

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

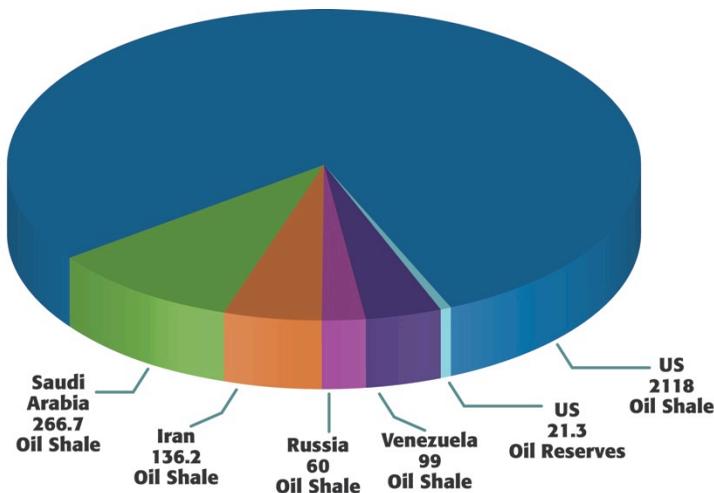
- Opportunities abound for Luber-finer and its filtration products in the North America shale oil and gas plays!
- We're in the midst of a “Black Gold Rush...and Oil Boom” being driven by:
 - Advances in horizontal drilling
 - Advances in hydraulic fracturing
 - Increases in crude oil prices



Shale Oil and Gas Market Potential

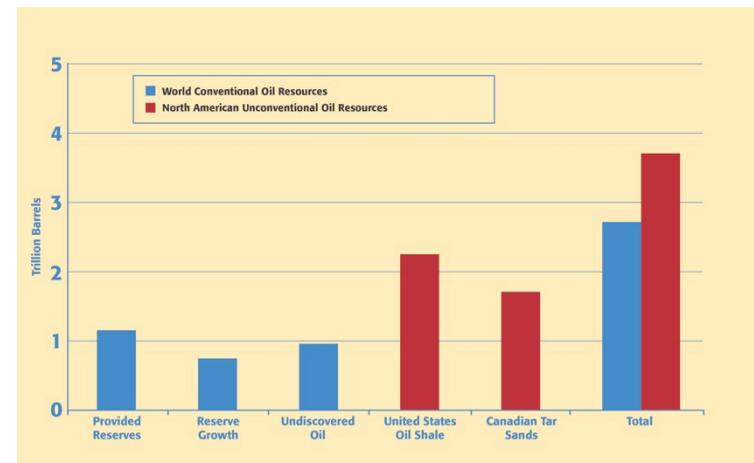
- The U.S. has, by far, the greatest shale resources
- Recent statistics place reserves at 2.118 trillion barrels or roughly 82% of total world shale deposits.¹

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

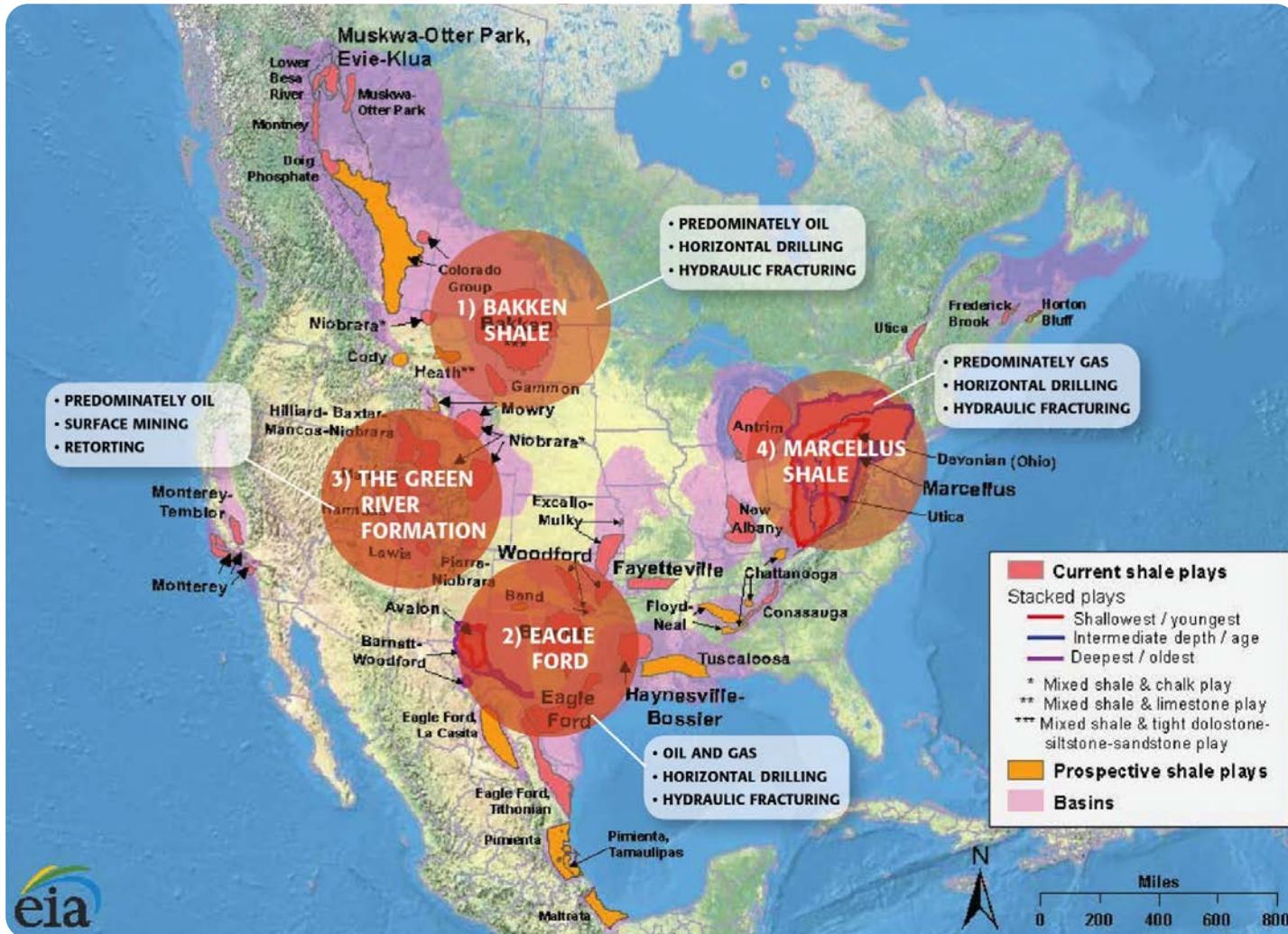
- **Where Luber-finer Can Make a Difference:**
 - OE-grade quality filtration – designed, built and rigorously tested to perform under extreme conditions
 - High quality materials of construction to endure
 - Filtration availability
 - Complete coverage on most HD vehicles
 - Best-in-Class Fill Rates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

