter the Mississippian Lime, we formed a new company called Tug Hill Operating to manage and develop the acreage.

Tug Hill Operating is the largest privately held oil and gas company targeting the Mississippian Lime; it is also the third-largest leaseholder in the play with more than 800,000 acres.

PLS: So you've been around. Why did you move into the Mississippian Lime?

M.R.: Like most people in this business, we knew about the Mississippian Lime and that it's been around for decades. We carefully followed the early horizontal well results and liked what we saw: good early horizontal well success, liquids rich reservoir, access to historical well data, weakening natural gas market and most importantly, low drilling and completion costs relative to other oil rich plays. We

'We concluded Kansas is equal to or better than Okla. from EUR perspective.'

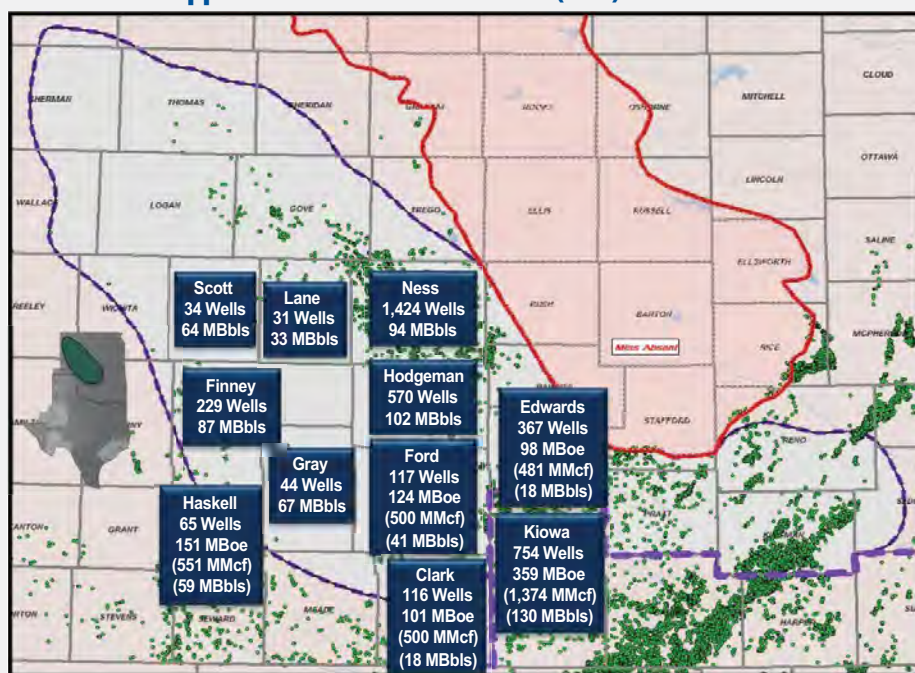
felt that our Barnett and Marcellus horizontal drilling experience and improved completion technology made

the Mississippian Lime worth a fresh look. The area has great well control, and we analyzed over 1,000 wells, which ultimately helped define our buy areas. We quickly came to the conclusion that Kansas is in many ways equal to or better than Oklahoma, especially from an EUR perspective.

Shale reservoirs tend to have nanodarcy rock and very low porosity. The Mississippian Lime has 5-40% porosity, millidarcy rock, and can have hundreds of fractures in a 4,000-ft lateral. Another big bonus is immediate revenue from production sales given the vast amount of midstream infrastructure in place. In the Marcellus, we waited years for pipelines and infrastructure to catch up.

➤ **Continues On Pg 5**

Kansas Mississippi Lime Vertical Performance (EUR)



Source: SandRidge February 28 Presentation via PLS docFinder www.plsx.com/finder

Mississippian Lime keeps looking better ➤ *Continued From Pg 2*


It's too early to say what the average EUR will be for the entire play.

SandRidge has horizontal wells with up to two years of production, some experiencing a 1.5% GOR increase per year. Decline rates are typically high, but b factors of 1.5 are lower than with verticals, meaning the EUR will be obtained sooner compared with wells with a long-tail production period.

Drilling ahead, and it's relatively cheap—

Early lease acquisitions helped make **Chesapeake** the largest landholder, with 1.8 million acres (see table). As of the end of February, Chesapeake was producing 11,300 boepd (40% oil, 15% NGLs and 45% gas). The company is actively looking for a

JV partner in the play.

