

2012 Shale Playbook

Alright kids, if we're going to have the best season in American Energy history, we're going to have to work hard. It's going to be a long road, but if we keep our noses to the grindstone we just might achieve energy independence. Remember the words of the immortal William ('the Fridge') Perry, **"I've been big ever since I was little."** Now get to work on the Playbook, maggots!

The Game

These shale plays represent a significant hydrocarbon resource. Total natural gas production potential is over 800 trillion cubic feet, now estimated to be over 250 years of reserves, according to the International Energy Agency.¹ On the liquids and condensate side, we're looking at total resource potential of 250-380 million barrels in the Eagle Ford Shale alone.² The good news? As prices for these resources go up and down, we've got you covered. If that doesn't get you up on your feet and cheering, I don't know what will.

The Shale Plays Game itself is one of the toughest in the Energy industry with significant challenges on offense, defense and special teams. If that isn't enough to make you want to bust some heads, I don't know what is. Let's meet some of the players and learn their winning strategies.

1. http://www.iea.org/weo/docs/weo2011/WE02011_GoldenAgeofGasReport.pdf
2. <http://eaglefordshale.com/drilling-rig-count/>



The Plays

Eastern Conference

Marcellus
New Albany
Antrim
Devonian
Utica
Chattanooga

Northern Conference

Bakken
Muskwa-Otter Park
Niobrara
Gammon
Mowry
Horn River

Western Conference

Monterey-Temblor
Mancos
Lewis
Hermosa
Barnett-Woodford
D-J Basin

Southern Conference

Barnett
Eagle Ford
Haynesville-Bossier
Woodford
Fayetteville
"Wolf Pack" Plays



Pre-Season Outlook

The South

Southern plays are prolific. It's oil country anyhow. These people eat, breathe and sleep Oil and Gas. Refs are pretty loose with developing the fields. Money is flowing freely from the land owners and the supporting cast in the region, keeping the rigs drilling. This place is booming with activity still and even though the folks around like the offshore sport too, our onshore game has been getting an awful lot of love lately. As gas prices have tumbled lately, operators are moving from the gas fields (Haynesville) back into the oil and condensate plays (Eagle Ford and Permian Basin). You want to win? You need to make your adjustments at half-time.



Eagle Ford – (est. 3 billion barrels oil)

Deep in the heart of oil country, this puppy is still giving us great gains, offering liquids and ample infrastructure to support them. Enterprise Products is building some serious technology to help keep the line running in tip top shape. The shale developments are really driving investment in midstream all the way to the point of affecting capital projects on plastics, a part of the game we haven't impacted here in North America for years.

Permian Basin – (historically > 15 billion barrels oil)

Well boys and girls, we all recognize this one from conventional days, it's back in a big way. Everyone is rushing back into this field. We're seeing good production and plenty of liquids. Keep an eye out for this, we'll be developing it heavily over the year and may even put some new twists in next year.

Haynesville – (est. 60 tcf gas)

This one is getting pretty tired folks. Everyone was into it a few years ago, but the only way I see us playing on this field much is if we see a big move by the government to increase natural gas use in trucks in this emerging mini plant LNG trend that's just emerging. Most operators in the play have reduced their rig count significantly, but don't worry, they'll be back as soon as prices firm up again.

Tuscaloosa – (est. 60 billion barrels oil)

The new Haynesville seems to be promising, but we're still developing it. Devon is leading the charge with developing the playing field and most of the competition is waiting to see how things turn out for them.

Pre-Season Outlook

The East

The East is a bit different - the refs call it real tight. In fact, they even shut down some of our operations in New York. 'Gas Land' managed to hurt the game up there even without much to substantiate its seepage claims. It's even starting to impact our friends in the Canadian league with the recent moratorium on fracking. The Utica is definitely the easiest place to play, those folks in Ohio have been looking for a new field for a while and they're definitely interested in keeping the developments going. It doesn't hurt that this play is also rich in liquids. Range Resources owns the East, but others like EQT, Chesapeake, EnerVest, Shell, Chevron and Talisman round out the home teams here.

Deep Marcellus – (est. >140 tcf gas)

This guy is losing some steam up north, but is still a go to in the southern section. Dry gas is tough to gain on right now, so lots of hand offs to Utica could be a good play for now. Shell made a huge play here dropping in a contract for an Ethylene Cracker that ought to energize some of the stale assets.

Utica – (est. between 1.3 and 5.5 billion barrels of oil and between 3.8 and 15.7 trillion cubic feet of gas in Ohio alone)

We're still developing this field, so we have to be careful about going to it early on, but it has huge potential. Chesapeake is heavily reliant on this play for its ground game and teams like Energy Transfer are getting after it on the line.

The North

The North is running some serious interference with lack of talent to actually keep the production coming as fast as it could. Last time I visited I couldn't even get a hotel. I ended up sleeping in a man camp.

