LUBER-FINER®

BUILT TO DO MORE™


# Shale Oil and Gas Attack-A-Market™ Program

# Objective:

- Develop an expert knowledge base among our sales team and channel partners who can help grow Luber-finer market share in shale oil and gas markets
- Identify and communicate the distinct, sustainable, competitive advantages of Luber-finer filtration products, systems and solutions
  in shale oil and gas applications
- Target key buying influences
- Target communications
- Create awareness and preference for Luber-finer filtration products, systems and solutions

> **"Today knowledge has power.
> It controls access to opportunity and advancement."**
>
> ***- Peter Drucker***

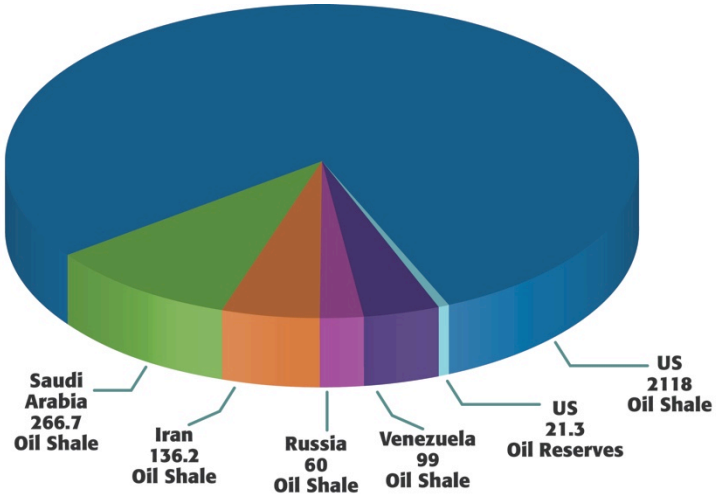
# Introduction

- **Opportunities abound for Luber-finer and its filtration products in the North America shale oil and gas plays!**
- **We're in the midst of a "Black Gold Rush…and Oil Boom" being driven by:**
  - Advances in horizontal drilling
  - Advances in hydraulic fracturing
  - Increases in crude oil prices

# Shale Oil and Gas Market Potential

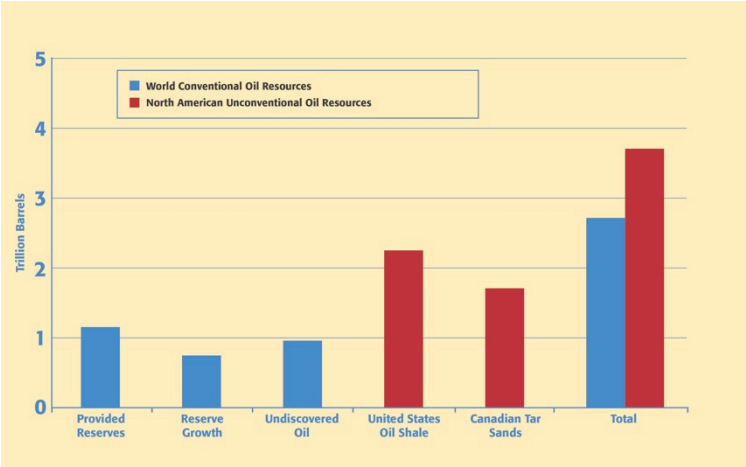
- The U.S. has, by far, the greatest shale resources
- Recent statistics place reserves at 2.118 trillion barrels or roughly 82% of total world shale deposits.[1]

**Potential US Oil Shale Resources vs. Foreign Oil Reserves in Billions of Barrels**




Source: Energy Information Administration IEO 2009

**Unconventional Oil Resources Exceed World Conventional Resources**




Source: Office of Naval Petroleum and Oil Shale Reserves U.S. Department of Energy Washington, D.C.

[1] OilandGas-Investments.com 2011 – A Rising Tide That Will Enrich Investors

# Key Needs of the Industry

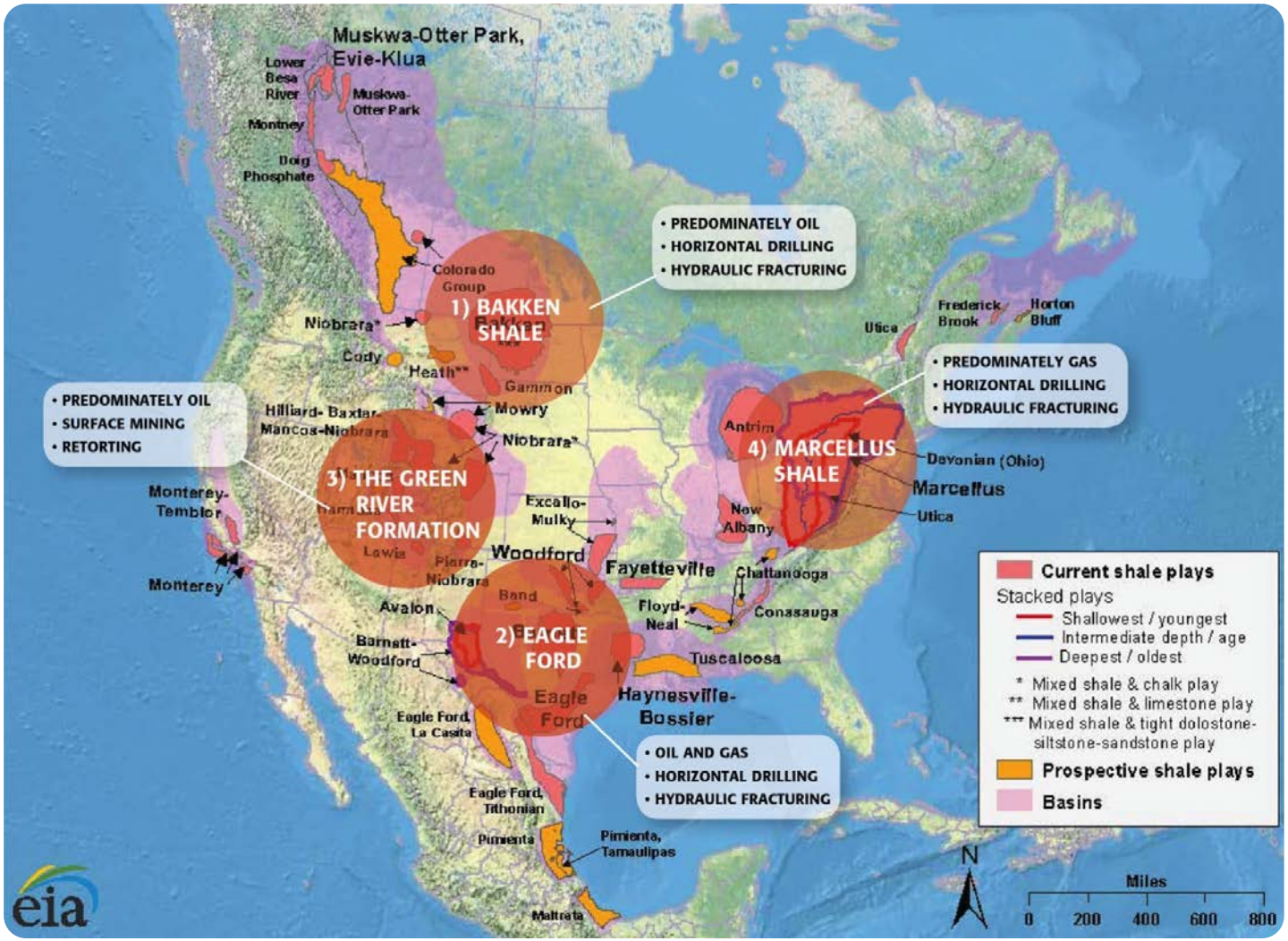
- **Where Luber-finer Can Make a Difference:**
  - OE-grade quality filtration – designed, built and rigorously tested to perform under extreme conditions
  - High quality materials of construction to endure
  - Filtration availability
    - Complete coverage on most HD vehicles
    - Best-in-Class Fill Rates - 99.6%

- **Protection of Revenue-Generating Assets**
  - Time-tested, field-proven – trusted by heavy-duty fleets worldwide since 1936
  - Part of one of the world's largest vehicle parts and filtration companies in the world with the engineering, manufacturing science, processes and service to meet any customer requirements

# Key Needs of the Industry

- **Cost Savings and Long-Life Performance Under Extreme Demands**
  - One of the most comprehensive quality control programs and test labs in the industry
  - ISO/TS 16949 and ISO 140001
  - Innovation to meet special oil & gas industry challenges:
    - Cost control through extended change intervals
    - Time Release Technology (TRT™) to reduce oil degradation and extend change intervals
    - Superior air filtration media to increase effectiveness, efficiency, greater dirt holding capacity, endurance and service life

# Market Overview - Where's all the Oil and Gas



# Market Overview - Where's all the Oil and Gas Shale?

| U.S. State | Shale Oil & Gas Plays |
|---|---|
| Alabama | Alabama Shale Fields |
| Alaska | Anwar |
| Arkansas | Fayetteville Shale |
| California | Los Angeles Oil Field - Wilmington Basin |
| | Kern County Oil Field |
| | Monterey Shale |
| Colorado | Green River Oil Shale |
| | Niobrara Shale |
| | Piceance Basin |
| Kansas | Niobrara Shale |
| Kentucky | Huron Shale |
| Louisiana | Austin Chalk |
| | Bossier Shale |
| | Haynesville Shale |
| Michigan | Antrim Shale |
| | Collingwood Shale |
| Montana | Bakken Shale |
| | Exshaw Shale |
| | Three Forks / Sanish Zone |
| Nevada | Chainman Shale |
| New Mexico | Avalon Shale |

| U.S. State | Shale Oil & Gas Plays |
|---|---|
| | Bone Spring |
| | Permian Basin |
| | Wolfcamp Shale |
| New York | Marcellus Shale |
| North Carolina | Cumnock Shale |
| North Dakota | Bakken Shale |
| | Three Forks / Sanish Zone |
| Ohio | Huron Shale |
| Oklahoma | Granite Wash |
| | Hogshooter Wash |
| | Woodford Shale |
| Pennsylvania | Marcellus Shale |
| Tennessee | Chattanooga Shale |
| Texas | Austin Chalk |
| | Barnett Shale |
| | Bone Spring & Delaware |
| | Bossier Shale |
| | Cline Shale |
| | Eagle Ford |
| | Granite Wash |
| | Haynesville Shale |
| | Permian Basin |
| | Spraberry Field |

| U.S. State | Shale Oil & Gas Plays |
|---|---|
| | Wolfberry Field |
| | Wolfcamp Shale |
| Utah | Green River Oil Shale |
| | Chainman Shale |
| West Virginia | Marcellus Shale |
| | Huron Shale |
| Wyoming | Green River Oil Shale |
| | Niobrara Shale |