 SandRidge, also an early player, has fallen to a close second place on acreage, having previously raised \$2.33 billion through four monetizations totaling 550,000 acres: the SD Mississippian Trust I, worth \$333 million; the Atinum (Korea) JV, worth \$500 million or \$4,400 per acre; the Repsol (Spain) JV, worth \$1.0 billion or \$2,750/acre; and SD Mississippian Trust II (pending) valued at \$500 million. The company is ahead of the others on production, with ~21,400 boepd from the ML at the end of February.

Chesapeake has drilled ~100 wells in the ML since its first spud in 2007. Cumulatively, the industry has drilled nearly 500 horizontal wells in the play, about half of them by SandRidge, and things are ramping up. Chesapeake was running 22 rigs in March and SandRidge plans to drill 380 horizontal wells this year. Three of the main operators cite drilling/completion/water-disposal costs at ~\$3.0-3.2 million per well.

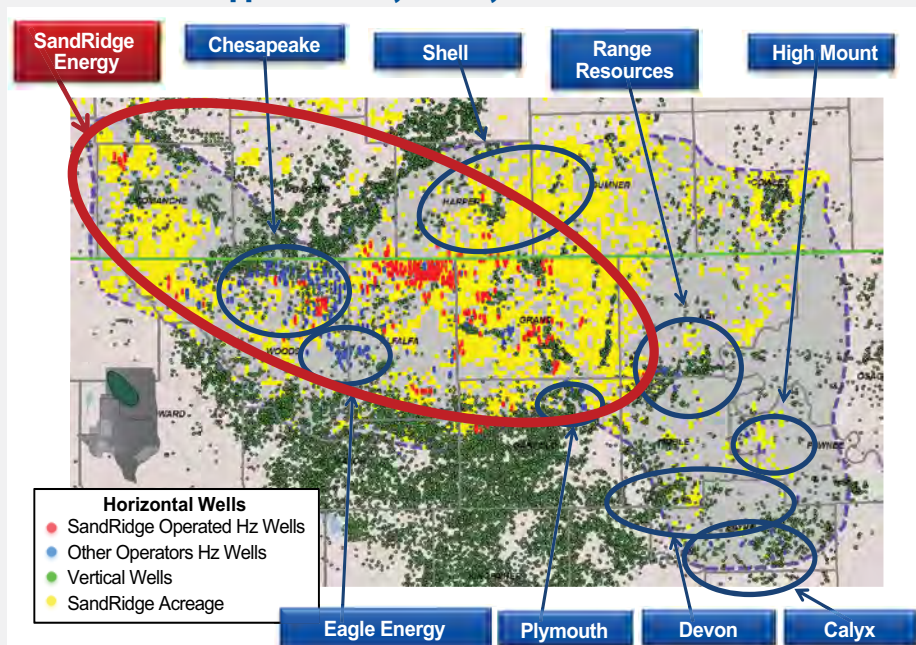
➤ *Continues On Pg 7*

Top ML Leaseholders

Company	Net Acreage
Chesapeake	1,800,000
SandRidge	1,500,000
Tug Hill	800,000
Shell Oil	300,000
Chaparral	250,000
Devon	153,000
Encana	140,000
Range	125,000

Source: PLS Research

Horizontal Mississippian Industry Activity



Source: SandRidge February 28 Presentation via PLS docFinder www.plsx.com/finder

Find more on E&P news at

PERMIAN

PERMIAN BASIN ACREAGE PKGS

PLS

2-Deals. 60,000-Acres.
 SOUTHERN MIDLAND BASIN
 SOUTHERN DELAWARE BASIN
 Wolfcamp & Wolfcamp Shale
 Bone Springs & Wolfbone
 MULTIPAY
 Other Shallow & Deeper Zones
 100% OPERATED WI; 75% NRI
 HOT AREAS

MULTIPAY

>20 Plus Permits Around Both Deals
 READY TO DRILL
 Seller Will Break Up Packages
[L 7324DV](#)

RUNNELS CO., TX PROSPECT

1-Initial Vertical Well.
 EASTERN SHELF
 BALLINGER FIELD
 MULTIPAY - 4,500 Ft.
 Primary Reservoirs:
 --Serratt Sd, Palo Pinto Lm, Jennings Sd
 Secondary Reservoirs:
 --Capps Lm, Gardner Lm, Caddo Lm.
 2-4 Additional Wells Possible in Prospect.

