A Supplement to

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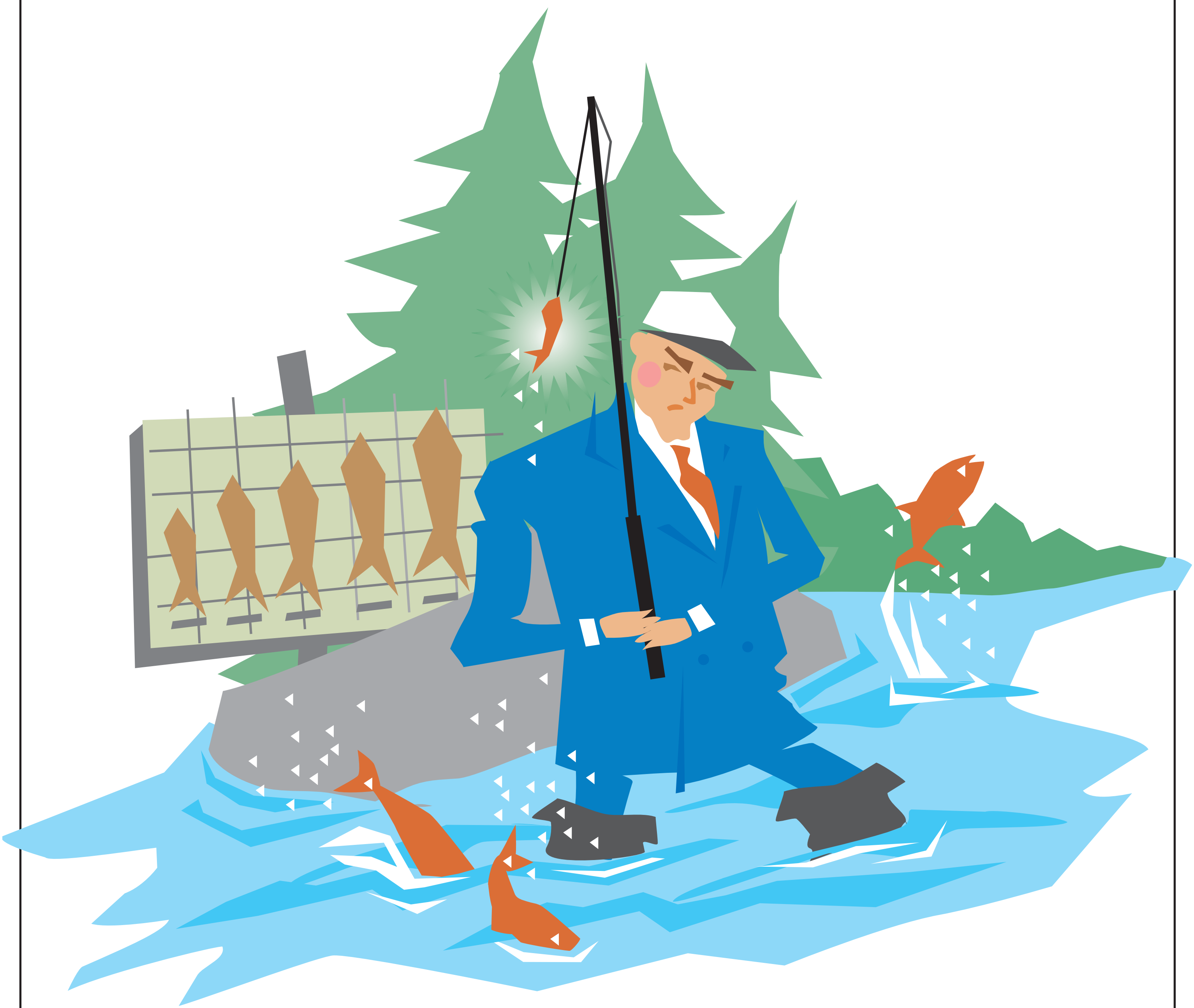

Small-Cap E&P Investment Opportunities

FEBRUARY 2005

A supplement to

Oil and Gas Investor

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Small-Cap E&P Investment Opportunities

Some 50 small, U.S.-based independents, such as Delta Petroleum, had average 2004 shareholder returns—improved stock price plus dividends or distributions—of 38.9%, according to John S. Herold Inc.'s analysis of 360 publicly held energy companies worldwide.

For the purpose of this report, we have defined the small-cap E&P universe as any U.S.-traded firm with a market cap below $2 billion. (A list of these companies begins on page 10.) That covers a lot of ground and makes for a very diverse, interesting universe. The group numbers 122 E&P companies and 57 oil-service companies.

Several small-cap firms drew heightened investor attention last year as their stocks rose with commodity prices and they reached the certain size threshold for big investors. But their visibility increased not just because of higher oil and gas prices and stellar income; it was also boosted by road-show visits and new public offerings of debt or equity.

Among the small-caps there is a great deal of variety. Many are niche players. FX Energy, based in Salt Lake City, but whose E&P activity is entirely in Poland, returned 133.6% to shareholders last year. Its focused international strategy began to attract more capital and its drilling program began to create new successes. As is the case with many small-caps, its star shone brighter after it hired some new executives with experience with the major oil companies, the right contacts and a history of prior exploration success.

E&P analyst Curtis Trimble of Ferris, Baker Watts says, "Small caps are going to be the most interesting space in which to invest because they are putting up more money for percentage growth in their capital budgets this year. Goodrich Petroleum is increasing its budget by 75%; KCS Energy is up 12%. Obviously the percentage growth possible in small caps is greater than for the large caps."