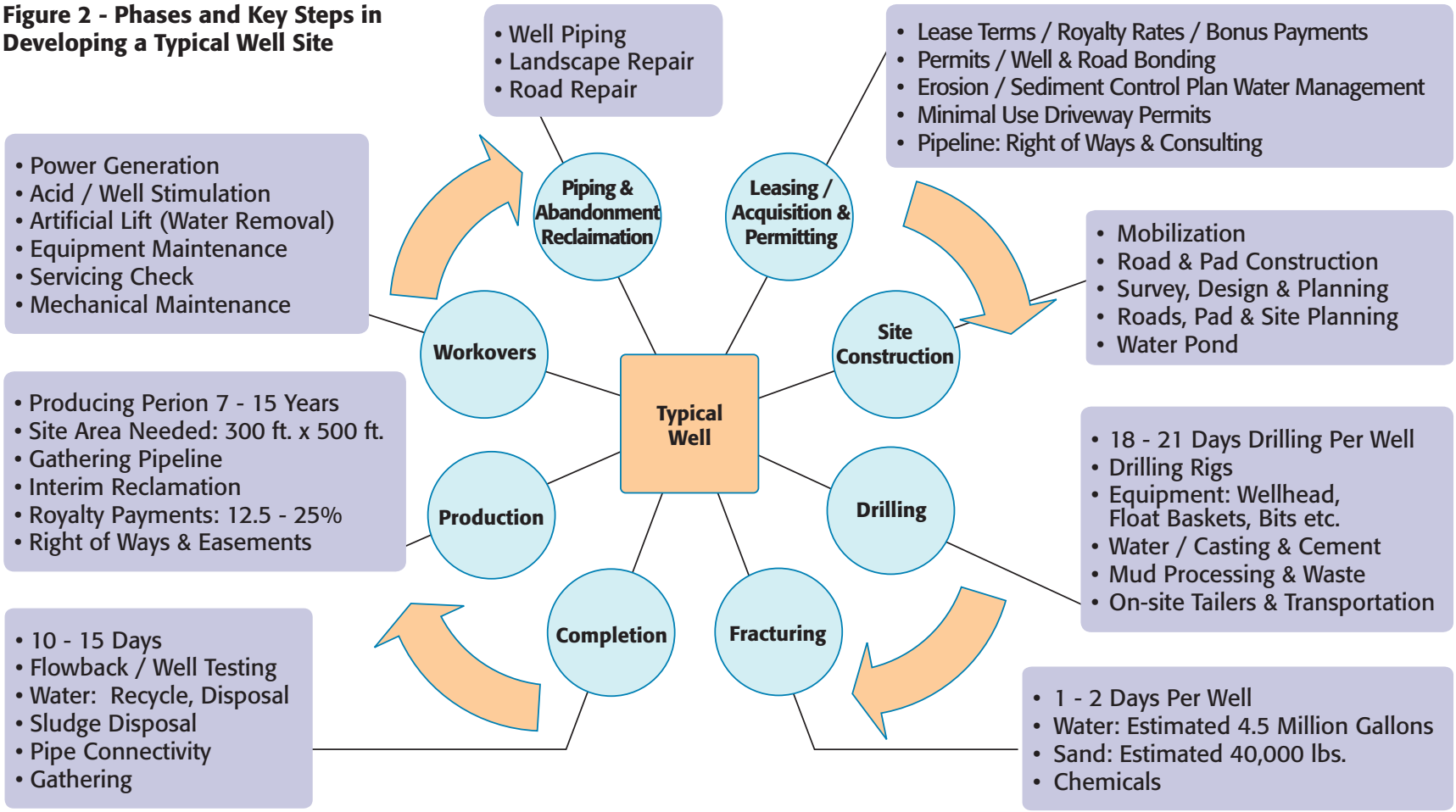
| Canadian Province | Shale Oil Field |
|---|---|
| Alberta | Alberta Oil Fields |
| | Cardium Shale |
| | Exshaw Formation |
| | Montney Shale |
| British Columbia | Cardium Shale |
| | Exshaw Formation |
| | Horn River Shale |
| | Montney Shale |

# New Discoveries Fuel Demand for Heavy-Duty Equipment


- New "Cline Shale" Play
- Expected Production 570,000 barrels per day
- Projected to contain 3.6 million barrels per sq. mile – 30 billion barrels for the entire play
- 35 miles from Midland, TX
- Deep zone formation – Equivalent to 10 Eagle Fords stacked on top one another

# Luber-finer Filtration can be Found in Every Phase of the Oil & Gas Process

**Figure 2 - Phases and Key Steps in Developing a Typical Well Site**



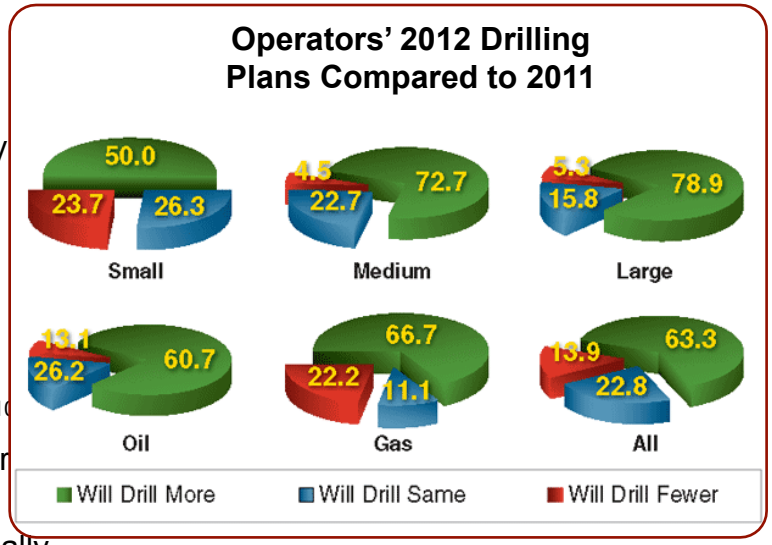
# Drilling Permits - Know Where the Action is Happening

## Horizontal Drilling Requires Fewer Rigs to Generate More Production[8]

- Horizontal wells cost 2-3 times as much as vertical wells
- Horizontal wells often produce 4-7 times as much oil (or gas) out of those wells
- Shale plays often extend over a large deep underground formation that can often provide tens or even hundreds of low risk, repeatable drill locations – easy money for the drillers and producers.

## Drilling Permits – On the Rise

- In 2008, 26 permits were issued to drill in Eagle Ford. In 2010, >1,000 permits were issued…in the first quarter of 2011, 562 permits were issued[9]
- Onshore drilling permits in the U.S. are expected to increase over 40% in 2011[10]
- Oil and gas companies have yet to develop 57% percent of their existing onshore leases nationally[11]
- Oil and gas companies have obtained 7,200 onshore oil and gas permits nationally they have a green light to drill[12]




Source: http://www.aogr.com/index.php/magazine/cover-story/u.s.-independents-paint-optimistic-picture-with-2012-drilling-plans

### Drilling Permit Facts:

You can visit the link http://www.epa.gov/epahome/state.htm to look up your State or Territorial Environment Agencies, which can provide you a way to track issued drilling permits.

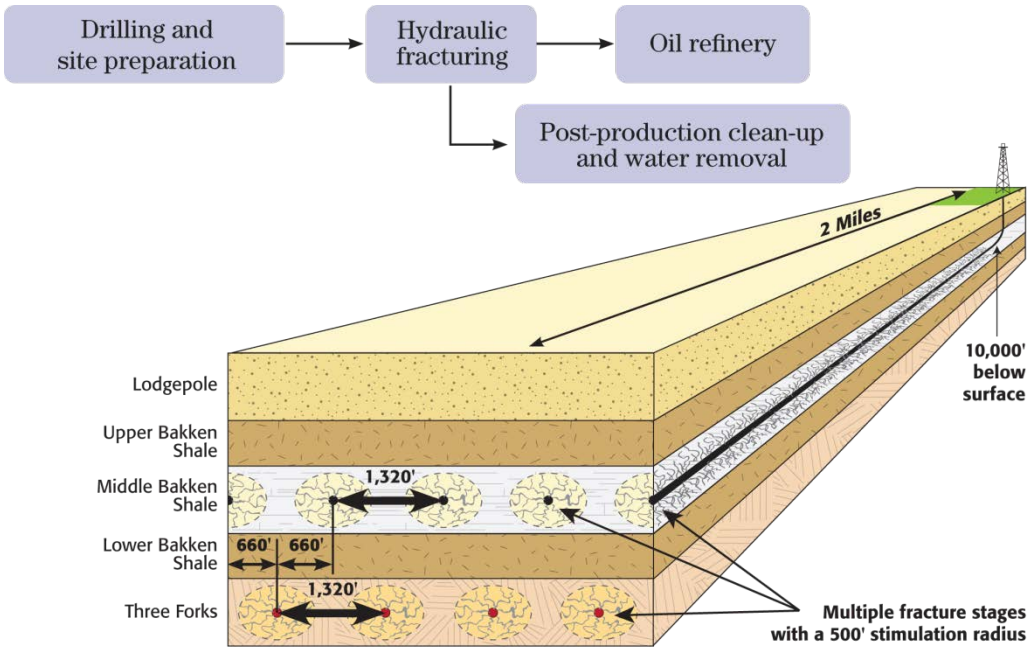
- For example in West Virginia, a typical well takes 45 days to get approved by the state Department of Environmental Protection, though official permitting ranges from 4 to 120 days. New regulations and more activity have slowed the process across all Shale plays
- Most states have either a 1-2 year time period requirement for the company to begin drilling, this is regulated by the State.

By tracking the drilling permits and trends, you can leverage the data to create your own sales leads.

8 www.oiland gas-investments.com/2011
9 www.reuters.com/article/2011/05/04
10 U.S. Dept. of Interior
11 U.S. Dept. of Interior
12 New York Times

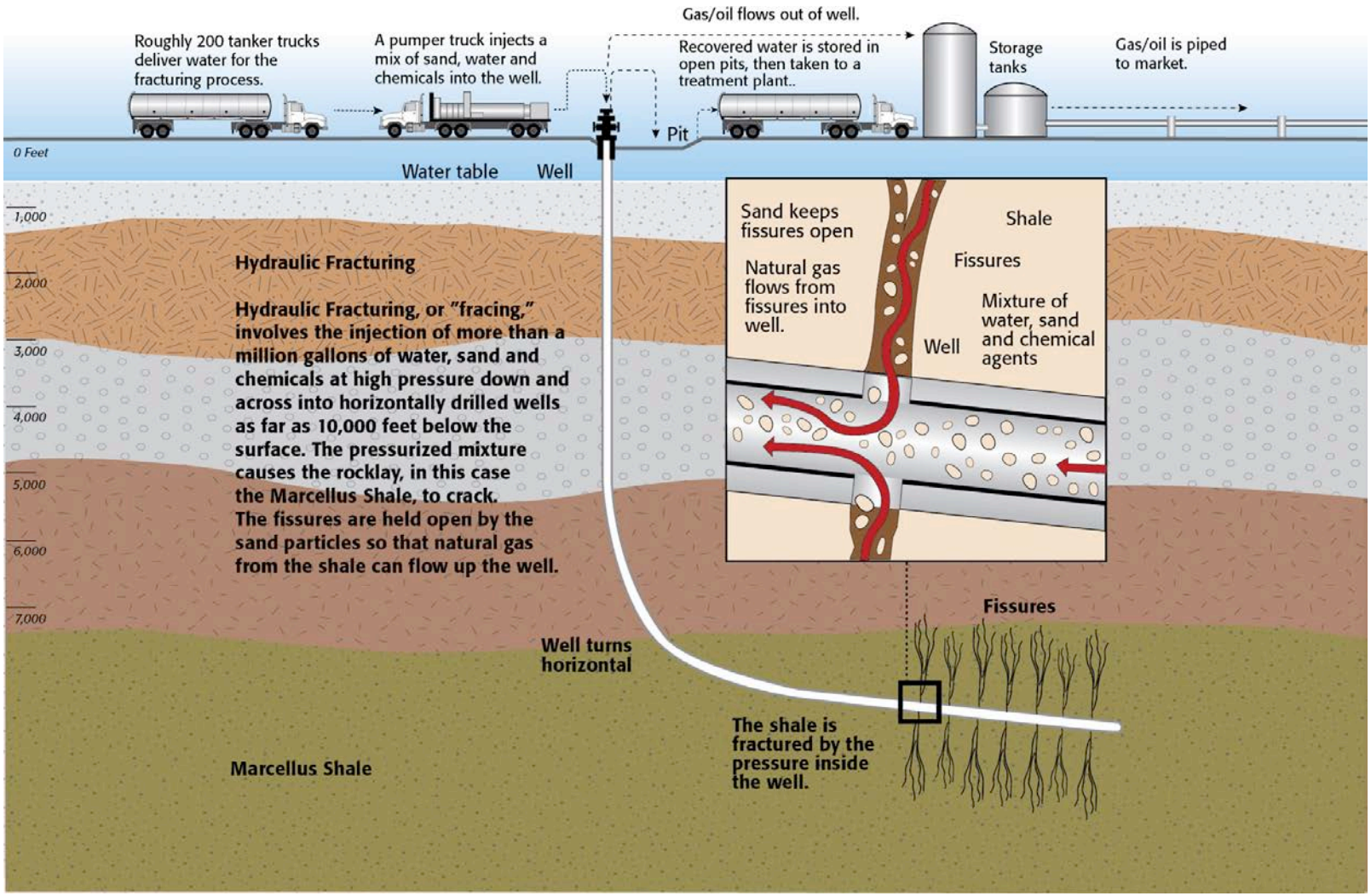
# Horizontal Drilling and Hydraulic Fracturing