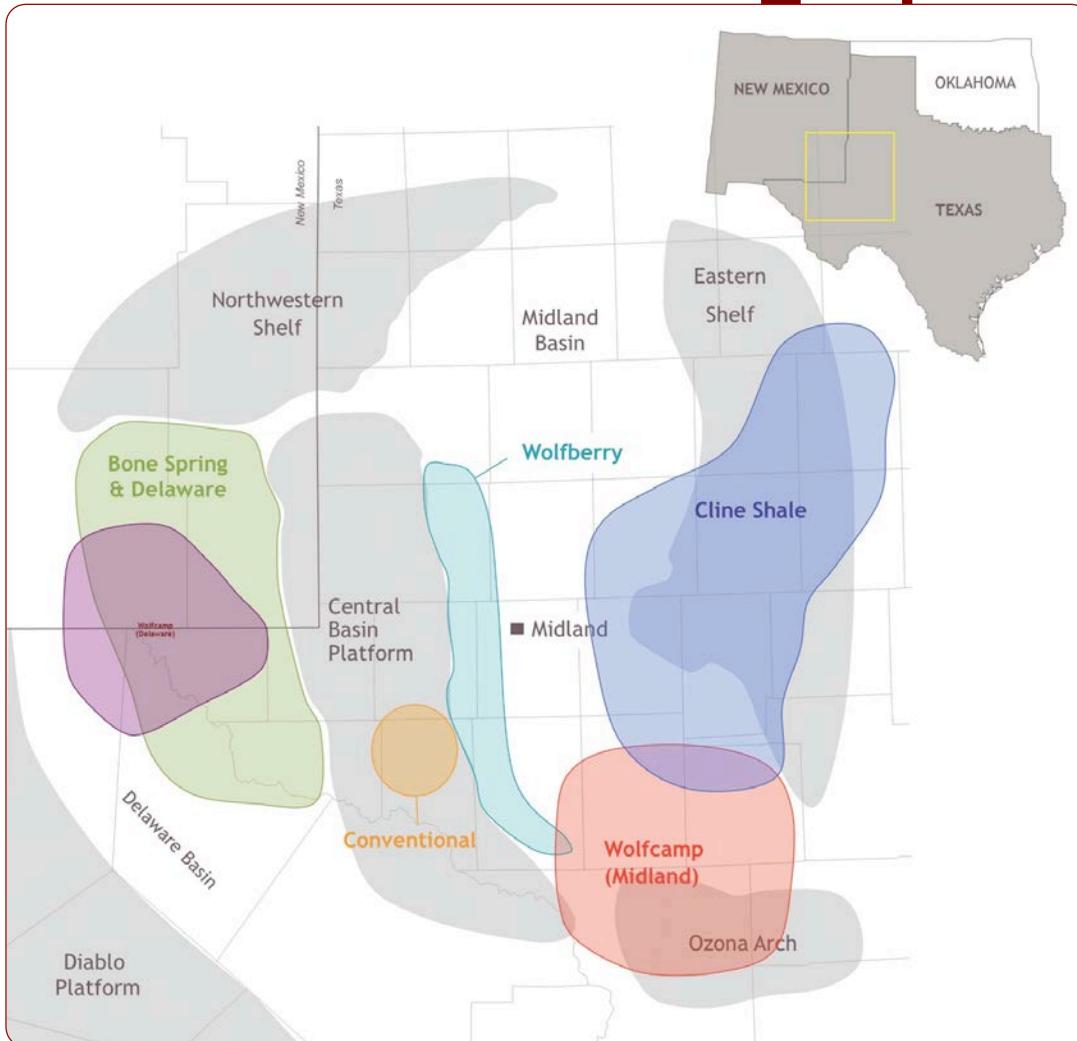
U.S. State	Shale Oil & Gas Plays
Alabama	Alabama Shale Fields
Alaska	Anwar
Arkansas	Fayetteville Shale
California	Los Angeles Oil Field - Wilmington Basin
	Kern County Oil Field
	Monterey Shale
Colorado	Green River Oil Shale
	Niobrara Shale
	Piceance Basin
Kansas	Niobrara Shale
Kentucky	Huron Shale
Louisiana	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

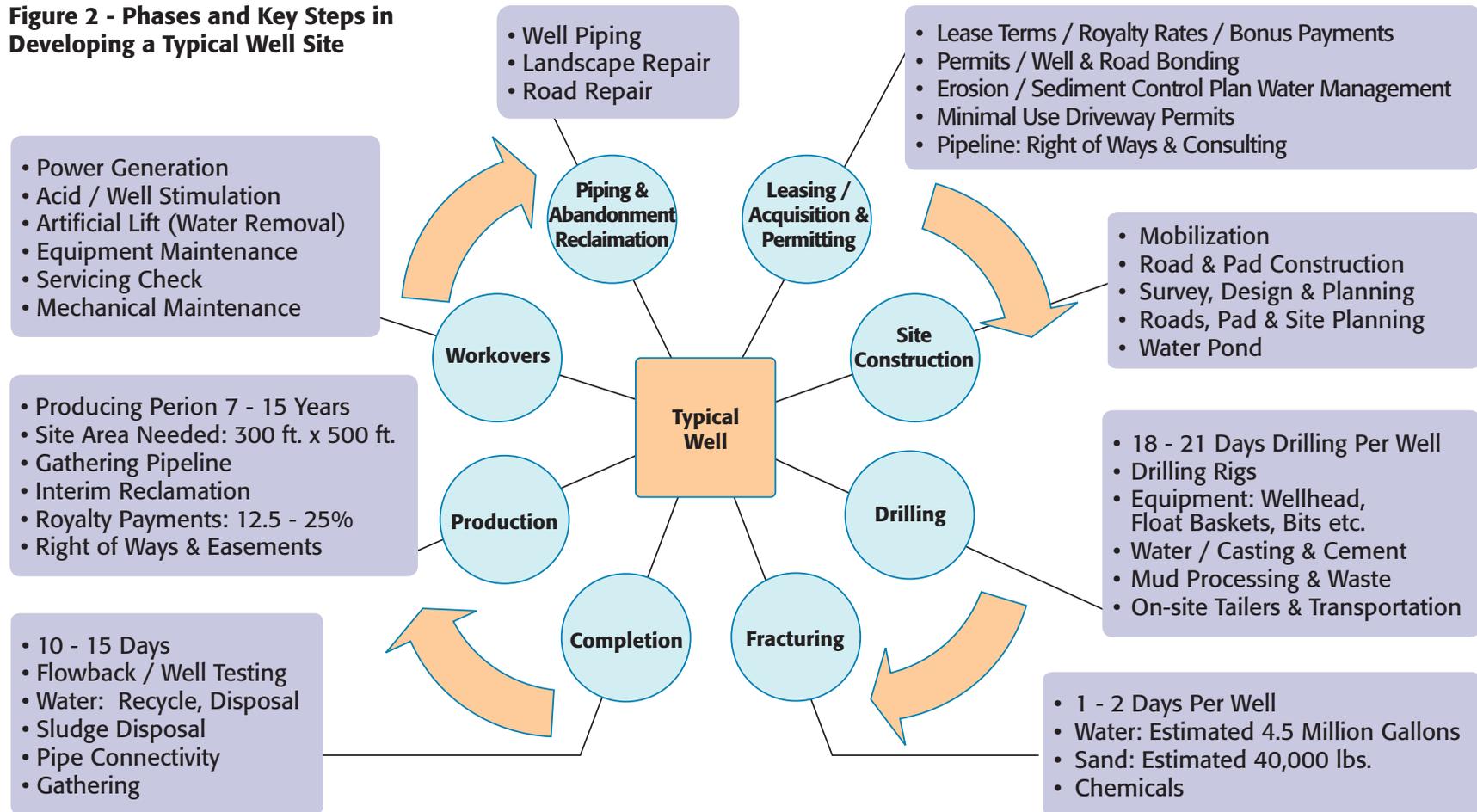
New Discoveries Fuel Demand for Heavy-Duty



- 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

Horizontal Drilling Requires Fewer Rigs to Generate More Production⁸

- 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 issued⁹
- Onshore drilling permits in the U.S. are expected to increase over 40% in 2011¹⁰
- Oil and gas companies have yet to develop 57% percent of their existing onshore leases nationally¹¹
- Oil and gas companies have obtained 7,200 onshore oil and gas permits nationally they have a green light to drill¹²

Drilling Permit Facts:

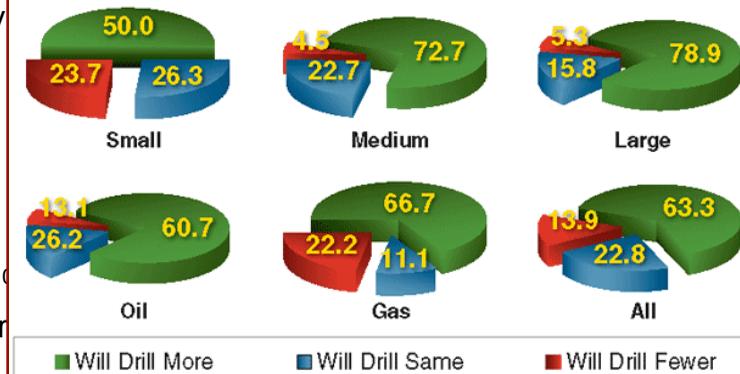
You can visit the link <http://www.epa.gov/epahome/state.htm> to look up your State or Territorial Environment Agencies, which can provide you a way to track issued drilling permits.