Bakken – (est. up to 18 billion barrels of oil)

It's rugged tundra up there, let's not forget that. Be sure to bring your firepower. The refs play pretty loose up here, so let's gain some ground while we still can. A bunch of the juggernauts are looking at hundreds of wells a year up in the North. The locals are real supportive and the vendors like Halliburton are making big moves to help big teams succeed. EOG, Statoil, OXY and Hess are the major teams that hail from the region. Oasis, XTO, Whiting, Newfield, Continental and a slew of others are looking to move up from the independent league leveraging the region.






The Playbook

The Offense

Our offenses are unconventional by definition. In a typical play, the Quarterback surveys the defense in a different way from conventional plays. In conventional exploration, we might locate a deep target with seismic and drill a nearly vertical well to penetrate and extract its reserves, letting gravity do most of the work.

Our QB is taking his time looking for basin-wide trends, studying source rocks and evaluating formations. He's looking for opportunities that can be exploited with a different approach to drilling and production. Our QB is protected by a solid line of experienced geologists, geophysicists, petroleum engineers and technology experts.

We're going after well-known but previously uneconomic opportunities with tools that overcome the traditional challenges of shale exploration and production including:

-  **Horizontal Drilling** – to find and follow gas reservoirs along their lateral extent and expose as much reservoir rock to production methods as possible
-  **Formation Evaluation Well Logging** – borehole analytics tools designed to measure reservoir properties, such as porosity, permeability and gas saturation during or after drilling. This is where we see touch points into our technical offense. The guys doing this work on the field love it when we feed back pressure data to better map the field and well placement.
-  **Hydraulic Fracturing (or “fracking”)** – to create new cracks and channels in otherwise tight shale formations and to enhance the flow of oil and gas into recovery wells and overall production
-  **Microseismic Monitoring** – to “listen” to the stress state of a reservoir during hydraulic fracturing and provide real-time data to exploration and production models
-  **3D Reservoir and Production Modeling** – to design the optimum drilling and recovery program to get the highest possible recovery from each target formation

The Defense

Once we discover hydrocarbons and start producing the field, our work is only beginning. On Defense, we have the heavy hitters, Operations, who put the strategies, processes, systems and manpower in place to produce, store, transport and protect the environment, which largely determines whether or not a shale development is economically viable over time.

The blocking and tackling part of the Game Plan includes:

- X Well Site Production, monitoring, storage and transfer to pipelines and transportation vehicles**
- O Water Disposal** – for fracking operations and other drilling/production liquids
- X Onsite Gas Plant Operations** – for processing hydrocarbons and producing clean energy
- O Safety Measures and Monitoring** – for oil field personnel, transport systems and local interests
- X Enhanced Oil Recovery** – advanced injection work to wring out extra production of fields. Without this method, typically only 20-40% of reserves are recovered.³
- O Regulatory Compliance** – for state, local and federal regulations and standards
- X Environmental monitoring, remediation and reclamation** – for drilling, production and fracking operations, storage and transportation systems

Special Teams

Offense and Defense alone won't win the Shale Plays Game. Today's shale gas fields harness the latest technology to meet 21st Century economic, security, safety, regulatory and environmental challenges. Your special teams players leverage automation systems and controls, industrial IT and cyber security to keep things running smoothly and prevent disasters from happening.

Some of the key plays include:

- X Intelligent well control and remote monitoring** – SCADA enabled, solar powered well control panels and services for intelligent well control, wellhead lift optimization, measurement and remote monitoring
- O Gas Measurement and Analysis** – integrating field control and monitoring systems with business systems, historical data analysis, production accounting systems, safety and regulatory systems and reservoir models
- X Cyber Security** – hardened in-field and remote networks and communications systems designed to defeat external threats
- O Infrastructure and Data Communications** – secure radio, WIFI, cellular, fiber and satellite networks for flexible and redundant real-time remote monitoring and operations control