- **Horizontal Drilling – Horizontal wells are drilled down and sideways to expose more of the well to productive reservoir layers.**
- **Hydraulic Fracturing – A liquid is pumped into a shale reservoir under such tremendous pressure that it cracks the reservoir rock. This creates channels through which hydrocarbons can travel, improving permeability.**




Source: http://www.investingdaily.com/tes/16405/oil-shale-versus-shale-oil.html

# A Simplified View of Horizontal Fracturing



# Tank Truck and Dry Bulk Transports




- **Liquid Transports**
  - 75% of all oil being moved from the well pad is moved by truck
  - Capacity: 200 barrels per tanker
  - Used to move various liquids to/ from the wellhead:
  - Completion fluids (chemicals, etc.)
  - Water/wastewater
  - Diesel fuel
  - Crude oil
- **Dry Bulk Transports**
  - Frac sand

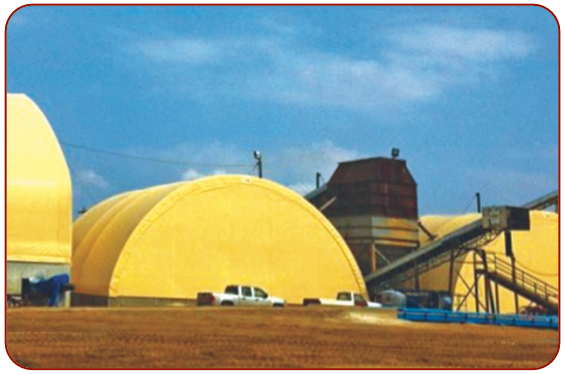
- **1012 truckloads, one way, to bring a single well into production**
  - 270 truckloads of gravel (to build the well pad)
  - 80 truckloads of sand
  - 400 truckloads of fresh water
  - 200 truckloads of waste water
  - 100 truckloads of Frac tanks
  - 50 truckloads of rig equipment
  - 50 truckloads of drilling mud
  - 4 truckloads of chemicals
  - 15 truckloads of cement
  - 10 truckloads of pipe
  - 80 truckloads of scoria/graveal
  - 7 truckloads of fuel
  - 15 truckloads of Frac/Cement pumper truck
  - 1 truckload – work-over rigs

*SOURCE: http://synergystation.com/infrastructure/transportation/bakken-oil-field-truck-traffic-taxes-community-infrastructure/

# The Chemistry of Hydraulic Fracturing

- Water and sand comprises 98% of volumes in hydraulic fracturing operations
- Chemical additives allow fracturing to be performed in a safe and effective manner
- Approximately 40,000 gallons of chemicals are used per fracturing
- Approximately 1.8 million gallons for water is required per fracturing
- It requires and average of 400 tanker trucks to carry water and supplies

# Fracture Sands – A Key Ingredient

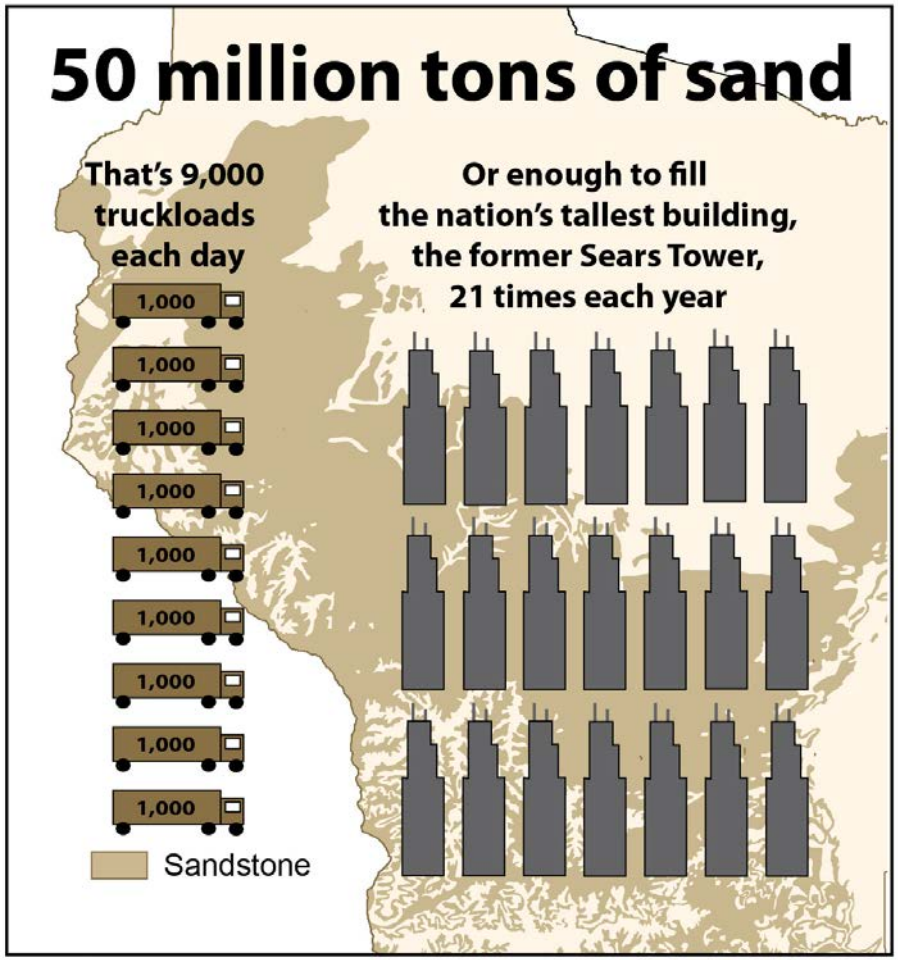


- Sand is mined locally – generally shipped by rail or truck

- Sands are typically transloaded from rail to truck for the last mile to the wellsite
- Each railcar holds up to five truck loads

- Sands are mixed with water and other liquids on site and pumped down the well bore

# Fracture Sands – A Key Ingredient




- Trucks are loaded at the sand mine and transport either directly to the well site or to a transloading hub – where the sand is moved by rail, then back to a truck for the final delivery to the well site.
- Frac sand is found mostly in four states: MI, WI, TX, and LA.
- Between 80 to 150 loads of sand are required for each fracking operation
- 600,000 and 800,000 pounds of frac sand are typically stored on site
- In Wisconsin alone, it is projected that 9,000 truckloads of sand per day will be shipped to fracking sites.

# Typical Fracturing Process Well Site Equipment

## Well Site Preparation – Access Road Construction

### Overview

Newly constructed access roads are typically unpaved and are generally 20-40 feet wide providing access to the well pad.
Typically, this is a local engineering & construction company specializing in this type of work.

| Construction Equipment | Quantity |
|---|---|
| Excavator | 2 |
| Grader | 2 |
| Bulldozer | 2 |
| Compactor | 2 |
| Water Truck | 2 |
| Dump Truck | 2 |
| Loader | 1 |
| Excavator | 2 |
| Grader | 2 |
| Bulldozer | 2 |
| Compactor | 2 |
| Water Truck | 2 |
| Dump Truck | 2 |
| Loader | 1 |

## Well Site Preparation – Access Road Construction

### Overview

Prior to the installation of a well, the site must be cleared and graded to make room for the necessary drilling equipment.
Typically, this is a local engineering & construction company specializing in this type of work.

| Construction Equipment | Quantity |
|---|---|
| Excavator | 1 |
| Bulldozer | 1 |
| Water Truck | 1 |
| Dump Truck | 2 |
| Pick Up Truck | 2 |

## Well Site Preparation – Access Road Construction

### Overview

Once initiated, the drilling operation continues 24 hours a day until completion.
This stage precedes the horizontal drilling phase.

| Construction Equipment | Quantity |
|---|---|
| Drill Rig Drive Engine | 1 |
| Compressors | 4 |
| Hurricane Booster | 3 |
| Compressor Exhaust | 1 |
| Mud Pumps | 2 |
| Transport Trucks | 20 |
| Rig Transport | 1 |
| Bucket Loader | 1 |
| Telehandler | 1 |
| Light Trucks | 5 |
| Service Trucks | 2 |
| Power Gen (lighting) | 6 |

# Typical Fracturing Process Well Site Equipment

## Horizontal Well Drilling

### Overview

Once initiated, the drilling operation continues 24 hours a day until completion.

| Construction Equipment | Quantity |
|---|---|
| Rig Drive Motor | 1 |
| Generator | 3 |
| Top Drive | 1 |
| Draw Works | 1 |
| Triple Shaker | 1 |
| Mud Pumps | 2 |
| Transport Trucks | 20 |
| Rig Transport | 1 |
| Bucket Loader | 1 |
| Telehandler | 1 |
| Light Trucks | 5 |
| Service Trucks | 2 |
| Power Gen (lighting) | 6 |
| Catwalk | 1 |
| Compressors | 2 |

## High-Volume Hydraulic Fracturing

### Overview

During the fracturing process, water, sand and other additives are pumped under high pressure into the formation to create fractures. Up to 20 diesel-pumper trucks operating simultaneously are necessary.

Similar to the other aspects of the drilling process, fracturing sites require the use of support equipment and vehicles.