- 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.

Happening

Operators' 2012 Drilling Plans Compared to 2011



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

8 www.oiland-gas-investments.com/2011

9 www.reuters.com/article/2011/05/04

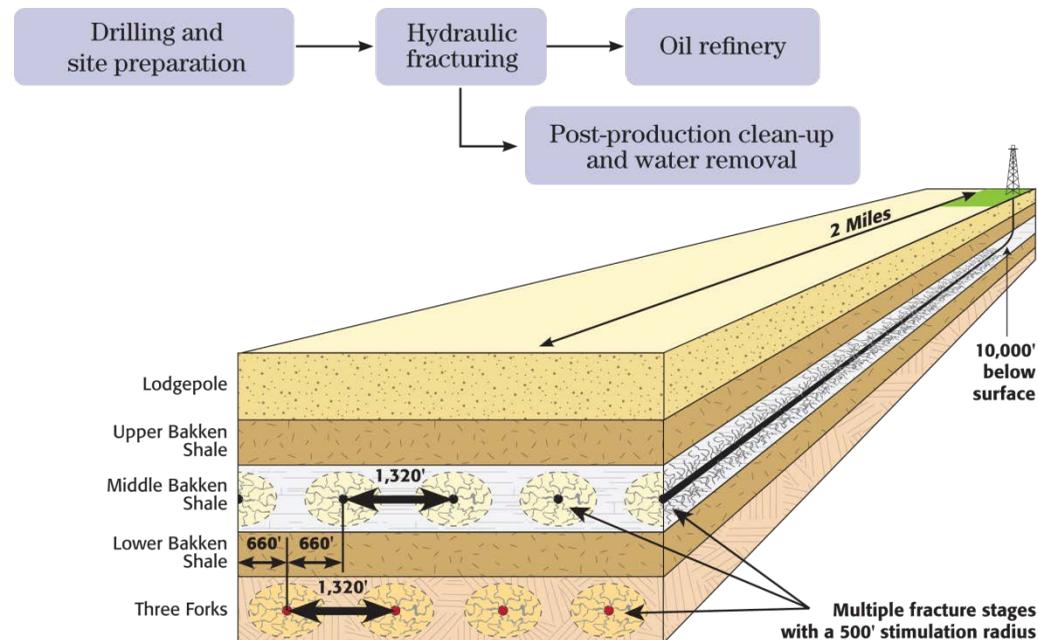
10 U.S. Dept. of Interior

11 U.S. Dept. of Interior

12 New York Times

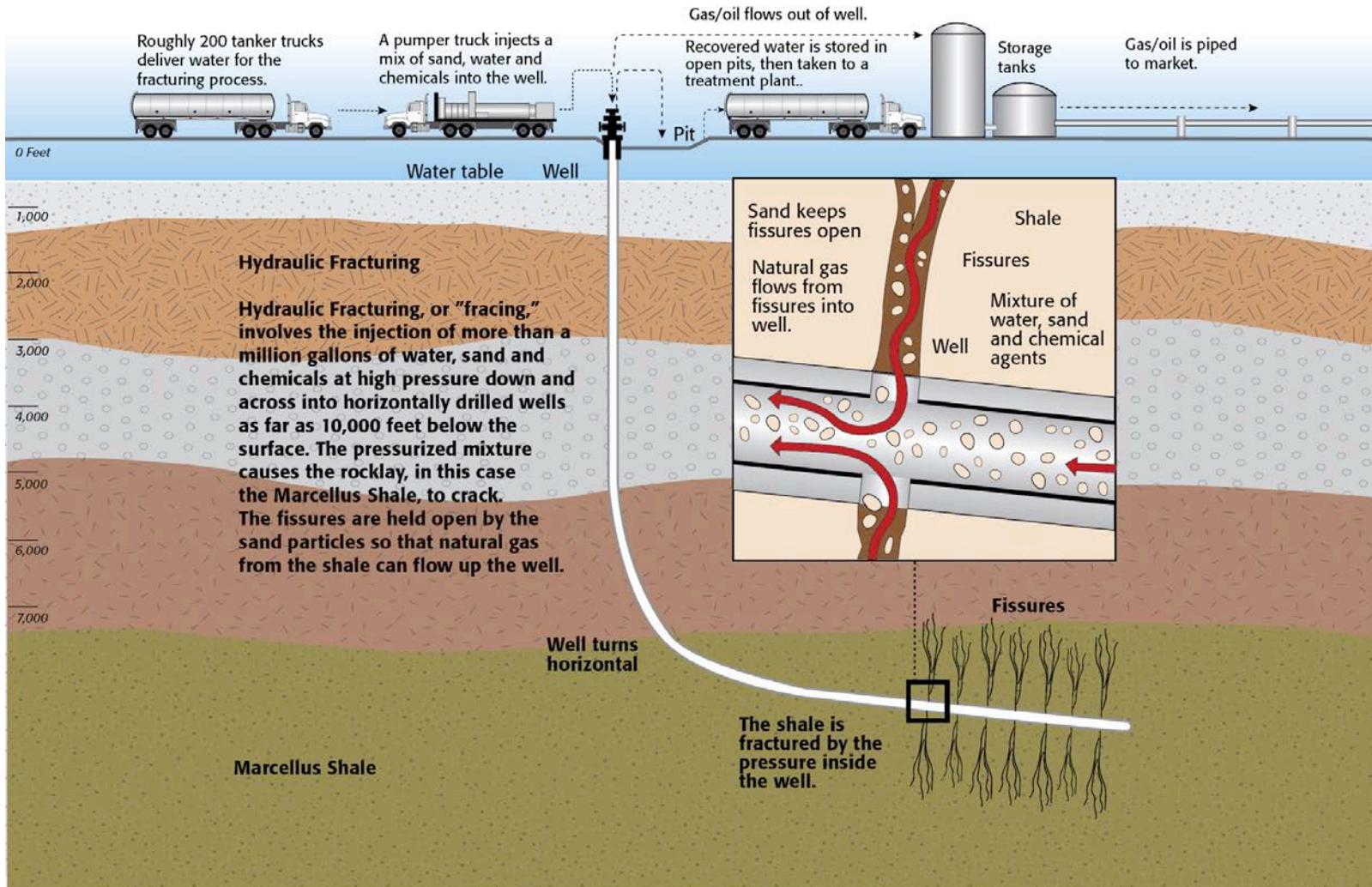
Horizontal Drilling and Hydraulic Fracturing

- **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

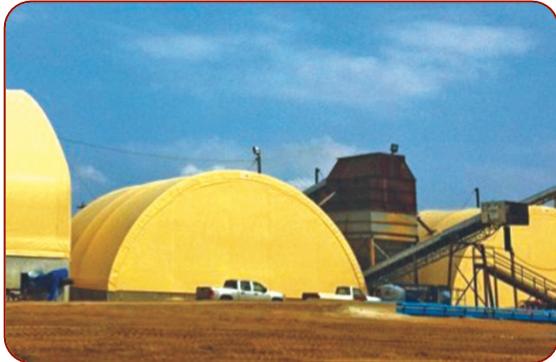
- 270 truckloads of gravel (to build the well pad)
- 80 truckloads of sand
- 400 truckloads of fresh water
- 200 truckloads of waste water
- 100 truckloads of Frac tanks
- 50 truckloads of rig equipment
- 50 truckloads of drilling mud
- 4 truckloads of chemicals
- 15 truckloads of cement
- 10 truckloads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

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 an 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		High-Volume Hydraulic Fracturing		
Overview		Overview	Construction Equipment	Quantity
Once initiated, the drilling operation continues 24 hours a day until completion.			Pumper Truck o 12V4000 o 16V4000	20
Construction Equipment	Quantity	Blenders	2	
Rig Drive Motor	1	Chemical Additive	2	
Generator	3	Data Acquisition & Control	1	
Top Drive	1	Acidizing Unit	2	
Draw Works	1	Proppant (Sand) Trucks	2	
Triple Shaker	1	Fresh Water Trucks	2	
Mud Pumps	2	Waste Water Removal	4	
Transport Trucks	20	Drilling Fluids Trucks	2	
Rig Transport	1	Pick Up Trucks	5	
Bucket Loader	1	Refueling Truck	1	
Telehandler	1	Draw Works	1	
Light Trucks	5	Transport Trucks	20	
Service Trucks	2	Service Trucks	2	
Power Gen (lighting)	6	Power Gen (Lighting)	6	
Catwalk	1	Telehandler	1	
Compressors	2	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		50	
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.