DV

MULTIPAY

20% Working Interest Remaining.
 Can Deliver 75% NRI.
 Minimum 5% WI Increment.
 HEADS-UP PARTICIPATION
 DHC: ~\$380,000; Compl: ~\$285,000
 ---SOLD BY SELLER SPRING 2012
[DV 7250](#)

SCHLEICHER CO., TX PROSPECT

16-Potential Locations. 1,300-Acres.
 SHALLOW OIL MULTI-PAY
 Strawn Limestone. 4,200 Ft.
 Home Creek Limestone. 4,100 Ft.
 Camar Sandstone. 3,800 Ft.
 Canyon Limestone. 3,700 Ft.
 Tillery Sandstone. 3,600 Ft.
 Palo Pinto Limestone. 3,500 Ft.
 NonOperated WI Available; 75% NRI
 CONTACT SELLER FOR DETAILS
[DV 7823](#)

DV

LIME-STONE

MIDCONTINENT

KANSAS MISSISSIPPIAN PLAY

PLS

19,000 Gross Acres. 17,000 Net Acres
 RAWLINS & THOMAS CO., KS
 100% OPERATED WI; 80% NRI
 All New Leases w/ 3 Yr Primary
 ---Most Have 5 Yr Kickers.
 CONTACT PLS FOR QUICK PACKAGE
[L 8000DV](#)

NEW

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MIDCONTINENT

NORTHERN OKLAHOMA ACREAGE

18,400-Net Acres. (83,200 Gross)
ALFALFA, GARFIELD, GRANT & --
 -- KAY COUNTIES, OKLAHOMA
 Horiz. Mississippian Oil. 4,000-6,000 Ft.
 23% NonOperated WI; 77% NRI
 Est IP: 275-410 BOED & 90-100% IRR.
 Avg EUR: From 415-485 MBOE/Well
 Est Developed (PV10): \$484,000,000
 Completed Well Cost: \$3,000,000
 CONTACT SELLER FOR DETAILS
 L 6946

MISSISSIPPIAN

NORTHERN OKLAHOMA PROSPECT

10-Potential Wells. 30,000-Net Acres.
ELLIS, HARPER & WOODWARD Cos
 ANADARKO BASIN
 Obj 1: Oswego/Cottage Grove. 6,000 Ft.
 Obj 2: Granite Wash. 8,000 Ft.
 Stacked Pay Multiple Formations
 Petrophysics, Core Data & Subsurface
 100% OPERATED WI; 77.25% NRI
 2-QUALIFIED PARTICIPANTS
 Est Reserves/ Well: 100-500 MBO
 Est Reserves/Project: 2-3 MMBO
 DHC: \$2,000,000; Compl: \$3,500,000
 CONTACT SELLER FOR DETAILS
 DV 8837

GRANITE WASH

EASTERN & APPALACHIA

FAIRFIELD CO., OH LEASEHOLD

3,621-Leasehold Acres.
UTICA SHALE
 OPERATED WI: 82.5% NRI (Lease)
 No Production.
 Leases Contain All Formation Rights.
 CONTACT AGENT
 L 8419

LEASE

MARCELLUS UTICA ACREAGE

7,973-Gross. 7,580-Net Acres.
ARMSTRONG, CLARION, FOREST,--
INDIANA, JEFFERSON & TIOGA, PA.
 ALLEGHANY & CATTARAUGUS, NY --
 --MCKEAN & VENANGO COUNTIES, PA
 MULTIPLE TARGET FORMATIONS
 Active Leasing, Permitted & Drilling Area.
 100% OPERATED WI; 80%+ NRI
 -- Non-Producing Leasehold
 Encouraging Results from Drilling Activity
 Existing ORRI Obligation of 1.5%
 -- Unleased Non-Producing Minerals
 Tracts Located Along Tennessee Pipeline
 -- & National Fuel Gas Gathering System
 AGENT WANTS OFFERS APRIL 17 2012
 L 8816M

MARCELLUS UTICA

Interview w/Tug Hill CEO Michael Radler ➔ Continued From Pg 3

PLS: Did you buy production in Kansas?

M.R.: No, primarily because most production is owned by small independent family-run operators. We wanted to avoid the liability associated with older wells and for the most part our goal was to stay away from areas with high depletion from historical production.