Well Stimulation & Intervention System OEMs build the fracturing equipment. Oil Field Drilling & Services Companies own, operate and maintain this equipment, sometime with the support of preventative maintenance services providers.

| Construction Equipment | Quantity |
|---|---|
| Pumper Truck<br>o 12V4000 o 16V4000 | 20 |
| Blenders | 2 |
| Chemical Additive | 2 |
| Data Acquisition & Control | 1 |
| Acidizing Unit | 2 |
| Proppant (Sand) Trucks | 2 |
| Fresh Water Trucks | 2 |
| Waste Water Removal | 4 |
| Drilling Fluids Trucks | 2 |
| Pick Up Trucks | 5 |
| Refueling Truck | 1 |
| Draw Works | 1 |
| Transport Trucks | 20 |
| Service Trucks | 2 |
| Power Gen (Lighting) | 6 |
| Telehandler | 1 |
| Bucket Loader | 1 |

# Typical Fracturing Process Well Site Equipment Overview

| Well Pad Activity | Early Well Pad Development (all water transported by truck) | | Peak Well Pad Development (pipelines may be used for some water transport) | |
|---|---|---|---|---|
| | Heavy Truck | Light Truck | Heavy Truck | Light Truck |
| Drill pad construction | 45 | 90 | 45 | 90 |
| Rig mobilization[2] | 95 | 140 | 95 | 140 |
| Drilling fluids | 45 | | 45 | |
| Non-rig drilling equipment | 45 | | 45 | |
| Drilling (rig crew, etc.) | 50 | 140 | 50 | 140 |
| Completion chemicals | 20 | 326 | 20 | 326 |
| Completion equipment | 5 | 326 | 5 | |
| Hydraulic fracturing equipment (trucks and tanks) | 175 | | 175 | |
| Hydraulic fracturing water hauling[3] | 500 | | 60 | |
| Hydraulic fracturing sand | 23 | | 23 | |
| Produced water disposal | 100 | | 17 | |
| Final pad prep | 45 | 50 | 45 | 50 |
| Miscellaneous | - | 85 | - | 85 |
| Total One-Way, Loaded Trips Per Well | 1,148 | 831 | 625 | 831 |

Source: All Consulting 2010.

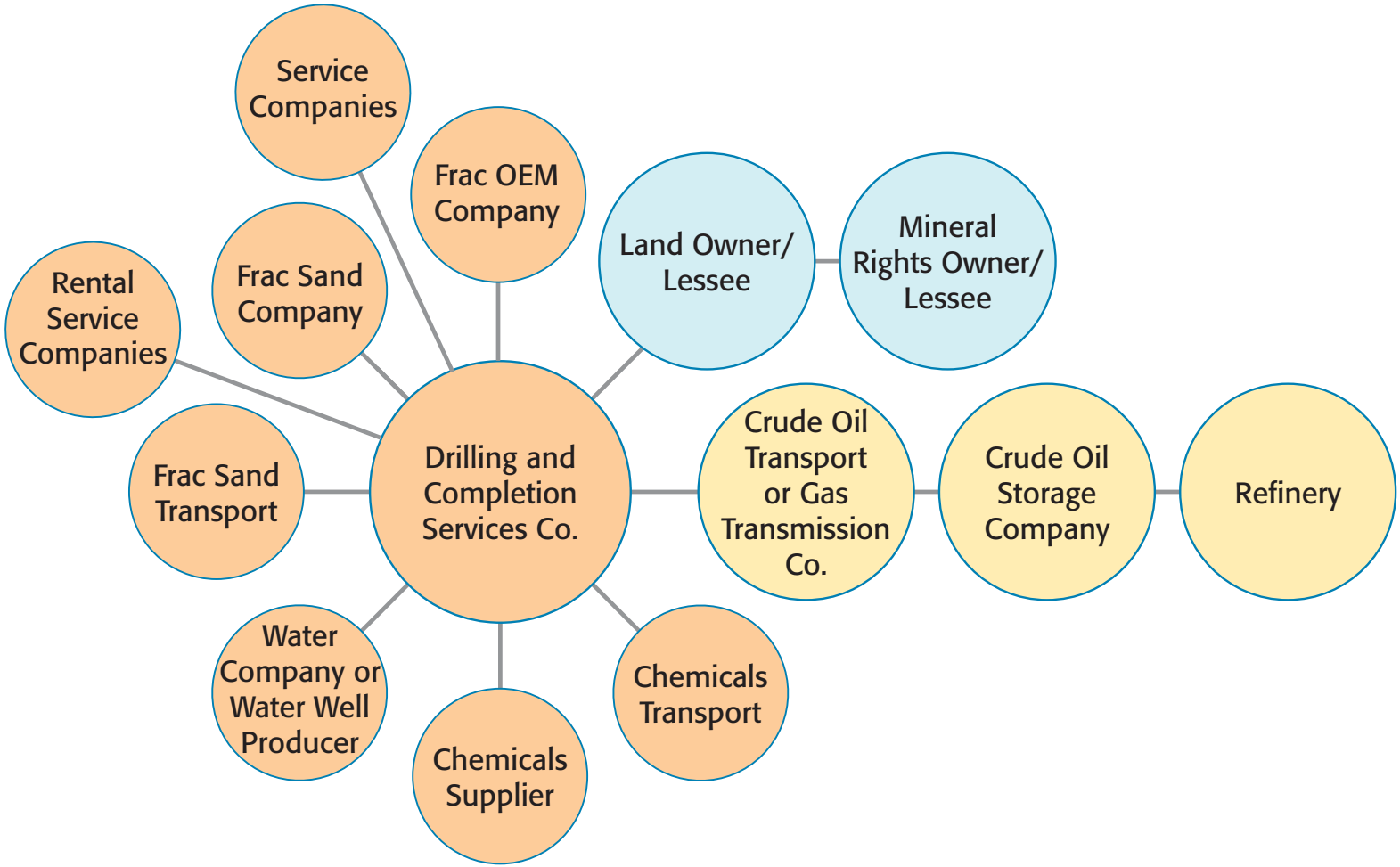
1. Estimates are based on the assumption that a new well pad would be developed for each single horizontal well. However, industry expects to initially drill two wells on each well pad, which would reduce the number of truck trips. The well pad would, over time, be developed into a multi-well pad.
2. Each well would require two rigs, a vertical rig and a directional rig.
3. It was conservatively assumed that each well would use approximately 5 million gallons of water total and that all water would be trucked to the site. This is substantially greater than the likely volume of water that would be trucked to the site.

# Typical Fracturing Process Well Site Equipment Overview

| Well Pad Activity | Early Well Pad Development (all water transported by truck) | | Peak Well Pad Development (pipelines may be used for some water transport) | |
|---|---|---|---|---|
| | Heavy Truck | Light Truck | Heavy Truck | Light Truck |
| Drill pad construction | 32 | 90 | 25 | 90 |
| Rig mobilization[2] | 50 | 140 | 50 | 140 |
| Drilling fluids | 15 | | 15 | |
| Non-rig drilling equipment | 10 | | 10 | |
| Drilling (rig crew, etc.) | 30 | 70 | 30 | 70 |
| Completion chemicals | 10 | 72 | 10 | 72 |
| Completion equipment | 5 | | 5 | |
| Hydraulic fracturing equipment (trucks and tanks) | 75 | | 75 | |
| Hydraulic fracturing water hauling[3] | 90 | | 25 | |
| Hydraulic fracturing sand | 5 | | 5 | |
| Produced water disposal | 42 | | 26 | |
| Final pad prep | 34 | 50 | 34 | 50 |
| Miscellaneous | - | 85 | - | 85 |
| Total One-Way, Loaded Trips Per Well | 398 | 507 | 310 | 507 |

Source: All Consulting 2010.

# Market Structure



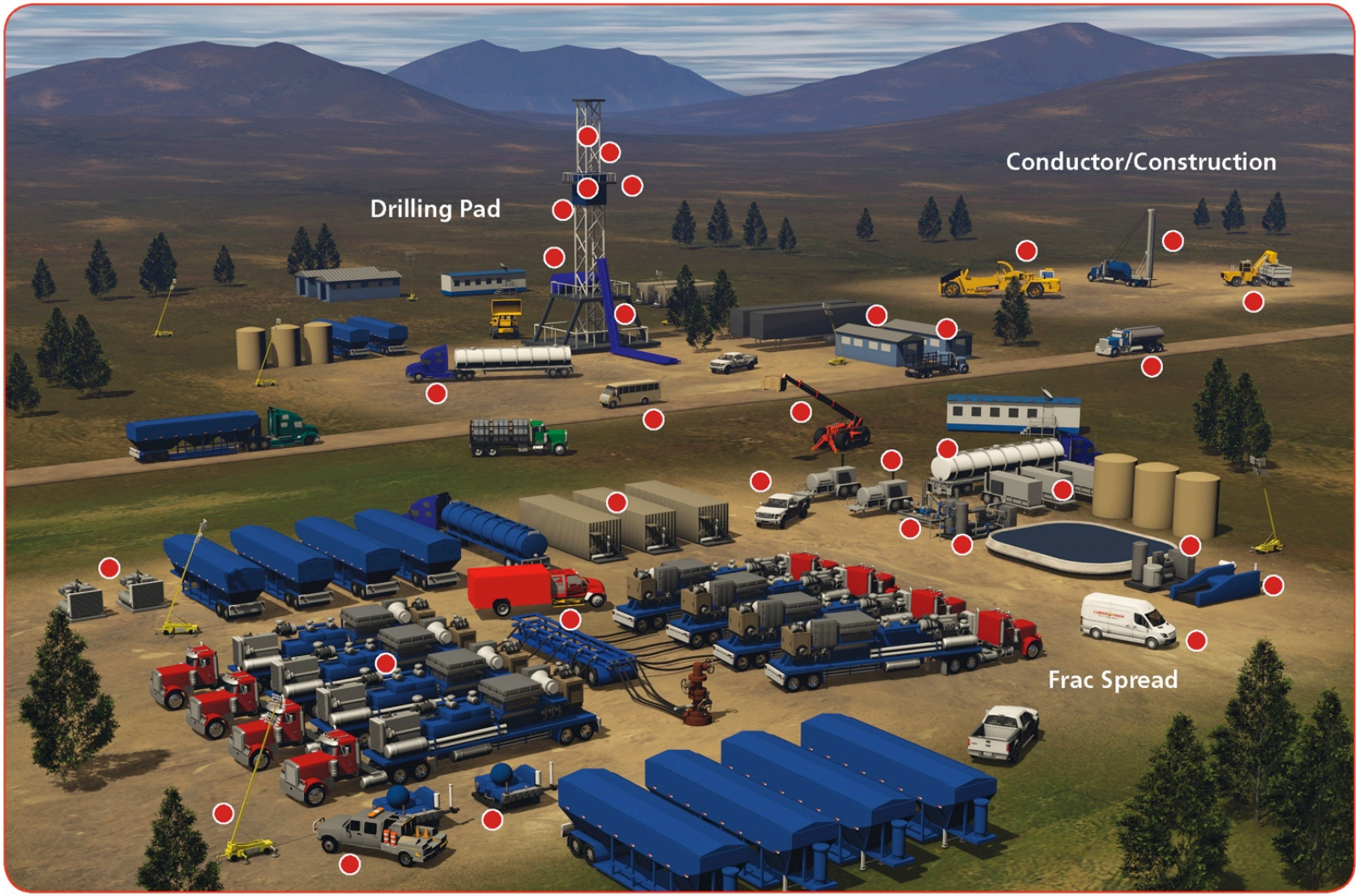
# Market Overview – Key Players

| Energy Producers (Exploration & Production) | Well Field & Drilling Services | Frac Sand Company | Equipment, Engineering & Construction | Equipment Rental Companies |
|---|---|---|---|---|
| **Independent Oil/Gas Companies** | **Major Players** | **Major Players** | **Major Players** | **Major Players** |
| Continental Resources | Halliburton Company | Carbo Ceramics | Nat'l Oil Well / Varco | Hertz |
| EOG Resources Inc. | Schlumberger Limited | DG Concepts | Tanaris | Arts |
| Magellan Petroleum Corp. | Baker Hughes Incorporated | Oglebay Norton Co. | FMC Corporation | 3G Manifold LLC |
| Petrohawk Energy Corp. | Weatherford International Ltd. | Texas Silica | Fluor | Baker Tanks and Pumps |
| Pioneer Natural Resources Inc. | Petrofrac | FlexFrac | Technip | CAROL Rigging and Lifting Engineering |
| Anadarko Petroleum Corp. | Transocean Ltd. | Baker Atlas | Saipem S.p.A. | Equimo, Ltd. |
| Chesapeake Energy Corp. | BJ Services | Arkhola Sand and Gravel Co. | Jacobs | FieldCo Energy Services |
| Dominion Resources Corp. | Major Drilling Group Int'l | Cal Silica | Cameron | Innovative Gas Systems - IGS - Generon |
| XTO Energy Inc. | Petroleum Geo-Services ASA | Anthracite Filter | JGC Corp | Oil States Industries, Inc. |
| Exxon Mobil Corp. | Precision Drilling Corporation | Media Co. | Keppel | |
| Southwestern Energy | Ensco | Western Garnet International | Sembcorp Industries | |
| Quicksilver Resources | Nabor Inds Ltd. | | | |
| | Parker Drilling | | | |
| | Pioneer Drilling | | | |