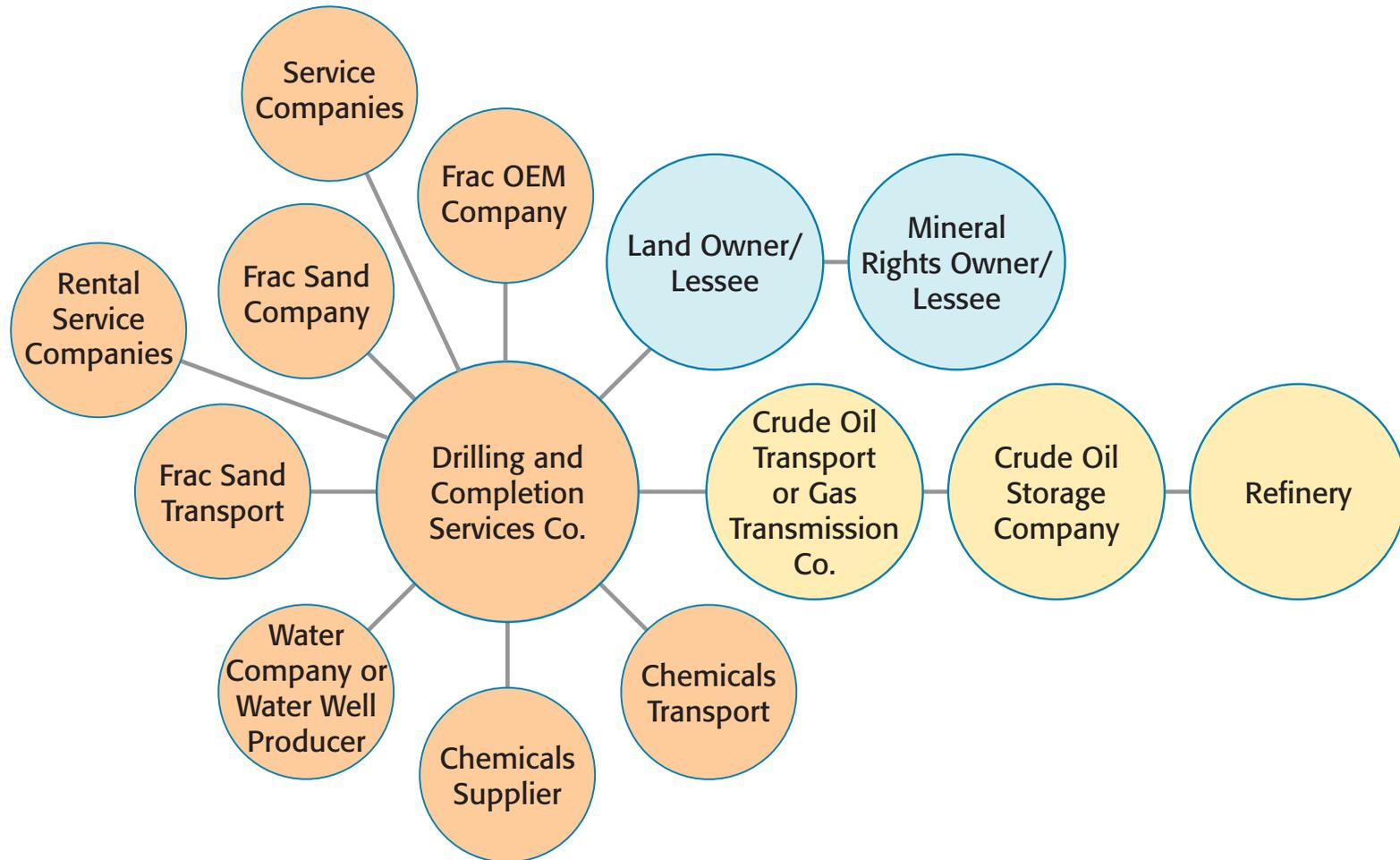
2. Each well would require two rigs, a vertical rig and a directional rig.

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		30	
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

Market Structure



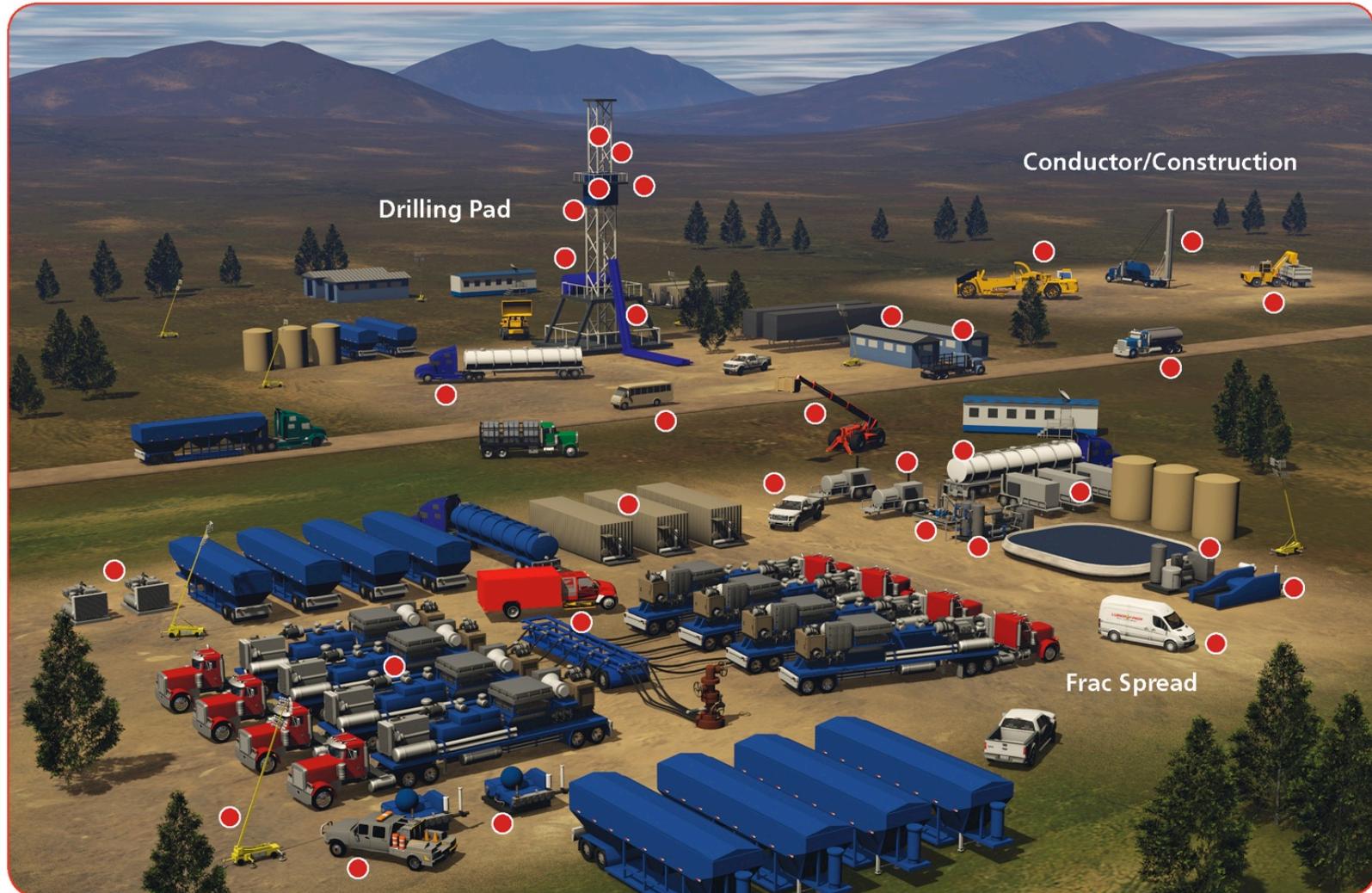
Market Overview – Key Players

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	Arkholia 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 crucial 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