PLS: You said you thought south Kansas was in many ways equal to or better than across the border. In what ways?

M.R.: Geology doesn't recognize state lines. Within the existing play we analyzed vertical oil well performance for southern Kansas counties and compared them to northern Oklahoma counties and found that, on average, Kansas had higher-Mboe recoveries. A majority of our acreage is on the same depth trend with Oklahoma and contains high porosities and tripolitic chert, often called chat. What you have is a thick carbonate reservoir with significant remaining oil and gas in place and multiple stacked hydrocarbon rich facies, brought into play with horizontal drilling and modern completions that cost \$3.2 million.

PLS: There are an incredible number of wells in the general area—more than 14,000, even though most of those produced from shallower formations. Are you planning any re-entries to save money?

M.R.: No. Most of the wells have the wrong casing designs and we don't want the liability of an older, poorly constructed well, for safety and environmental reasons. In fact, before we spud we'll test every water well and fresh water source within 3,000 ft of our well. We take the environment and water resources very seriously, and because of so many old wellbores and the current controversy around fracking, we feel that this baseline data will protect us in the long run.

PLS: How about water supplies and disposal? How does that look?

M.R.: Disposal won't be a problem. We plan to drill an Arbuckle disposal well for about every eight to 12 producing wells. For decades the Arbuckle has been a prolific disposal zone for produced saltwater. Water to frac with, however, is a big deal. We're actively securing water sources now such as water wells, ponds and streams. In some cases, we've bought ranches for the water rights. We plan to reuse flowback water from fracking which we estimate will be about 30% of pumped volume, but we're also looking into using produced saltwater for fracking. This shows great promise and, if successful, over time water will become a much smaller issue.

PLS: Do you have partners?

M.R.: Great partners. We're partners with Trevor Rees-Jones at **Chief Capital (O&G) LLC**; T. Boone Pickens at **BP Capital LP**; Mark L. Deverka at **ARAD Energy** and Mike Allen at **Providence Energy**.

PLS: What are your plans as to development?

M.R.: This month we'll spud our first well. We plan to run three to four rigs this year, eight next year, and eight to 12 in 2014. We have over 800,000 acres leased, with another 100,000 in the works. Our overall goal is around 900,000 leased acres in the Mississippian Lime.

PLS: With so much ramping up, do you think there could be a service/supply crunch?

M.R.: Our view is that by year-end there will be 80 rigs running between Oklahoma and Kansas with more added all the time, but I don't see a problem. Gas plays have all but stopped or are slowing down so major service companies are already repositioning themselves. Also, because of the low treating pressures, smaller local service companies that are more competitive can be used and will keep costs lower. The amount of historical data from so many wells—that's one of the keys—and the economics are exceptional. PLS

'We plan to drill an Arbuckle disposal well for every ~8-12 producing wells.'

'Our view is by year-end there will be 80 rigs running between Oklahoma & Kansas.'

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PLS

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EASTERN & APPALACHIA

SOUTHERN ILLINOIS PROSPECT

>273 Potential Wells. 175,000+ Acres.
FRANKLIN, SALINE, HAMILTON, --
WAYNE, JEFFERSON & WILLIAMSON
ILLINOIS BASIN - ALL OIL WINDOW
Obj 1: Mississippian Lime. 3,000-4,000 Ft
Obj 2: New Albany Shale. 4,000-5,000 Ft.
Subsurface Geology ---
--- & Geochem Data
100% OPERATED WI; 80% NRI
Est Reserves/Section: >1.0 MMBO
Est Reserves/Project: 250+ MMBO
Completed Well Cost: \$3,000,000
CONTACT SELLER FOR DETAILS
[DV 8776HZ](#)

DV

MISS
LIME

ROCKIES

COLORADO ACREAGE FOR SALE

~15,500 - Gross / 7,454 - Net Acres.
DOUGLAS & ELBERT CO.
SOUTHERN D-J BASIN
Niobrara, Codell, Greenhorn, DJ Sands
Niobrara Thickness: 300-350 Ft
OPERATED WI; NRI Varies 75%-87%.
No Near Term Lease Expirations
South Of Lowry Bombing Range
Offsetting ConocoPhillips, CHK & APC
SEE L 8130DV FOR LARGER PACKAGE
[L 8137DV](#)