# Market Overview – Key Players

| Equipment Services Company | Fracturing Equipment Manufacturers | Chemical Transport & Pipeline | Midstream Oil & Gas Transport/ Infrastructure | Terminals UST/Storage | Refinery |
|---|---|---|---|---|---|
| **Major Players** | **Major Players** | **Major Players** | **Major Players** | **Major Players** | **Major Players** |
| Fleetserv | PSI Frac Logistics | Buckeye GP Holdings L.P. | Kinder Morgan, Inc. | Kinder Morgan | CenTrica plc |
| EPM | Stewart & Stevenson | Copano Energy, LLC | M3 Midstream | Apex Oil | Delek US Holdings, Inc. |
| | PSI Frac Logistics | El Paso Corporation | American Refining Group, Inc. | Buckeye Terminals | GeoBio Energy, Inc. |
| | Stewart & Stevenson | Energy Transfer Equity, L.P. | Dominion Resources, Inc. | Magellan Midstream | Green Mountain Energy Company |
| | Wabash National Corp | Gas Transmission Northwest Corporation | ExxonMobil Pipeline Company | Partners | Hess Corporation |
| | Utility Trailer Manufacturing Co. | Great Lakes Gas Transmission Company | Sunoco Inc. | NuStar Energy | Indian Oil |
| | Great Dane Ltd. Partnership | Kinder Morgan | Williams Midstream | Vopak Terminal | Corporation Limited |
| | Hyundai Translead | Plains All American Pipeline, L.P. | U.S. Development Corp. | Westway Terminal | Marathon Oil Corporation |
| | Stoughton Trailers | | | World Point Terminals | NexGen Biofuels Ltd. |
| | Vanguard National Trailer Corp | | | TransMontaigne | |
| | Schlumberger Ltd. | | | Motiva Enterprises LLC | |

# Products to Applications



# Products to Applications


- **Heavy-Duty Lube Filters**
  - Extra-Strength Spiral Core that resists high-pressure surges for long duration activity
  - Higher Efficiency Filtering Media for extra dirt-holding capacity in harsh environments
  - Durable Vibration-Resistant Gasket for a positive seal
  - Built for extended change intervals


- **Heavy-Duty Fuel Filters**
  - More Efficient Filtration - Durable, leak-proof construction reduces risk of failure during crutial operations
  - Easier Installation - Reduces downtime, labor costs and mess associated with changing plastic bowl filters
  - Designed for operation in extreme conditions

# Products to Applications


- **Heavy-Duty Air Filters**
  - Removes 99.91% of airborne contaminants
  - Reduces filter changes and labor costs
  - Increased capacity reduces downtime and service
  - Reduces engine damage in harsh conditions


- **Heavy-Duty Cabin Air Filters**
  - Trap most harmful pollutants before they reach your cab interior
  - Cleaner, healthier passenger cab during long service operations
  - Provide cleaner air from allergens and extreme dust environments

# Products to Applications

Hydraulic Filters

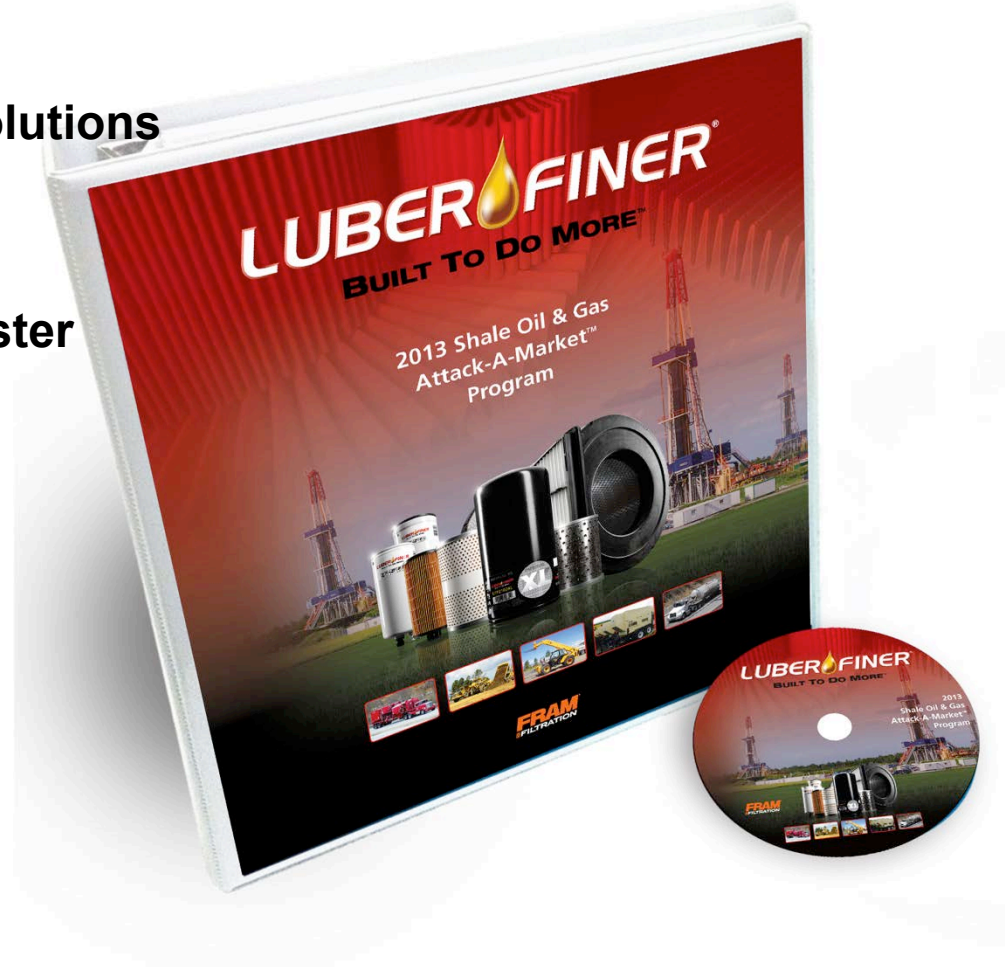
Coolant Filters

- **Heavy-Duty Hydraulic Filters**
  - A long lasting, anti-drainback valve for extended protection against dry starts
  - Easy-Turn low-torque valve
  - All-metal housings that deliver higher burst and pulse-fatigue strength
  - High-performance media designed to trap microscopic contaminants
  - LH 60 Synthetic Media that delivers high performance and up to 99% efficiency

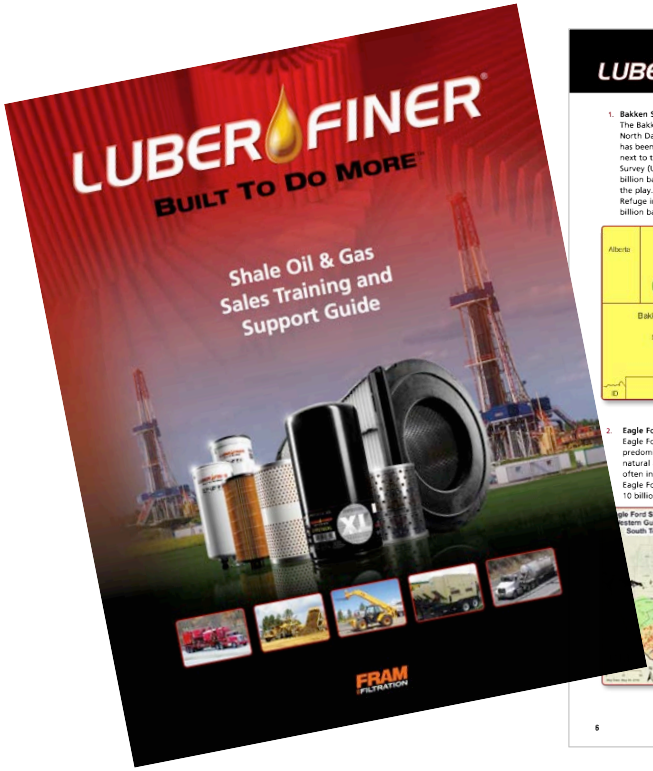
- **Heavy-Duty Coolant Filters**
  - A Durable Epoxy-Coated Shell that resists rust and corrosion during extended service
  - Patented Controlled Release Technology (CRTâ„¢) that releases controlled levels of supplemental coolant additive to protect against rust, scale and other build-up
  - High-Efficiency Synthetic Media designed for extended service levels

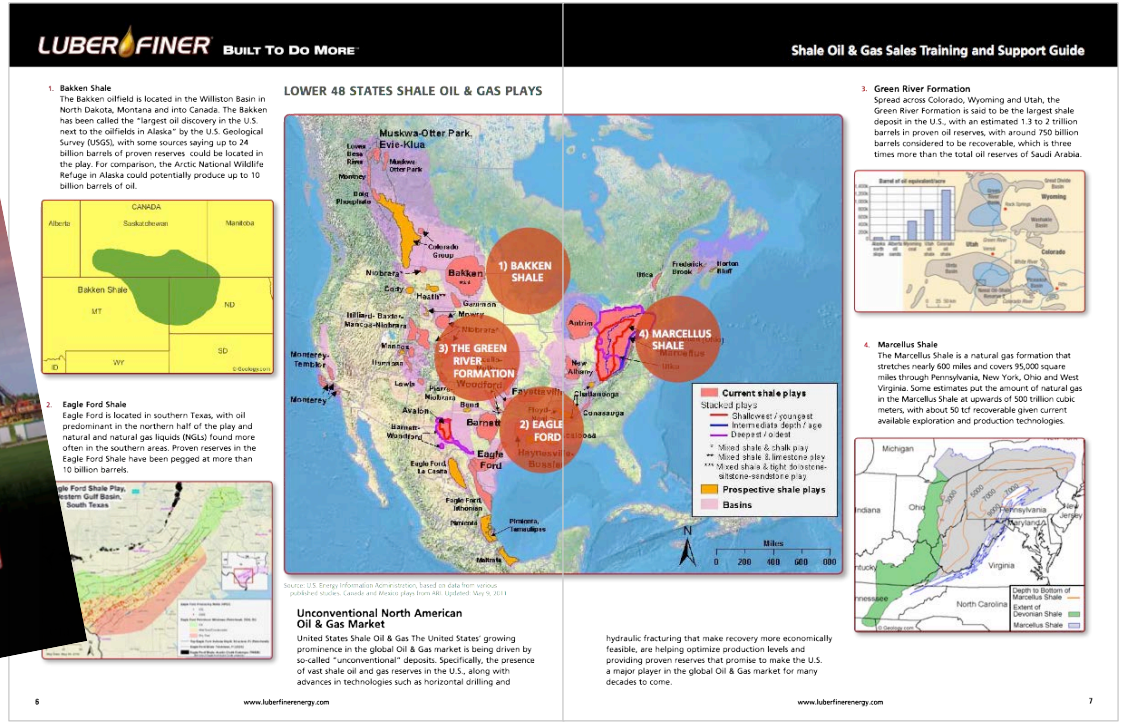
# Sales Support Tools

- Market Education/Training Guide
- End-User Brochure – Luber-finer Solutions
- Product-To-Applications Guides
- Micro Website
- The Applications We Serve Wall Poster
- Advertisements
- Publicity
- Key Players
- Glossary Of Terms