■ 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

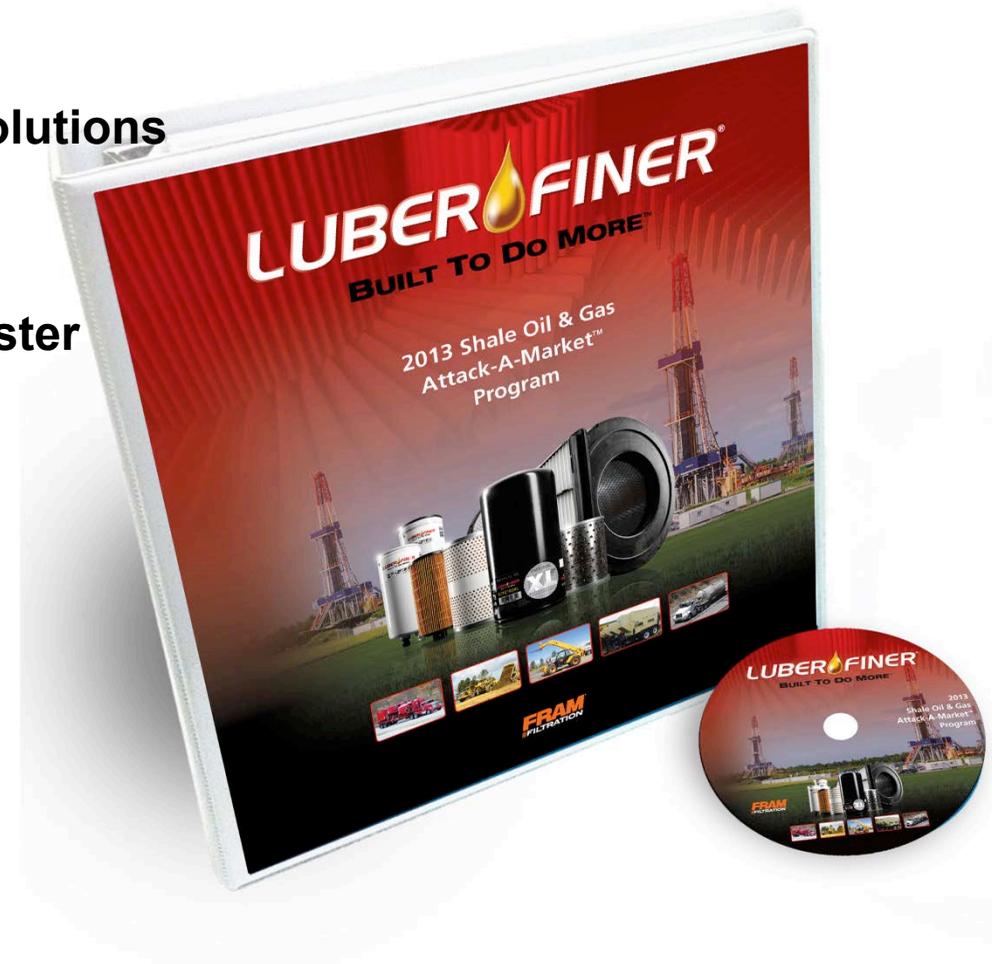


■ Heavy-Duty Coolant Filters

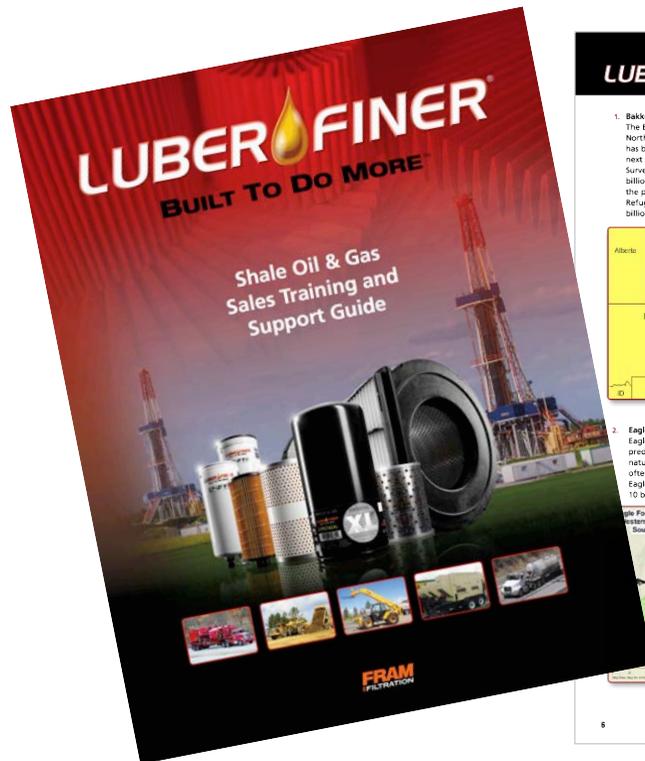
- A Durable Epoxy-Coated Shell that resists rust and corrosion during extended service
- Patented Controlled Release Technology (CRT™) that releases controlled levels of supplemental coolant additive to protect against rust, scale and other build-up
- High-Efficiency Synthetic Media designed for extended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



LUBER FINER BUILT TO DO MORE™

1) Bakken Shale
The Bakken oilfield is located in the Williston Basin in North Dakota, Montana and into Canada. The Bakken has been called the "largest oil discovery in the U.S. next to the oilfields in Alaska" by the U.S. Geological Survey (USGS), with some sources saying up to 24 billion barrels of proven reserves could be located in the play. For comparison, the Arctic National Wildlife Refuge in Alaska could potentially produce up to 10 billion barrels of oil.

LOWER 48 STATES SHALE OIL & GAS PLAYS

3) Green River Formation
Spread across Colorado, Wyoming and Utah, the Green River Formation is said to be the largest shale deposit in the U.S., with an estimated 1.3 to 2 trillion barrels in proven oil reserves, with around 750 billion barrels considered to be recoverable, which is three times more than the total oil reserves of Saudi Arabia.

2) Eagle Ford Shale
Eagle Ford is located in southern Texas, with oil predominant in the northern half of the play and natural and natural gas liquids (NGLs) found more often in the southern areas. Proven reserves in the Eagle Ford Shale have been pegged at more than 10 billion barrels.

4) Marcellus Shale
The Marcellus Shale is a natural gas formation that stretches nearly 600 miles and covers 95,000 square miles through Pennsylvania, New York, Ohio and West Virginia. Some estimates put the amount of natural gas in the Marcellus Shale at upwards of 500 trillion cubic meters, with about 30% of recoverable gas current available exploration and production technologies.

Unconventional North American Oil & Gas Market
United States Shale Oil & Gas The United States' growing prominence in the global Oil & Gas market is being driven by so-called "unconventional" deposits. Specifically, the presence of vast shale oil and gas reserves in the U.S., along with advances in technologies such as horizontal drilling and hydraulic fracturing that make recovery more economically feasible, are helping optimize production levels and providing proven reserves that promise to make the U.S. a major player in the global Oil & Gas market for many decades to come.

- 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



LUBER FINER Shale Oil & Gas Industry Filtration Products

BUILT TO DO MORE™



Lube Filters

High-quality Luber-finer Lube Filters are available in Full-Flow, By-Pass, High-Efficiency and Extended Life options. All styles have been designed, tested and re-engineered with specifically formulated media that meets or exceeds the latest SAE and OE testing and performance requirements for maximum protection from engine wear and prevent breakdown in the harshest of gas production environments.

Heavy-Duty Lube Filters

Steel Shell for unequaled burst and fatigue strength.
Strength Spiral Core that resists pressure surges.
Efficiency Filtering Media for extra long capacity.
Abrasion-Resistant Gasket for a good seal.