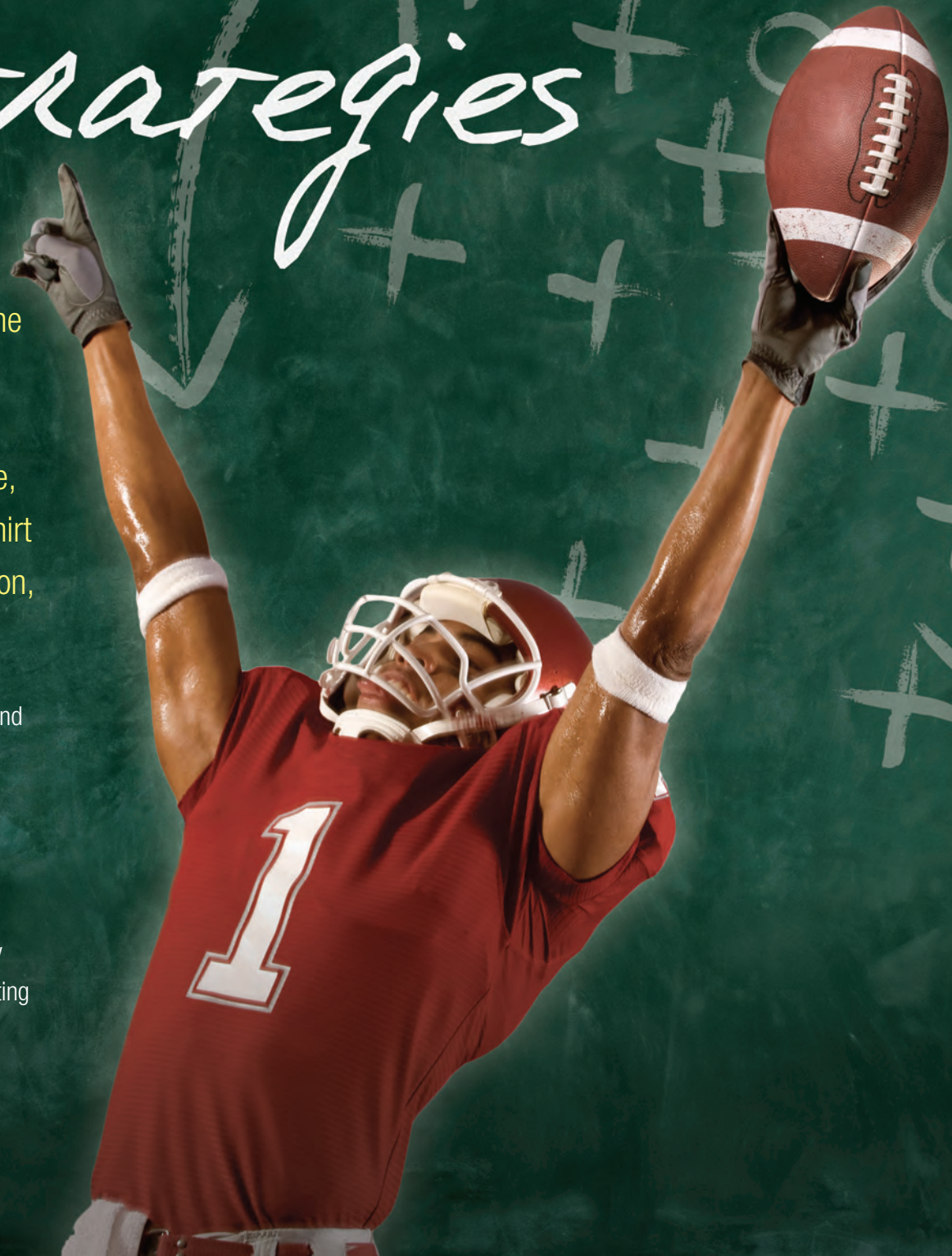


Winning Strategies

You can say what you want about Offense – yes it fills the seats, and yes it makes the highlight reels, but Defense and Special Teams win championships! That's right. You can drill all you want and frack 'til you're blue in the face, but if you can't recover the liquids without losing your shirt and bringing the refs down on you like a ton of bricks, son, you got nothing.

Today's winners are planning ahead and leveraging the latest technology and strategies to limit turnovers and exploit opportunities faster than the other teams. And don't forget about all those prying eyes out there. If you can't lock down your playbook and signals, you're going to be in a world of hurt.

Yes, they play this game overseas too (at least they say they do), but North America still owns this Game! As long as we stick to our Playbook and play by the rules, we can continue to make this Shale Play Game the most exciting and profitable energy venture in history. Now remember our motto – Make Plays and Have Fun! Go get 'em boys and girls.





Training Room

Here are some blogs you should read – yes read.
You can't get everything from your iPod,
you lame brain!

[EIA Examines Alternate Scenarios for the Future of U.S. Energy](#)

[Producing Natural Gas From Shale](#)

[Unconventional Reservoir Blogs](#)

[Answering the Infrastructure Demand in America's Shale Plays](#)


[Bakken/Three Forks Infrastructure, takeaway woes only threats to high activity](#)

[The Real Price of Oil and Natural Gas](#)

[Emerging Plays \(DrillingInfo\)](#)

[Insight: Peak, pause or plummet? Shale oil costs at crossroads](#)

[Developing Unconventional Oil: Aptly Named](#)



Film Room

Alright, you need to study these videos to review just how badly you got beat in our last game. Turnovers and missed assignments. How do you expect to win any games this year?

Shale Oil - The Rush for Black Gold

Hydraulic Fracturing

Planning, for Performance Excellence (EnergyFromShale.org)

Eagle Ford Brings Wealth of Opportunities to South Texas

Well pad preparation and drilling in the Marcellus Shale

Natural gas production and marketing in the Marcellus Shale

About Cimation

In recent years, exploration, development and production techniques have improved, resulting in more cost-effective means for companies to invest in this fast-growing energy sector. To leverage these emerging technologies, companies need a solution to control, monitor and collect real-time data directly from the site to the wellhead, processing facility, or straight to existing pipeline infrastructure for transport to the customer.

With our experienced staff of automation and IT specialists located in Colorado, Pennsylvania, Louisiana and Texas, Cimation provides innovative, local automation solutions and field services to enhance production, processing and transportation in the North American shale plays.

For more information, please visit our website at:

www.cimation.com