PLS

NIOBRARA

COLORADO NIOBRARA ACREAGE

~56,000-Net Acres.
DOUGLAS, ELBERT, EL PASO
SOUTHERN D-J Basin
Niobrara, Codell, Greenhorn, D-J Sands.
Similar Geology to Northern D-J Basin
100% OPERATED WI; ~80% NRI
Recent Anadarko Drilling To The North
Offset Players; ConocoPhillips, Anadarko
---Chesapeake & Ultra Petroleum
Recent ConocoPhillips Permits To North
Some Tracts Near Lowry Bombing Range
CONTACT PLS FOR MORE DETAILS
[L 8130DV](#)

PLS

NIOBRARA

COLORADO PROJECT

50+ Potential Wells. >7,100-Acres.
CENTRAL DENVER BASIN
Obj 1: Niobrara. 8,400 Ft.
Obj 2: Muddy J Sand. 9,500 Ft.
2-D Seismic & Subsurface Geology Data
100% OPERATED WI; 80% NRI
Offset: Niobrara Producing 40 API Oil
Est Reserves: 300 MBOE
DHC: \$2,500,000; Compl: 2,500,000
CONTACT SELLER FOR DETAILS
[DV 8773PP](#)

DV

NIOBRARA

www.plsx.com/listings

Leases

ROCKIES

LEA CO., NM WATERFLOOD

960-Acres. Shallow Depths: 3,500 Ft.
Water Source - Santa Rosa Sand.
Analogous Queen Waterflood:
-- Immediate Area Recover 1.7:1 - 2.5:1
-- Secondary To Primary
~92-100% OPERATED WI AVAILABLE
PrimaryRecovToDate: 1.3 MMBO, 11 BCF
EUR: 2.3 MMBO & 4.3 BCF
Net Cash Flow: \$30,000/Mn
Long Life Reserves: 25-30+ Years
Payout: 2.56 Years
Net Proved Rsvs (PV10): \$61,400,000
Low D&C Costs: \$400,000/Well
CONTACT AGENT
[DV 8097PP](#)

DV

DVI
WF

HETTINGER CO., ND FARMOUT

Single Well Development.
WILLISTON BASIN. TEEPEE BUTTE FIELD
Red River Formations.
3D Seismic & 2D Seismic Interpretation.
OPERATED WI FOR FARMOUT
Total Cumm'd Production: 227 MBO
Last Well Production: 24 BOPD
Recoverable Reserves: 340 MBOE
Total Well Cost: \$2,750,000
CONTACT PLS FOR MORE DETAILS
[FO 1427DV](#)

PLS

FO

RED
RIVER

LARAMIE CO., WY LEASEHOLD

4,709-Acres.
DJ BASIN / NIOBRARA
Seller Will Deliver 80% NRI
CONTACT SELLER FOR DETAILS
[L 8196DV](#)

L

LEASEHOLD

NIOBRARA ACREAGE FOR SALE

16,000-Gross; 12,000-Net Acres.
DOUGLAS, ELBERT, EL PASO
Southern D-J Basin
Niobrara, Codell, Greenhorn, DJ Sands
Similar Geology to Northern DJ Basin
75% OPERATED WI; 80% NRI
Seller to Retain 25% WI
Good Term Remaining On Leases
Fee And State Leases
Extension Options Available
Near New Permits By Ultra Resources
CONTACT PLS FOR MORE DETAILS
[L 8153DV](#)

PLS

NIOBRARA

NORTH DAKOTA & MONTANA PKG

~3,300-Net Acres For Lease.
ND - DIVIDE CO.
MT - SHERIDAN & ROOSEVELT CO.
BAKKEN & THREE FORKS
READY TO DRILL
100% OPERATED WI; ~80% NRI
Area Shows Strong Initial Production.
CONTACT PLS FOR MORE DETAILS
[L 4760DV](#)

PLS

BAKKEN

ROCKIES

NORTH DAKOTA ACREAGE

~10,915-Net Acres.
BURKE COUNTY
BAKKEN/THREE FORKS POTENTIAL
40 Possible Bakken Locations
South of Border & Taylorton Bakken Pool
East of Hess Avalanche Area
Active Area Operators Nearby
70% OPERATED WI; 80% NRI
Partner May Also Sell Remaining 30% WI.
Samson IP to South ~600 BOED
Disposal Well Permit Completed
CALL PLS FOR MORE INFO
[L 8787DV](#)