Extended Life Filters

Highly efficient XL Lube Filters provide enhanced and increased dirt-holding capacity on-highway and off-highway that feature low-temperature oil-aid operations.
Easy-Turn Release (ERT™) TST Filters are a 1 oil-management systems designed to help your fleet by intervals by providing oil management systems such as:
Oil change calculator



Fuel Filters

Luber-finer offers a full range of reliable fuel filters that provide the highest in fuel-cleaning efficiency and capacity by trapping harmful contaminants before they can reach vital fuel injectors and carburetors in a vehicle's fueling system. Luber-finer fuel filters also ensure OEM replacement for form, fit and function and are the best insurance for long engine life.

The Luber-finer advantage

- More Efficient Filtration - Durable, leak-proof construction reduces risk of failure
- Easier Installation - Reduces downtime, labor costs and mess associated with changing plastic bowl filters

TotalTec™ Heavy-Duty Fuel Filters

"The Smart Solution - One Filter Does it All." TotalTec™ is a premium-quality "no bowl" heavy-duty fuel filter and an all-in-one alternative to OEM Racor bowl-type fuel separators and features:

- All-Metal Housing for higher burst and pulse-fatigue strength
- High-Performance Media for more dirt-holding capacity and 99% filtering efficiency
- "No bowl" Construction that is a hassle-free alternative to standard fuel separators
- Sensor Port for proper OEM sensor replacement
- Easy-Turn low-torque valve
- No need to order and stock separate filters and plastic bowl add-on components
- Meets or exceeds OEM Requirements



Air Filters

Luber-finer air filters are constructed with a specially blended filter media for optimal dirt-holding capacity, filtering efficiency and maximum protection from harmful airborne contaminants. Available for virtually all air-filtering applications, they offer advanced features that ensure original equipment replacement fit, form and function.

Real-Time Filtration Solutions That:

- Removes 99.91% of Airborne Contaminants
- Reduces Filter Changes and Labor Costs
- Reduces Downtime
- Reduces Engine Damage from Over-Servicing

MOEM Force Air Filters

The new, premium-quality MOEM Force Air Filters with revolutionary MicroGold fiber technology is ideally suited for the high dirt and dust environments of oil and gas drilling and production. MOEM Air Filters provide an average of 50% more dirt-holding capacity than standard heavy-duty air filters and feature:

- More pleats for longer filter life, enhanced filter performance and maximum dirt-holding capacity
- 99.91% cleaning efficiency

Filter Minder™

For Maximum Filter Life, the Luber-finer Filter Minder is an air-filter gauge that indicates the highest level of restriction achievable when the engine is under load and indicates when it is time for filter replacement.



Cabin Air Filters

Luber-finer Cabin Air Filters—help you breathe clean air.
You can protect yourself and any passengers in the cab of your vehicle from dust, smog and pollen by changing cabin air filters. Cabin air filters from Luber-finer offer superior performance and long life.

Luber-finer Heavy-Duty Cabin Air Filters:

- Trap most harmful pollutants before they reach your vehicle's interior
- Original equipment fit and quality for cleaner, healthier passenger cabin air
- Provide cleaner air to allergy and asthma sufferers
- Most cabin air filter changes take less than 15 minutes

Charcoal Activated Luber-finer Heavy-Duty Cabin Air Filters are also available in Charcoal-Activated Particulate and Odor Removal Media.



Hydraulic Filters

Luber-finer hydraulic filters are designed to meet the heavy-duty demands put on oil & gas drilling and production related fleet equipment every day. Today's oil & gas production requirements demand increased performance levels and Luber-finer has responded with premium hydraulic filtration products that protect machinery both mechanically and chemically.

The Luber-finer hydraulic filter product range features components for every type of heavy-duty vehicle and engine used in the oil & gas drilling, production and transportation process, including: tracking equipment, transport trucks, stationary diesel engines construction equipment and more. The hydraulic media removes harmful contaminants in the hydraulic fluid through the incorporation of a fluid path that continuously changes its direction as it flows through an intricate maze of media, trapping contaminants.

Luber-finer Heavy-Duty Hydraulic Filters Feature:

- A long lasting, anti-drainback valve for extended protection against dry starts
- Easy-Turn low-torque valve
- All-metal housing that delivers 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 90% efficiency
- Molded O-Ring for easy installation and removal



Coolant Filters

Field-tested Luber-finer coolant filters provide quick and easy maintenance that reduces downtime and costs while prolonging equipment life. Years of research have led to the development of three specialized types of Luber-finer coolant filters, supplemental coolant additives and testing products:

- "Conventional" SCA Coolant Filters
- "Controlled Release" E500 Series - SCA Coolant Filters with "CR™"
- "Extended Life" XL Series - Non-SCA Coolant Filters

Luber-finer Heavy-Duty Cooling System Filters Feature:

- A Durable Epoxy-Coated Shell that resists rust and corrosion during extended service
- Patented Controlled Release Technology (CRT™) that releases controlled levels of supplemental coolant additive to protect against rust, scale and other build-up
- A Protective Holding Chamber that keeps CRT™ coolant additives separate from filter media to prevent degradation and provide even release
- High-Efficiency Synthetic Media designed for extended service levels
- All-Steel Enclosure for durability and strength over extended service levels
- Double-Rolled Seam ensures a tight fit

Luber-finer In-Field Coolant Analysis Test Kits and Strips

Affordable, effective and universal, Luber-finer test kits and strips maintain the proper levels of supplemental coolant additives for all applications while taking the work and worry out of coolant system analysis.