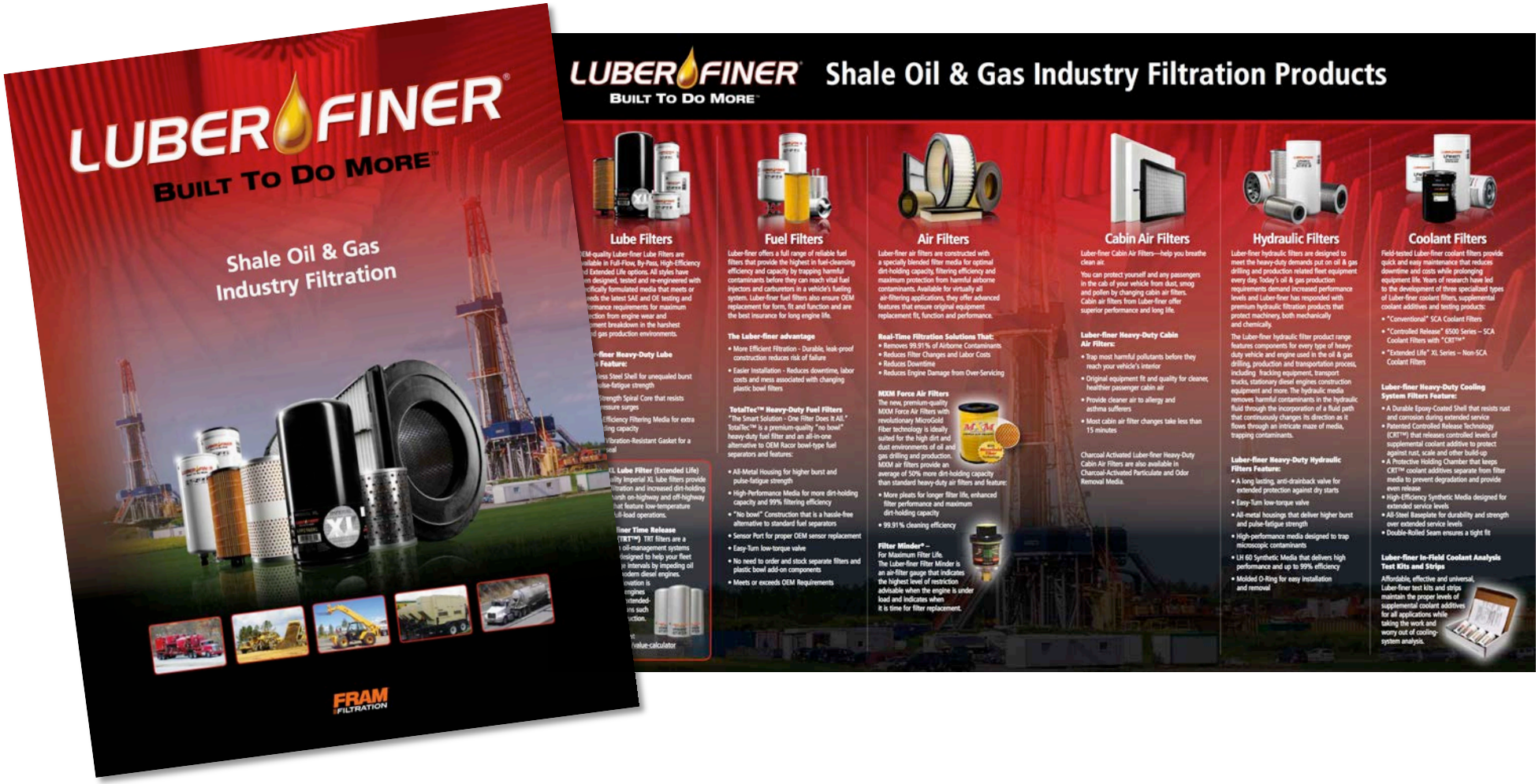
# Shale Oil and Gas Education and Training Guide




- The Training Guide is intended to provide a general overview of the shale oil and gas industry for Luber-finer Sales personnel and channel partners
- This tool will also provide a better understanding of the market potential for Luber-finer Filters in the burgeoning world of shale oil and gas production

# End-User Brochure – Luber-finer Solutions



# Products to Applications

## Luber-finer Provides Extensive Filter Cover for Wide Range of Heavy-Duty Vehicles

| Desc | Catalog No. | Application Type | OEM# | Fleetguard | Donaldson | Wix | Baldwin |
|---|---|---|---|---|---|---|---|
| Air | LAF1849 | Heavy Duty On/Off Hwy Trucks w/Detroit Diesel & Cummins engines | FA-1077 | AF25139M | P527682 | 46556 | RS3518 |
| Air | LAF3551 | Heavy Duty On-Hwy Trucks w/Cummins, Caterpillar engines | P153551 | AF1968 | EAF5053 / P153551 | 46883 | PA2705 |
| Air | LAF4816 | Freightliner, Kenworth, Peterbilt, Western Star - Heavy Duty Trucks | 89002289 | AF25247 | EAF5100 / P534816 | 42971 | RS3539 |
| Air | LAF8388 | Bobcat, Carrier-Transicold, Caterpillar, John Deere, Komatsu, Magnum, Volvo - Utility Vehicles, Exavators, Skid Steer Loaders, Auxilliary Power Units | M-113621 | AF25550 | P822686 | 46449 | PA4632 |
| Coolant | LFW4075 | Case, Cummins, Doosan, Euclid, Hitachi, Freightliner, Hyundai, John Deere -Construction, Dump Trucks, Excavators, Wheel Loaders, Loaders | 3318318 | WF2075 | P552075 | 24075 | BW5075 |
| Fuel | LFF1000 | Dump Trucks, Wheel Loaders, Construction, Heavy Trucks, Excavators, Loaders -w/Cummins Engines | 3889716 | FS1000 | P550901 | 33406 | BF1259 |
| Fuel | LFF2749 | Compactors & Paving Equip, Crawler Tractors, Dump Trucks, Industrial, Mining, Scrapers, Pipelayers, Wheel Dozers, Heavy Trucks w/Caterpillar Engines | 1R-0749 | FF5319 | P551311 | 33674 | BF7587 |
| Fuel | LFP815FN | Bedford - Compressors, Dumpers, Loaders, Motor Graders, Chevrolet/ GMC - HD Trucks | 6438839 | FF5207 | P556915 | 33118 | BF5800 |
| Fuel | LS667F | Detroit Diesel, Caterpillar, Maxxforce, Paccar Engines, Heavy Duty On Hwy Trucks w/Cummins engines | 23529168 | FS19624 | P550467 | 33651XE | PF7748 |
| Hydraulic | LFH5013 | Bell, Caterpillar, Ingersoll-Rand, Champion, Volvo - Articulated Dump Trucks, Backhoe Loaders, Crawler Tractors, Crawler Loaders, Telescopic Handlers, Wheel Loaders, Graders, Compressors, Drills | 9T-0973 | HF6586 | P165569 | 51721 | BT8876-MPG |
| Lube | LFP2160 | Gen Sets, Dump Trucks with - w/Series 50 Detroit Diesel engs., All Series 60 Detroit engs. built beginning in December, 1992. | 25014505 | LF3620 | P552100 | 51971 | B495 |
| Lube | LFP3191 | Caterpillar - Wheel Loaders, Dump Trucks, Compactors, Crawler Loaders, Excavators, , Lift Trucks, Articulated Dump Trucks, Mack HD On Hwy Trucks | 2P-4004 | LF667 | P553191 | 51791 | B76 |
| Lube | LFP4005 | Caterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors | 2P-4005 | LF3374 | P554105 / P554005 | 51792 | B99 |
| Lube | LFP3000 | Construction, Concrete Mixers, Dump Trucks, Excavators, Wheel Loaders, Loaders, Graders, Scrapers, Compressors, Drills, HD Trucks, Dozers w/Cummins engines | 3318853 | LF3000 | P553000 | 51748 | BD103 |
| Lube | LFP2285 | Heavy Duty On Hwy Trucks - w/Navistar DT and Detroit Diesel engines | 1819452C1 | LF3883 | P550367 / P550512 | 51799 | B7030 |
| Lube | PH2808 | Airman, Bobcat, Case, Caterpillar, Doosan, Earth-force, Gehl, Hitachi, Kobelco, Komatsu, John Deere, New Holland, Volvo, Yanmar - Backhoes, Loaders, Lift Trucks Excavators, Skid Steer Loaders, Transporters, Compressors, Auxiliary Power Units, Wheel Loaders, Generators, Light Towers | 1146934 | LF16034 | P502049 / P550162 | 51064 | B1421 |
| Lube | PH2835 | Caterpillar, Freightliner, Gardner-Denver, Hesston, International, JCB, John Deere, Kenworth, Komatsu, Kramer/Allirad, Miller Electric, Mack, New Holland, Parks Industries LLC, Peterbilt, Volvo - Skid Steer Loaders, Compactors & Paving Equip., Industrial, HD Trucks, Excavators, Generators, Welders, Wheel Loaders, Auxiliary Power Units | 93156323 | LF3335 | P550335 | 51348 | BT223 |
| Lube | LFP8642 | Ackerman, Kalmar, Volvo - Excavators, Compactors, Lift Trucks, Articulated Dump Trucks, Loaders, Motor Graders, Mack Dump Trucks | 20B43764 | LF3410 | P550425 | 51660 | B7409 |
| Lube | LFP3000XL | Construction, Concrete Mixers, Dump Trucks, Excavators, Wheel Loaders, Loaders, Graders, Scrapers, Compressors, Drills, HD Trucks, Dozers - w/Cummins engines | 89002945 | LF9009 | ELF7300 | 51748XD | BD7309 |
| Lube | LFP3236 | Caterpillar - Compactors & Paving Equipment, Wheel Loaders, Crawler Tractors Mack, Freightliner - HD Trucks, | 485GB3236 | LF3973 | P551807 | 57791 | B7225 |
| Lube | LFP4005RN | Caterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors | 2P-4005 | LF3566 | P551808 | 51792XE | B7245 |
| Lube | LFP2160XL | Gen Sets, Dump Trucks with - w/Series 50 Detroit Diesel engs. All Series 60 Detroit engs. built beginning in December, 1992 | 23523701 | LF9620 | ELF2500/ ELF3998 | 51971XD | B495-MPG |
| Lube | LFP4005XL | Caterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors | 2P-4005 | LF9691A | ELF7405 / P554005 | 51792XD | B7249-MPG |
| Lube | LFP449 | Bobcat, Case, Caterpillar, Challenger, Champion, IHC, John Deere, New Holland Skid Steer Loaders, Cable Layers, Compactors & Paving Equip., Graders, Skid Steer Loaders, Concrete Mixers, Cable Layers, Rollers | 342449 | HF6167 | P550388 | 51759 | BF853 |
| Lube | LFP2292 | Ahlman, Akerman, Barber Green, Bobcat, Broyt, Carrier-Transicold, Case, Caterpillar, Claas, Clark, Daewoo, ERF, Fermec, Ford, Gehl, JCB, Komelco, Komatsu, Hanomag, Leyland, Manitou, Massey-Ferguson - Excavators, Motor Graders, Telehandlers, Skid Steer Loaders, Excavators, Telescopic Handlers, Backhoe Loaders, Compactors & Paving Equipment, Crawler Tractors, Wheel Loaders, Lift Trucks, Construction Equipment, Compactor Rollers, Generators,Transporters, Loaders, Pegaso & Volvo HD Trucks | 2654407 | LF699 | P554407 | 51459 | BT217 |