PLS

L

BAKKEN/
THREE
FORKS

NORTHERN COLORADO PROSPECT

100+ Potential Wells. 40,000+ Acres.
WELD & MORGAN COUNTIES
DJ BASIN - NIOBRARA
GREENHORN LIME & "D" SAND TREND
Obj 1: Horizontal Niobrara. 5,900 Ft.
Obj 2: Horizontal Greenhorn. 6,200 Ft.
Subsurface Geology Data Available
100% OPERATED WI; 80% NRI
MULTI-STAGE FRAC COMPLETION
Est Reserves/Well: 250 MBOE
Est Reserves/Project: 25 MMBOE
DHC: \$1,800,000; Compl: \$2,000,000
CONTACT SELLER FOR DETAILS
[DV 8803](#)

DV

NIOBRARA

NORTHWESTERN NM PROSPECT

17-Potential Wells. 8,995-Acres.
SANDOVAL & MCKINLEY COUNTIES
SAN JUAN / CHACO SLOPE
Obj 1: Entrada. 5,800 Ft.
Obj 2: Mancos. 3,800 Ft.
3-D Seismic, Subsurface & Other Tech
Reservoir Simulation + New Engineering
--DOWNHOLE WATER SINK (DWS)
35% NonOperated WI; 80% NRI
OPERATIONS NEGOTIABLE
Vertical Hole Dual DWS Completion
Est Reserves/Well: 281.8 MBO
Est Reserves/Project: ~4.8 MMBO
DHC: \$650,000; Compl: \$450,000
CONTACT SELLER FOR DETAILS
[DV 8804](#)

DV

CHACO
SLOPE

NW COLORADO PROSPECT

>27-Potential Wells. 17,000-Acres.
ROUITT & MOFFAT COUNTIES
SAND WASH BASIN
Niobrara. 7,500 Ft.
Subsurface Geology, Geochem--
-- & Geophysics Data Available
100% OPERATED WI; 80% NRI
Est Reserves/Section: >1.0 MMBO
Est Reserves/Project: 20+ MMBO
Completed Well Cost: \$4,000,000
CONTACT SELLER FOR DETAILS
[DV 8772HZ](#)

DV

NIOBRARA

ROCKIES

NIORRARA DRILLING PROSPECT

PLS

~1,005 Acres; Recent 3-D Seismic
 WELD COUNTY COLORADO. DJ BASIN
 NIOBRARA, CODELL & GREENHORN
 100% OPERATED WI; 80% NRI
 Lease Expires November 2013
 Offset Activity Surrounding Acreage
 Additional Weld Co. Production Available
 CALL PLS FOR MORE INFO
[L 8970DV](#)

L
 NIOBRARA

ROCKIES PROSPECT SUB PKG

1-Prospect.
 MONTANA
 Obj: Shallow Mississippian Carbonate
 OPERATED WI AVAILABLE
 Net Proved Reserves: 4.0 MBO
 Prov+Prob Reserves: 1.1 MMBO
 Net Proved Rsrvs (PV10): \$11,000,000
 P+P+P Reserves: 5.4 MMBO
 CONTACT AGENT TO LEARN MORE
[DV 9101](#)

DV

MT/
 DV

ROCKIES PROSPECT SUB PKG

1-Prospect
 UTAH. WASATCH PLATEAU
 Objective: Cretaceous Ferron Sandstone
 CBM POTENTIAL
 OPERATED WI FOR SALE
 Net Prospective Resource: 50-274 BCF
 CONTACT AGENT TO LEARN MORE
[DV 9102](#)

DV

CBM

SOCORRO CO., NM PROSPECT

80-Potential Wells. 12,500-Acres.
 ALBUQUERQUE RIFT
 NEW BASIN EXPLORATION
 Primary Obj: Mancos Shale. 8,500 Ft.
 UNCONVENTIONAL SHALE RESERVES
 100% OPERATED WI; 80% NRI
 CONTACT SELLER FOR DETAILS
[DV 8777](#)

DV
 MANCOS
 SHALE

ABOUT PLS

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 (713) 658-1922 (Facsimile)

Report prepared by: David Rosilez

To obtain additional listing info, contact us at (713) 650-1212 or listingmgr@plsx.com with the listing code. Only clients are able to receive additional information, to become a client call (713) 650-1212.