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	46596	R53518
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	M-113621	AF25550	P822686	46449	PA4632
Air	LAF8388	Bobcat, Carrier-Transcold, Caterpillar, John Deere, Komatsu, Magnum, Volvo - Utility Vehicles, Excavators, Skid Steer Loaders, Auxiliary Power Units	3318318	WF2075	P552075	24075	BW5075
Coolant	LFW4075	Case, Cummins, Doosan, Euclid, Hitachi, Freightliner, Hyundai, John Deere - Construction, Dump Trucks, Excavators, Wheel Loaders, Loaders	3889716	FS1000	P550901	33406	BF1259
Fuel	LFF1000	Dump Trucks, Wheel Loaders, Construction, Heavy Trucks, Excavators, Loaders - w/Cummins Engines	1R-0749	FF5319	P551311	33674	BF7587
Fuel	LFF2749	Compactors & Paving Equip, Crawler Tractors, Dump Trucks, Industrial, Mining, Scrapers, Pipelayers, Wheel Dozers, Heavy Trucks w/Caterpillar Engines	6436839	FF5207	P556915	33118	BF5800
Fuel	LFP815FN	Bedford - Compression, Dumpers, Loaders, Motor Graders, Chevrolet/GMC - HD Trucks	23529168	FS19624	P550467	33651XE	PF7748
Fuel	L5667F	Detroit Diesel, Caterpillar, Maxforce, Paccar Engines, Heavy Duty On Hwy Trucks w/Cummins engines	9T-0973	HF6586	P165569	51721	BT8876-MPG
Hydraulic	LFH5013	Bell, Caterpillar, Ingersoll-Rand, Champion, Volvo - Articulated Dump Trucks, Backhoe Loaders, Crawler Tractors, Crawler Loaders, Telescopic Handlers, Wheel Loaders, Graders, Compactors, Drills	25014505	LF3620	P552100	51971	B495
Lube	LPF2160	Gen Sets, Dump Trucks with -w/Series 50 Detroit Diesel engs., All Series 60 Detroit engs. built beginning in December, 1992	2P-4004	LF667	P553191	51791	B76
Lube	LPF3191	Caterpillar - Wheel Loaders, Dump Trucks, Compactors, Crawler Loaders, Excavators, Lift Trucks, Articulated Dump Trucks, Mack HD On Hwy Trucks	2P-4005	LF3374	P554105 / P554005	51792	B99
Lube	LPF4005	Caterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors	3318853	LF3000	P553000	51748	BD103
Lube	LPF3000	Construction, Concrete Mixers, Dump Trucks, Excavators, Wheel Loaders, Loaders, Graders, Compactors, Drills, HD Trucks, Dozers w/Cummins engines	1819452C1	LF3883	P550367 / P550512	51799	B7030
Lube	LPF2285	Heavy Duty On Hwy Trucks -w/Navistar DT and Detroit Diesel engines	1146934	LF16034	P502049 / P550162	51064	B1421
Lube	PH2808	Airman, Bobcat, Case, Caterpillar, Doosan, Earthforce, Gehl, Hitachi, Kobelco, Komatsu, John Deere, New Holland, Volvo, Yanmar - Backhoes, Loaders, Lift Trucks Excavators, Skid Steer Loaders, Transporters, Compressors, Wheel Dozers, Wheel Loaders, Generator, Light Towers	93156323	LF3335	P550335	51348	BT223
Lube	PH2835	Caterpillar, Freightliner, Gardner-Denver, Heston, International, JCB, Mack, John Deere, Kenworth, Komatsu, Kramer/Allrad, Miller Electric, New Holland, Parks Industries LLC, Peterbilt, Volvo - Skid Steer Loaders, Compactors & Paving Equip., Industrial, HD Trucks, Excavators, Generators, Welders, Wheel Loaders, Auxiliary Power Units	20843764	LF3410	P550425	51660	B7409
Lube	LPF8642	Ackerman, Kalmar, Volvo - Excavators, Compactors, Lift Trucks, Articulated Dump Trucks, Loaders, Motor Graders, Mack Dump Trucks	89002945	LF9609	ELF7300	51748XD	BD7309
Lube	LPF3000XL	Construction, Concrete Mixers, Dump Trucks, Excavators, Wheel Loaders, Graders, Scrapers, Compressors, Drills, HD Trucks, Dozers - w/Cummins engines	485GB3236	LF3973	P551807	51791	B7225
Lube	LPF3236	Caterpillar - Compactors & Paving Equipment, Wheel Loaders, Crawler Tractors, Mack, Freightliner - HD Trucks	2P-4005	LF3566	P551808	51792XE	B7245
Lube	LPF4005RN	Caterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors	23523701	LF9620	ELF2500 / ELF3998	51971XD	B495-MPG
Lube	LPF2160XL	Gen Sets, Dump Trucks with -w/Series 50 Detroit Diesel engs., All Series 60 Detroit engs. built beginning in December, 1992	2P-4005	LPF691A	ELF7805 / P554005	51792XD	B7249-MPG
Lube	LPF4005XL	Caterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors	342449	HF6167	P550388	51759	BF853
Lube	LPF449	Bobcat, Case, Caterpillar, Challenger, Champion, JCB, John Deere, New Holland - Skid Steer Loaders, Cable Layers, Compactors & Paving Equip., Graders, skid Steer Loaders, Concrete Mixers, Concrete Mixers, Rollers	2654407	LF699	P554407	51459	BT217
Lube	LPF2292	Ahlmann, Akerman, Barber Green, Bobcat, Brooy, Carrier-Transcold, Case, Caterpillar, Claas, Clark, Daewoo, ERF, Ferret, Ford, Gehl, JCB, Komelco, Komatsu, Hanomag, Leyland, Manitou, Massey-Ferguson - Excavators, Motor Graders, Telemasters, Skid Steer Loaders, Excavators, Telescopic Handlers, Backhoe Loaders, Lift Trucks, Construction Equipment, Crawler Tractors, Wheel Loaders, Compactors & Paving Equipment, Compactor Tractors, Wheel Loaders, Lift Trucks, Construction Equipment, Compactor Tractors, Wheel Loaders, Lift Trucks, Transporters, Loaders, Pegaso & Volvo HD Trucks	2654407	LF699	P554407	51459	BT217

Desc	Catalog No.	Application type	OEM#	Fleetguard	Donaldson	Wix	Baldwin
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Air	LAF8388	Bobcat, Carrier-Transcold, Caterpillar, John Deere, Komatsu, Magnum, Volvo - Utility Vehicles, Excavators, Skid Steer Loaders, Auxiliary Power Units	3318318	WF2075	P552075	24075	BW5075
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Fuel	LFF2749	Compactors & Paving Equip, Crawler Tractors, Dump Trucks, Industrial, Mining, Scrapers, Pipelayers, Wheel Dozers, Heavy Trucks w/Caterpillar Engines	6436839	FF5207	P556915	33118	BF5800
Fuel	LFP815FN	Bedford - Compression, Dumpers, Loaders, Motor Graders, Chevrolet/GMC - HD Trucks	23529168	FS19624	P550467	33651XE	PF7748
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Hydraulic	LFH5013	Bell, Caterpillar, Ingersoll-Rand, Champion, Volvo - Articulated Dump Trucks, Backhoe Loaders, Crawler Tractors, Crawler Loaders, Telescopic Handlers, Wheel Loaders, Graders, Compactors, Drills	25014505	LF3620	P552100	51971	B495
Lube	LPF2160	Gen Sets, Dump Trucks with -w/Series 50 Detroit Diesel engs., All Series 60 Detroit engs. built beginning in December, 1992	2P-4004	LF667	P553191	51791	B76
Lube	LPF3191	Caterpillar - Wheel Loaders, Dump Trucks, Compactors, Crawler Loaders, Excavators, Lift Trucks, Articulated Dump Trucks, Mack HD On Hwy Trucks	2P-4005	LF3374	P554105 / P554005	51792	B99
Lube	LPF4005	Caterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors	3318853	LF3000	P553000	51748	BD103
Lube	LPF3000	Construction, Concrete Mixers, Dump Trucks, Excavators, Wheel Loaders, Loaders, Graders, Compactors, Drills, HD Trucks, Dozers w/Cummins engines	1819452C1	LF3883	P550367 / P550512	51799	B7030
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Lube	LPF4005RN	Caterpillar - Compactors & Paving Equip, Dumpers, Excavators, Crawlers, Graders, Industrial, Mining, Off Hwy Trucks, Scrapers, Wheel Dozers, Compressors	23523701	LF9620	ELF2500 / ELF3998	51971XD	B495-MPG
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Micro Website – www.luberfinerenergy.com

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Cabin Air Filters

Hydraulic Filters

Expert Filtration Solutions for Heavy-Duty Equipment Used in Shale Oil & Gas Operations

Luber-finer, a division of **FRAM Filtration**, is a global leader of heavy-duty filtration products. Since 1937, Luber-finer has been the first choice in the world's most demanding heavy-duty environments.

Built to a rigorous OE level quality standards, Luber-finer **Lube, Air, Fuel, Cabin Air, Hydraulic** and **Coolant** filters are ideally suited for the intense performance requirement of oil and gas equipment throughout all phases of the extraction process.

Our mission is to provide the optimum protection against dirt, grime, oil and hydraulic fluid degradation under any condition, so your revenue generating assets can deliver you peak performance everytime.

LUBER FINER

The Shale Oil and Gas Applications We Serve



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- Providing Quality Filtration for over 75 Years
- Unmatched Design and Quality
- A Comprehensive Product Offering, Servicing Virtually Every Heavy-Duty Market Channel

- Over Three Million Filters Produced Per Week
- Best-in-Class Sales Support and Service
- The Driving Force in Heavy-Duty Filtration for the Toughest Applications

PREFERRED FOR MORE HEAVY-DUTY APPLICATIONS WORLDWIDE





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Heavy-Duty Hydraulic Filters



Heavy-Duty Cabin Air Filters



Heavy-Duty Coolant Filters



Heavy-Duty Lube Filters



Heavy-Duty MXXM Force Air Filters



Heavy-Duty Air Filters

Luber-finer Filters are Ideally Suited for:

1) Earth Moving Equipment	7) Wheel Loader with bucket	8) Light-duty trucks	16) Water storage	23) Parts truck	29) Soil mounted air compressor
2) Power Gen Sets	8) Transport trucks	10) Convector generators	17) Relay table	24) Mechanic truck	30) Centrifugal pump
3) Air Compressors	- Fuel	11) Mud pumps	18) Man-ride vehicle	25) Driveways	31) Winch truck
4) Power Gen for lighting	- Produced fluids	12) Mud tanks	19) Iron Roughneck	26) Catering automated canteen	
5) Solenoid - Diesel	- Waste fluids	13) Shale shakers	20) Tracking trucks	27) Vacuum Degreaser	
6) Forced air heaters	- Chemicals/Acids	14) Mud Cleaner	21) Small Drill Rig	28) 200' Chain Hoist Handling Systems	
	- Frack sand	15) Diesel fuel tank heater	22) Passenger bus - crew transport		