| Application Type | OEM# | Fleetguard | Donaldson | Wix | Baldwin |
|---|---|---|---|---|---|
| Heavy Duty On/Off Hwy Trucks w/Detroit Diesel & Cummins engines | FA-1077 | AF25139M | P527682 | 46556 | RS3518 |
| Heavy Duty On-Hwy Trucks w/Cummins, Caterpillar engines | P153551 | AF1968 | EAF5053 / P153551 | 46883 | PA2705 |
| Freightliner, Kenworth, Peterbilt, Western Star - Heavy Duty Trucks | 89002289 | AF25247 | EAF5100 / P534816 | 42971 | RS3539 |
| Bobcat, Carrier-Transicold, Caterpillar, John Deere, Komatsu, Magnum, lvo - Utility Vehicles, Exavators, Skid Steer Loaders, Auxilliary Power Units | M-113621 | AF25550 | P822686 | 46449 | PA4632 |
| se, Cummins, Doosan, Euclid, Hitachi, Freightliner, Hyundai, John Deere -Construction, Dump Trucks, Excavators, Wheel Loaders, Loaders | 3318318 | WF2075 | P552075 | 24075 | BW5075 |
| Dump Trucks, Wheel Loaders, Construction, Heavy Trucks, Excavators, Loaders -w/Cummins Engines | 3889716 | FS1000 | P550901 | 33406 | BF1259 |
| mpactors & Paving Equip, Crawler Tractors, Dump Trucks, Industrial, Mining, Scrapers, Pipelayers, Wheel Dozers, Heavy Trucks w/Caterpillar Engines | 1R-0749 | FF5319 | P551311 | 33674 | BF7587 |
| Bedford - Compressors, Dumpers, Loaders, Motor Graders, Chevrolet/ GMC - HD Trucks | 6438839 | FF5207 | P556915 | 33118 | BF5800 |
| Detroit Diesel, Caterpillar, Maxxforce, Paccar Engines, Heavy Duty On Hwy Trucks w/Cummins engines | 23529168 | FS19624 | P550467 | 33651XE | PF7748 |
| Bell, Caterpillar, Ingersoll-Rand, Champion, Volvo - Articulated Dump Trucks, Backhoe Loaders, Crawler Tractors, Crawler Loaders, Telescopic Handlers, Wheel Loaders, Graders, Compressors, Drills | 9T-0973 | HF6586 | P165569 | 51721 | BT8876-MPG |
| n Sets, Dump Trucks with - w/Series 50 Detroit Diesel engs., All Series 60 Detroit engs. built beginning in December, 1992. | 25014505 | LF3620 | P552100 | 51971 | B495 |
| aterpillar - Wheel Loaders, Dump Trucks, Compactors, Crawler Loaders, cavators, , Lift Trucks, Articulated Dump Trucks, Mack HD On Hwy Trucks | 2P-4004 | LF667 | P553191 | 51791 | B76 |
| terpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors | 2P-4005 | LF3374 | P554105 / P554005 | 51792 | B99 |
| onstruction, Concrete Mixers, Dump Trucks, Excavators, Wheel Loaders, Loaders, Graders, Scrapers, Compressors, Drills, HD Trucks, Dozers w/Cummins engines | 3318853 | LF3000 | P553000 | 51748 | BD103 |
| Heavy Duty On Hwy Trucks - w/Navistar DT and Detroit Diesel engines | 1819452C1 | LF3883 | P550367 / P550512 | 51799 | B7030 |
| Airman, Bobcat, Case, Caterpillar, Doosan, Earth-force, Gehl, Hitachi, Kobelco, Komatsu, John Deere, New Holland, Volvo, Yanmar - Backhoes, eaders, Lift Trucks Excavators, Skid Steer Loaders, Transporters, Compressors, Auxiliary Power Units, Wheel Loaders, Generators, Light Towers | 1146934 | LF16034 | P502049 / P550162 | 51064 | B1421 |
| Caterpillar, Freightliner, Gardner-Denver, Hesston, International, JCB, John Deere, Kenworth, Komatsu, Kramer/Allirad, Miller Electric, Mack, New Holland, Parks Industries LLC, Peterbilt, Volvo - Skid Steer Loaders, Compactors & Paving Equip., Industrial, HD Trucks, Excavators, Generators, Welders, Wheel Loaders, Auxiliary Power Units | 93156323 | LF3335 | P550335 | 51348 | BT223 |
| Ackerman, Kalmar, Volvo - Excavators, Compactors, Lift Trucks, Articulated Dump Trucks, Loaders, Motor Graders, Mack Dump Trucks | 20B43764 | LF3410 | P550425 | 51660 | B7409 |
| onstruction, Concrete Mixers, Dump Trucks, Excavators, Wheel Loaders, Loaders, Graders, Scrapers, Compressors, Drills, HD Trucks, Dozers - w/Cummins engines | 89002945 | LF9009 | ELF7300 | 51748XD | BD7309 |
| terpillar - Compactors & Paving Equipment, Wheel Loaders, Crawler Tractors Mack, Freightliner - HD Trucks, | 485GB3236 | LF3973 | P551807 | 57791 | B7225 |
| aterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors | 2P-4005 | LF3566 | P551808 | 51792XE | B7245 |
| Gen Sets, Dump Trucks with - w/Series 50 Detroit Diesel engs. All Series 60 Detroit engs. built beginning in December, 1992 | 23523701 | LF9620 | ELF2500/ ELF3998 | 51971XD | B495-MPG |
| aterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors | 2P-4005 | LF9691A | ELF7405 / P554005 | 51792XD | B7249-MPG |
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# Micro Website – www.luberfinerenergy.com

# The Shale Oil and Gas Applications We Serve


## Wall Poster

- Potentially distributed as a polybag insert in Oil & Gas Industry Publication
- Circulation to key industry people
- Additional flat posters available

# Sales Support - Advertising



- Group and individual brand ads in key industry publications:
  - American Oil & Gas Reporter
  - Gas Oil & Mining Contractor
  - Oil & Gas & Petrochem Equipment
  - Oil & Gas Product News
  - Well Services

# Sales Support


- Publicity
  - Feature Articles
  - Press Releases
  - White Papers
  - Case Studies
  - Newsletter

# Key Players in Each Segment

LUBER FINER BUILT TO DO MORE Support Services-Cement

Support Services- Cement

**Aquaterra Energy Ltd**
Aquaterra Energy provides world c
winning offshore engineering solu
support for the global oil and gas
Website: www.aquaterraenergy.co

**Baker Hughes**
Core business consists of cementir
coiled tubing services worldwide.
provides casing and tubular servic
industrial commissioning and insp
Website: www.bakerhughes.com

**Baker Hughes**
Baker Hughes, a leader in oilfield s
for oil and gas producers by provi
technology to find, develop, produ
petroleum reservoirs.
Website: www.bakerhughes.com

**Blue Ocean**
Blue Ocean Technologies is a team
subsea engineers, project manage
providing solutions for the subsea
Website: www.blueoceansubsea.c

**Concho Oilfield Services, Inc.**
Concho Oilfield Services provides
workovers, completion, cementing
hauling, pressure pumping, and s
services to customers in West and
the Panhandle. Concho was found
Website: www.conchooilfield.com

**Crosco**
Crosco is an integrated onshore a
and well services contractor. The c
48 modern drilling, workover and
as well as one semisubmersible a
Website: www.crosco.com

LUBER FINER BUILT TO DO MORE Frac Sand Companies

Frac Sand Companies

**Major Players**

**Carbo Ceramics Inc.**
6565 MacArthur Blvd., Ste. 1050
Irving, TX 75039
Phone: 972-401-0090
Fax: 972-401-0705

**DG Concepts**
115 Hunter Pass
Waxahachie, TX 75165-8219
Phone: 972-0351-9042

**Oglebay Norton Industrial Sands, Inc.**
County Rd 259
Brady, TX 76825
Phone: 325-597-0029

**Texas Silica**
P.O. Box 1069
Brady, TX 76825-1069
Phone: 325-218-4777

**Flexfrac Proppant Sand Suppliers LLC**
558 S Central Expy
Richardson, TX 75080-6126
Phone: 972-792-4110

**Baker Atlas**
2001 Rankin Rd.
Houston, TX 77073
Phone: 713-625-4200
Fax: 713-625-4525

**Arkhola Sand & Gravel Co.**
2118 Gate Nine Rd
Greenwood, AR 72936-8102
Phone: 479-996-4188

**Cal Silica**
1420 S. Bon View
Ontario, CA 91761
Phone: 909-938-6505
Fax: 800-540-7557

LUBER FINER Engineering – Field Development

Engineering – Field Development

**Abalt Solutions Limited**
Engineering, consulting and training services to the upstream oil and gas industry.
Website: www.abaltsolutions.com

**ABNL Limited**
ABNL Limited, services Oil and Gas exploration and production companies. Providing Manpower, Contractors, Supervise & Management, EPC, Vendors, for projects worldwide.
Website: www.abnl.net

**Advanced Subsea** - Deepwater Positioning & Survey Company based in Paris, Rio & Houston, offering services in Brasil, GoM, West Africa. Acoustic Rig Positioning Services, AUV for Survey Construction Support; Tie-in Metrology; LBL positioning; Pipeline survey; R&D.
Website: www.advanced-subsea.com

**Aker Maritime**
One team - no boundaries. Aker Maritime is a multilocal group of companies. Together with our customers and partners, our people deliver solutions for the safe and efficient exploitation of offshore oil and gas resources.
Website: www.akermaritime.com

**Amercian Southern Energy LLC**
The company provides a unique combination of traditional data gathering and research methods with modern GIS mapping techniques to provide a well balanced interpretation of geologic/geographic phenomena.
Website: asenergyconsulting.com

**An Independent Perspective on Energy by RSEG**
The Energy Investment Handbook delivers 80 independent reports a year on hot resource plays, competitive strategies, financial engineering, commodity uncertainty, and big picture influences, so energy stakeholders can focus on making decisions.
Website: www.EnergyInvestmentHandbook.com

**Anaya Welding & Lease Service, Inc.**
20+ Years serving South Texas in the oil & gas industry. We perform oilfield construction and pipeline maintenance.
Website: www.anayawelding.com

**Applied Physics Systems**
We specialize in the design and manufacture of EM Dipole Measurement While Drilling (MWD) Systems, Near Bit sensors, Gamma Logging, Directional Sensors, and Magnetometer systems including custom design.
Website: www.appliedphysics.com