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Mississippian Lime keeps looking better ➔ **Continued From Pg 4**

Leasing is still ongoing but winding down because most of the players have their property staked out. SandRidge and Chesapeake have most of their properties on the Oklahoma side, while **Tug Hill Operating** has virtually all of its property on the Kansas side, in the border counties (see interview with CEO Michael Radler, pg 1).

Takeaway, please!—

While the area has good infrastructure from years past, lessons learned from the Marcellus and other plays are being applied. As a firm indication of what will happen in the next 18 months, midstream companies have committed to adding some 355,000 bopd of oil pipeline capacity and at least 250 MMcfd of gas takeaway capacity across the ML. **Atlas**, which has a partnership with SandRidge, is expanding capacity by 200 MMcfd with completion expected by 3Q12. **Plains All American Pipeline** signed a deal with SandRidge to build a

Midstreamers plan to add 355,000 bopd & 250 MMcfd of takeaway capacity.

new 175,000 bopd line for crude transport to Cushing. The 170-mile pipeline should be completed by mid-2013. **Superior Pipeline** inked an agreement with **Range Resources** for a 30 MMcfd cryogenic gas processing facility in Kay Co., Oklahoma.

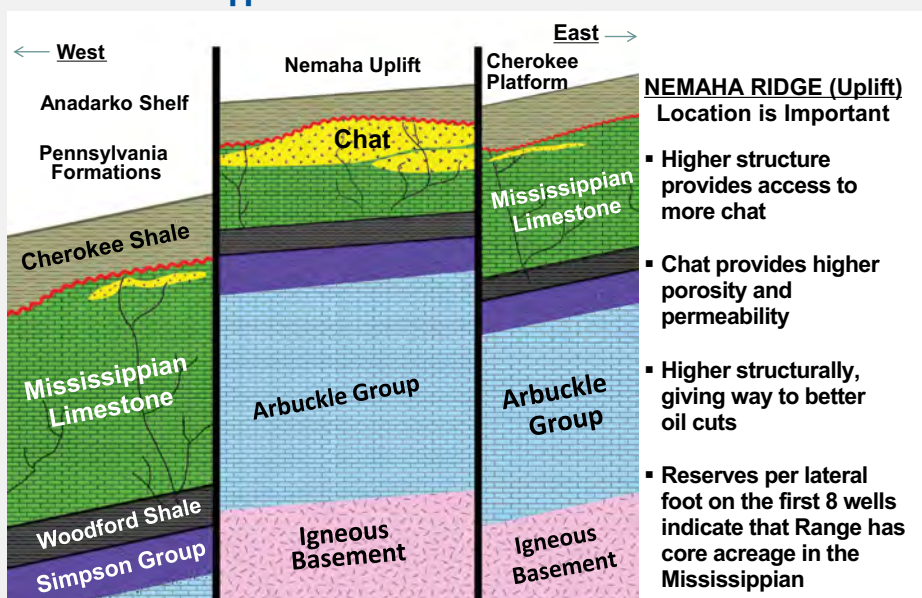
Chesapeake affiliate **Gavilon Midstream** has partnered with **SemGroup** to build a 180,000 bopd pipeline for crude transport to Cushing, where it has a 1.0 million-bbl storage facility. The 180-mile-long pipeline expects to be in service by 3Q13. Other midstream companies with ML plans are **NGL Energy Partners**, **DCP Midstream**, **Lumen Midstream Partnership** and **Mustang Fuel Corp.** which is adding 50 MMcfd of capacity.

The last word—

At today's oil prices, the ROR, IRR, ROI or, for that matter, *any* type of return rate in the ML is phenomenal, ranging 40-91% depending on the metric and the company math. The play has produced over a half billion bbl with low recovery factors in the 3-10% range. While it's too early to tell overall recovery factors with the new methods, recoveries in other unconventionally drilled tight formations are typically ~5%.

While that sounds low, it's quite good. Given the long laterals (~4,000-5,000 ft) and high per-well EURs (exceeding 400,000 boe) thus far, plus the ML's huge area, total cumulative recovery of the play could be in the billions of barrels. Think about just 2,000 wells per year for 25 years times even a much lower EUR. The potential is enormous. **PLS**

Horizontal Mississippian Cross-Section



Source: Range Resources March 5 Presentation via PLS docFinder www.plsx.com/finder

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