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 Zaragoza, Spain Suzhou, China Wuliang, China Fenley, NV, USA Toronto, Canada Saltillo, Mexico San José, Costa Rica Paris, France

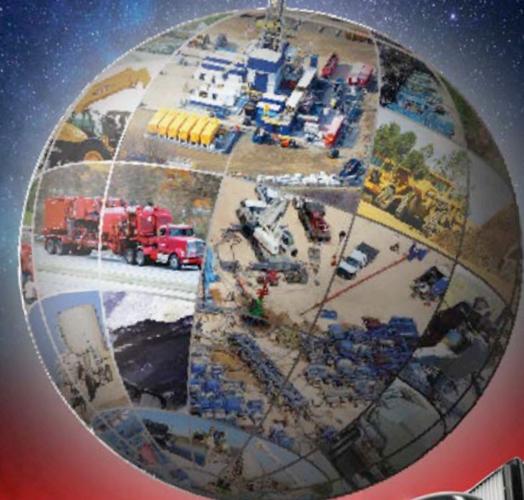
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- Potentially distributed as a polybag insert in Oil & Gas Industry Publication
- Circulation to key industry people
- Additional flat posters available

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Designed for the Rigorous
Challenges of the Oil & Gas World.

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To learn how Luber-finer filters can help optimize protection of your heavy-duty assets against grime, oil and hydraulic fluid degradation, reduce downtime, and extend your service intervals—call or visit us at www.luberfinerenergy.com.

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Is Your Filter



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- 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

Key Players in Each Segment

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

Support Services- Cement

Support Services- Cement

Aquaterra Energy Ltd
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Baker Hughes
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Baker Hughes
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Blue Ocean
Blue Ocean Technologies is a team of subsea engineers, project managers providing solutions for the subsea industry. Website: www.blueoceansubsea.com

Concho Oilfield Services, Inc.
Concho Oilfield Services provides workovers, completion, cementing, hauling, pressure pumping, and services to customers in West and the Panhandle. Concho was founded in 1988. Website: www.conchooilfield.com

Crosco
Crosco is an integrated onshore and well services contractor. The company provides modern drilling, workover and well services as well as one semi-submersible and well services. Website: www.crosco.com

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

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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

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American 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
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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

Glossary of Common Terms

Shale Oil & Gas Sales Training and Support Guide

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 at 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.

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

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

Dredger: A large machine that digs oil sand ore from a mine pit and transfers it into windrows

Drilling Permit: In states that regulate well spacing, a drilling authorization to drill at a specified location; also known as a "well permit"

Field Natural Gas: Field natural gas that does not require any processing to meet pipeline-quality dew-point requirements

Field Recovery: The production of crude oil using primary and/or tertiary recovery techniques

Flare Leaks: Emissions of natural gas or hydrocarbon equipment components

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

First Natural Gas: Natural gas extracted from a production well entering the first stage of processing, such as

distillation. Losses that occur during the filling of tank trucks, railcars, and marine tankers

Flare: A flame used for routine or emergency disposal of

hydrocarbon vapors. A common method of safely disposing by combustion of gas at oil-and-gas facilities

Flowmeter: A device that indicates the relative flow rate of a liquid or gas in a pipeline or duct

Flow Assurance: The process of pumping fluids into a productive well to prevent blockages or fractures of injection to hydraulically break the rock. Fractures are created in the rock act as flow channels in the well.

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Fuel Combustion: Emissions of fuel typically occurring at oil-and-gas external combustion devices through a stack or vent

Fugitive Emissions: Emissions of gas or liquid that escape from a fluid to the environment past a seal, leak, or minor damage point; can be caused by improper assembly or use, manufacturing defects, installation, inspection or maintenance issues, and environmental effects

Fugitive Equipment Leaks: Emissions of gas or liquid that escape from a fluid to the environment past a seal, leak, or minor damage point; can be caused by improper assembly or use, manufacturing defects, installation, inspection or maintenance issues, and environmental effects

Gas Conditioning: The process of conditioning process fluids directly to the atmosphere in the event of leakage past the valve seat

Gas Fractionation: A distillation process that separates gas fractions in order to recover specific components

Gas Oil: Medium to heavy distillate fractions of crude oil and secondary units that are used to produce diesel fuel and heavy oil

Gas Production: Total natural gas and gas well

Gas Sweetening: A process that removes sulfur compounds (H₂S) and carbon dioxide from natural gas

Gate Station: A station at which ownership and where it is common flow through a splitter system for distribution to various areas

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

Greenhouse Gases: Gases that contribute to global warming, including primary greenhouse gases are carbon dioxide (CO₂), nitrous oxide (N₂O) and methane (CH₄)

Heavy Crude Oil: A category of crude oil with a relatively high viscosity, a higher density, and a higher gravity compared to conventional recoverable oil

Hydrate Control: The process of preventing natural gas gathering systems by the formation of hydrates

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

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 flames, 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

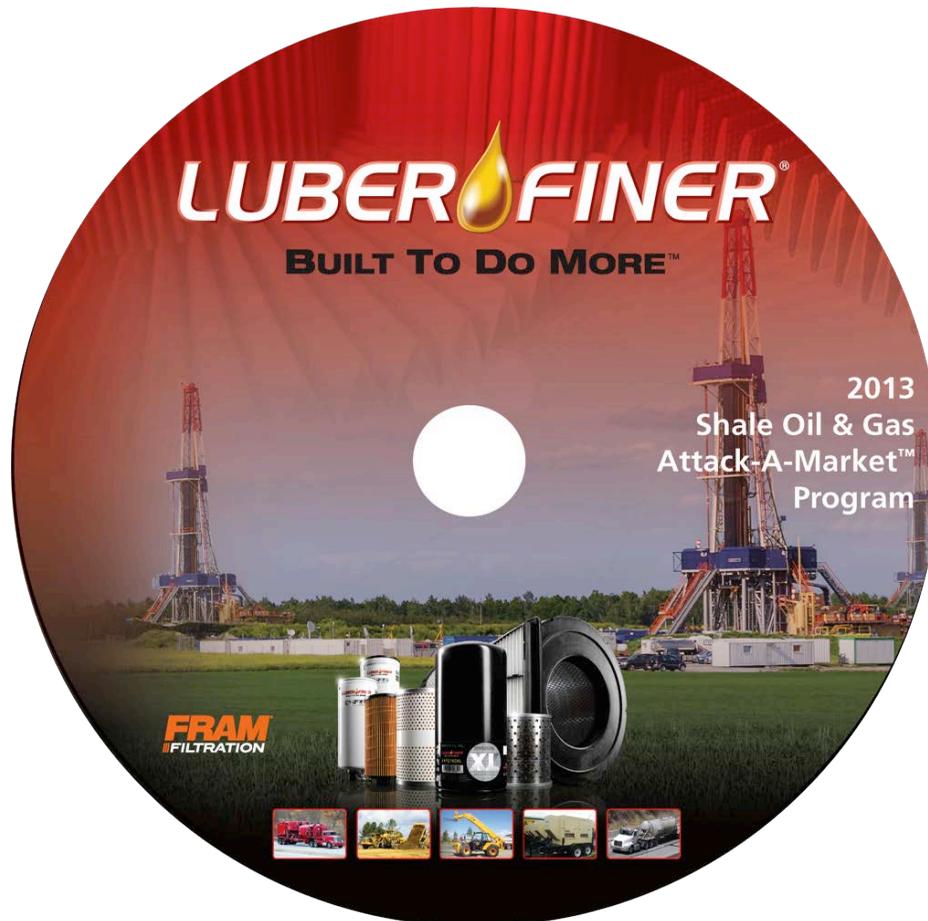
Service Lines: The pipe that delivers natural gas from a distribution main or transmission pipeline to the customer's meter

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 laminated 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.

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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

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**It's Time to Grow Our
Shale Oil and Gas Business.
Let's Go Get It!**