**Aquaterra Energy Ltd**
Aquaterra Energy provides world class and award winning offshore engineering solutions and technical support for the global oil and gas industry.
Website: www.aquaterraenergy.com

**Argonauta Energy Services L.L.C.**
Argonauta Energy Services provides worldwide technical consulting services to the upstream oil and gas industry through Argonauta Drilling Services, Argonauta Marine & Subsea, and Argonauta Exploration & Production Services.
Website: www.argonenergy.com

**Atherion Management Services Ltd.**
Project Management
Website: atherion.co.uk

**Atlas Maridan**
Maridan is one of the world leading suppliers of AUV technology and survey services. The company has experience in developing, manufacturing and using AUV for missions ranging from Oil & Gas to Telecomm and archaeology.
Website: www.maridan.dk

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## Organized Classes of Trade

- Producers
- E&P Companies
- Frac Sand Companies
- Terminals/Transloaders
- Transportation Companies
- OEMs (rail and cargo)
- Repair/Rebuilders
- Miscellaneous

**Titles:**

- Drilling Engineer
- Completion Engineer
- Production Technologist
- Facilities Engineer

# Glossary of Common Terms



## Glossary of Terms

**Abandonment:** Oil-and-gas production facilities, located either above or below ground, that are not currently being operated, but are not permanently closed and secured from an environmental perspective

**Accidental Release:** Unintentional releases of oil, produced water, process chemicals and/or natural gas to the environment via human error, equipment malfunction or major equipment failure

**Ancillary Equipment:** In oil-and-gas production, including, but not limited to, the following equipment: auxiliary pumps, pressure relief devices, sampling connection systems, open-ended valves, line valves, and flanges connected to and involved in the proper functioning of a major assemblage of equipment (compressor, pump or distillation tower)

**API Gravity:** The weight per unit volume of hydrocarbon liquids relative to water as measured by a system recommended by the American Petroleum Institute (API). The measuring scale is calibrated in terms of degrees API where pure water is defined as 10 degrees. All degrees higher than 10 are less dense (i.e. they float) than water and all values less than 10 degrees are more dense (i.e. they sink) than water

**Assignment:** The legal instrument whereby Oil & Gas leases or overriding royalty interests are assigned/conveyed

**Associated Natural Gas:** All natural gas that is produced in conjunction with crude oil

**Bitumen:** A naturally occurring viscous mixture consisting of hydrocarbons heavier than pentane and other contaminants which, in its natural state, will not flow under reservoir conditions or ambient temperature; often referred to as ultra-heavy crude oil

**Blanket Gas:** A fuel gas or any inert gas used in conjunction with gas-purge systems that are designed to reduce vapor emissions and ensure that oxygen does not enter the vapor space in a storage tank or vessel

**Blowdown:** The act of depressurizing process equipment and piping, usually to a vent or flare

**Casinghead Gas:** Natural gas that is produced or vented from an oil-well casing when the crude oil is extracted through a tube that extends inside the well casing down to the reservoir

**Central Bitumen Processing Facility:** Features boilers that generate steam that is injected into the reservoir to heat the bitumen, which allows the bitumen, water and amounts of natural gas that are produced to be sent to the central processing facility to be separated

**Central Crude Oil Treating Plant:** Battery system or arrangement of tanks and other surface equipment without any directly associated wells where crude oil is processed primarily to reduce water and volatile gases before transport to a refinery

**Closed-Vent System:** A system that is not open to the atmosphere and is composed of piping, ductwork, connections and, if necessary, flow-inducing devices that transport gas or vapor from a discharge point to one or more control devices

**Cold Recovery:** The production of crude oil that does not involve the use of any thermal techniques

**Compressed Natural Gas (CNG):** Natural gas that is compressed into high-pressure fuel cylinders for use as a transportation or stationary engine fuel

**Compressor Station:** Contains service equipment that increases the flowing pressure of the gas that it receives from a well, battery, gathering system or transmission pipeline for delivery of natural gas to processing, storage or markets

**Control Device:** Any equipment used for recovering or oxidizing vented hydrocarbon vapors, including absorbers, carbon absorbers, condensers, incinerators, flares and vapor-recovery units

**Conventional Crude Oil/Natural Gas:** Crude oil/natural gas that is produced and flows freely from higher permeability reservoirs in easily accessible locations and where reservoir conditions do not require modification to economically extract the crude oil or natural gas

**Crude Oil:** A mixture of hydrocarbons ranging from one carbon (methane) to hundreds of carbon atoms that exist in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure and ambient or elevated temperature after passing through surface separation facilities

**Custody Transfer:** A metering point at a location where a commodity such as natural gas is measured for sale from one party to another

**Custody Transfer Point:** The point where ownership of hydrocarbon liquids or natural gas is transferred from a seller to a buyer or transporter

**Diluent:** Light petroleum liquids used to reduce the viscosity of heavy crude oil, or fractions, particularly bitumen, so that it can flow more easily through pipelines.





**ssolved Natural Gas:** Natural gas that is in solution with de oil in the reservoir at reservoir conditions (temperature pressure); referred to as associated gas when produced and rated from crude oil

**illates:** Typically used to denote hydrocarbon boiling range ons that are too high in boiling point to be blended into ine range products, generally greater than a 350°F (170°C) boiling point. Distillate products include kerosene, diesel and , 2, 4 and 5 fuel oils.

**ine:** A large machine that digs oil sand ore from a mine pit nsfers it into windrows

**g Permit:** In states that regulate well spacing, a drilling s the authorization to drill at a specified location; also s a "well permit"

**ural Gas:** Field natural gas that does not require any g to meet pipeline-quality dew-point requirements

**d Recovery:** The production of crude oil using and/or tertiary recovery techniques

**nt Leaks:** Emissions of natural gas or hydrocarbon equipment components

**drator:** A dehydration unit located upstream of a rocessing plant or battery that controls the amount gas that is destined for a processing plant

**al Gas:** Natural gas extracted from a production s entering the first stage of processing, such as

**s:** Losses that occur during the filling of tank trucks, nd marine tankers

flame used for routine or emergency disposal of

non method of safely disposing by combustion s at oil-and-gas facilities

A device that indicates the relative flow rate of pipeline or duct

cess of pumping fluids into a productive tes of injection to hydraulically break the rock. h are created in the rock act as flow channels the well.

**Fuel Combustion:** Emissions f of fuel typically occurring at oil-a and external combustion devices

**Fugitive Emissions:** Emission through a stack or vent

**Fugitive Equipment Leaks:** fluid to the environment past a se flaw or minor damage point; can improper assembly or use, manuf installation, inspection or mainte use, and environmental effects

**Gas Conditioning:** The proces gas stream in order for it to meet respect to H2S content, water an heating value

**Gas Fractionation:** A distillati gas and refinery/upgrader off-gas fractions in order to recover speci

**Gas Oil:** Medium to heavy disti crude oil and secondary units at used to produce diesel fuel and h

**Gas Production:** Total natural and-gas well

**Gas Sweetening:** A process th sulfide (H2S) and carbon dioxide

**Gate Station:** A station ay whi ownership and where it is comm flow through a splitter system for or areas

**Gas-to-Oil Ratio (GOR):** The gas per unit to volume of crude o

**Greenhouse Gases:** Gases th primary greenhouse gases ate ca (CH4), nitrous oxide (N2O) and fl

**Heavy Crude Oil:** A category relatively high viscosity, a higher relatively higher density; heavy c extract with conventional recover to refine

**Hydrate Control:** The suppres natural gas gathering systems by of heat addition





**Oil Sands:** A term applied to particular geographical areas having bituminous sands, as well as deposits of other heavy crude oil

**Oil Shale:** A laminated, sedimentary rock that contains a solid, waxy hydrocarbon called kerogen that is commingled with the rock structure

**Open-Ended Valves and Lines:** Any valve that may release process fluids directly to the atmosphere in the event of leakage past the valve seat

**Particulate Matter (PM):** The portion of flue gas that exists as a solid or liquid droplet when it leaves the stack and cools to ambient conditions

**Petroleum:** A term sometimes used as a substitute for crude oil and sometimes as a collective term for natural gas and crude oil

**Petroleum Liquids:** Liquid hydrocarbons such as crude oil, diluted bitumen, natural gas liquids, condensate, etc.

**Pig:** A device that is inserted into a pipeline and pushed along by the flowing fluid to perform any number of functions, including cleaning, displacement, batching or internal inspection; gets its name from the squealing noises the pipeline "pigs" made when first used

**Pig Launcher:** A piping arrangement that allows pigs to be inserted into a pipeline without stopping flow

**Pig Receiver:** A piping arrangement that allows pigs to be removed from a pipeline without stopping flow

**Pipeline System:** A network of pipes used to transport gases and liquids

**Pipeline Leak:** Fugitive emissions through a small opening in the wall of the pipeline, generally due to corrosion or material defects, or from valves, fittings or connectors

**Pressure Relief Valves:** Protect process piping and vessels from being accidentally over-pressurized

**Primary Recovery:** The production of crude oil using natural reservoir pressure and/or a simple downhole pump

**Produced Water:** Water that is extracted from the earth from a crude oil or natural gas production well, or that is separated from crude oil, condensate, or natural gas after extraction

**Produced Water Storage:** Atmospheric storage tanks used to store produced water from oil-and-gas facilities prior to transporting it to a disposal or re-injection facility

**Pump Seals:** Packing, with or without a sealant, on positive displacement pumps that controls leakage around the pump shaft

**Reciprocating Compressor:** A compressor with a piston in the cylinder that increases the pressure of the process gas through positive displacement

**Reciprocating Compressor Packing System:** Controls leakage around the piston rod on each compressor cylinder

**Refrigeration:** A process for chilling natural gas to extract condensable heavier-than-methane hydrocarbon fractions and controlling the hydrocarbon dew point of the natural gas stream

**Regulation Station:** A facility designed to regulate the flow rate and/or pressure of natural gas that is passing through a pipeline

**Relief Device:** Opens to release process fluids at a pressure below that which will rupture or damage process vessels or piping

**Safety Device:** Meets both of the following conditions: not used for planned or routine venting of liquids, gases or fumes, and remains in a closed, sealed position at all times except when an unplanned event requires that the device open for the purpose of preventing physical damage or permanent deformation of the unit or equipment on which it is installed

**Sales Meter Station:** A station that measures the amount of natural gas being withdrawn from a gas transmission system by a customer

**Secondary Recovery:** The production of crude oil using reservoir flooding with water or natural gas to displace crude oil to producing wells

**Service Lines:** The pipe that delivers natural gas from a distribution main or transmission pipeline to the customer's meter

**Shale:** A very fine-grained sedimentary rock formed by the consolidation and compression of clay, silt or mud. It has a finely laminated or layered structure. Shale breaks easily into thin parallel layers; a thinly laminated siltstone, mudstone, or claystone. Shale is soft, but sufficiently hard packed (indurated), so as not to disintegrate upon becoming wet. However, some shales absorb water and swell considerably, causing problems in well drilling. Most shales are compacted and, consequently, do not contain commercial quantities of oil and gas.

# All Support Materials Are Available Electronically


- Sales Training Support Guide
- End-User Brochure
- Sales Training PowerPoint Presentation
- Production Processes
- Product Coverage
- Publications & Associations
- Key Players by Segment
- Sales Support Aids


# It's Time to Grow Our Shale Oil and Gas Business.

# Let's Go Get It!