He adds, "Small caps have generally outperformed the larger caps over the past six quarters. But so many investors have long memories—it's always an education, an effort to get investors to swing 5%, 10% of their budget to investing in small caps, where you may have greater risk, but in my opinion, greater reward."

—Leslie Haines, Editor-in-Chief

Contents

PETROGEN

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A Full Menu

More than 100 small-cap E&P stocks offer highly focused regional and geologic strategies, resulting in pure-play stock picks.

Article by Leslie Haines

Small-cap E&P companies often play to their strengths through participating in niches. That's why they are a good way for an investor to get in on a specific "pure play," such as a company that is 100% exploration or alternatively, strictly an acquire-and-exploit firm.

The large-caps tend to diversify, but the small-cap pure-plays focus on Texas Gulf Coast natural gas production, Rockies tight-gas plays, coalbed-methane development, Gulf of Mexico shelf drilling, or specific international plays.

"Small caps are run by real entrepreneurs that make things happen. You can't hold them back—they smell an opportunity and just do it," says a longtime small-cap E&P observer in New York. He recounts the story of an executive who traveled to Africa on vacation recently and came back so enthused about its oil and gas potential, he started an E&P company to pursue it.

Long shot? Maybe. But there are plenty of stories of small-cap E&P successes that started in just this way. There was the entrepreneur who rode a motorcycle across Russia, saw potential there, and ended up marrying a Russian woman whose brother was a geologist—and the rest is history. They formed a small company, took it public, got a concession in Western Siberia, drilled wells, grew production and sold the assets eventually to a much larger firm.

Or consider John Brock, the retired Mobil executive who remembered some abandoned seismic data on West Africa in a drawer somewhere, rejected by the majors, that now, with modern technology, might lead to something meaningful. It did. That's how he started what became the former United Meridian Corp., which grew through drilling that prospect and many others in Africa and the U.S., and making acquisitions. Eventually UMC merged with Ocean Energy, a large-cap independent that was sold to Devon Energy for $5.3 billion in 2003.

That's the beauty of small caps. They strike faster than their larger brothers and usually show faster growth in reserves, production and cash flow. They create value through exploration, development drilling and acquisitions. Many are good investments due to their rapid percentage growth rates. Others represent eventual takeover targets through which investors can also make money.

Growth stories

The ability to grow faster than large-caps is the small-cap's greatest strength, and one that most investors seek. An investor could have bought Gasco Energy Inc. (GSX) at 67 cents per share about two years ago and watched it climb to nearly $4 in 2004. The Denver-based company pursues oil and gas exploration in Utah and Wyoming.

Edge Petroleum Corp. (EPEX) is another example. The Houston-based producer ended 2004 with estimated total proved reserves of 89 billion cubic feet equivalent, an increase of 39% from the prior year. Production at the end of the fourth quarter was 49 million cubic feet per day, up 53% from the year-end 2003 rate.

Since 2002, the company's proved reserves have doubled and annual production has grown at a compound annual rate of 32%, chairman, president and chief executive John Elias said when announcing recent guidance for 2005.

Like many smaller-cap companies, Edge's CEO is a former major-oil executive, in this case Amoco, and he has years of oil-patch experience and contacts behind him. Most recently the firm acquired properties in South Texas from another Houston-based small-cap, Contango Oil & Gas, for $43 million. It also raised $47 million in an offering of 3.5 million shares of common equity.

At press time, Edge's debt was below $13 million and its unused borrowing capacity exceeded its entire $40-million credit line a year ago. Now, with greater size and a better financial foundation, it is poised to grow even more rapidly in the future.

International flavor

A number of small-caps are busy pursuing international exploration and development, providing investors with a variety of potential opportunities for growth. Take your pick of countries: TransMeridian Exploration Inc. (TMXN) focuses on Russia and the Caspian area, including Kazahkstan. Toreador Resources (TRGL) is exploring in Turkey. Vintage Petroleum (VPI) is drilling and producing in Argentina and Yemen.

In many cases these firms are overseen by executives and boards of directors who previously served with integrated oil companies around the world. They bring their contacts and experience to bear for lining up foreign concessions and maintaining relations with the host governments.

That is the case with Carrizo Oil & Gas Inc. (CRZO) which focuses mostly on the Texas and Louisiana coasts and the Barnett Shale play in North Texas. Recently Carrizo has moved as well into the U.K. North Sea as well, a decision that seems to have been questioned by some investors. However, some of its board members have life-long experience there and they believe the North Sea will provide another leg of growth for the Houston-based company, sup-

plementing its U.S. drilling program.

Vaalco Energy Inc., Houston, (EGY) has five wells producing in the new Etame Field it discovered in Gabon. It plans to drill more exploration and development wells there in 2005.

Rewards from digging

Warren Shimmerlik, principal with Cosco Capital Management in New York, used to be an independent investor-relations counselor that worked principally with small-cap E&P companies.

"I'm a big fan of small-cap stocks, although regulators have made it tougher for them to meet the reporting requirements," he says. "Their biggest challenge is that small-cap money managers are moving up the scale and managing larger and larger amounts of capital, which leaves small caps in the dust.

"But for stock-pickers, this sector is a real opportunity. Because there are fewer analysts today who follow them, the small-caps are often mispriced, which is a buying opportunity. You can find an idea that you think is too good to be true, but it is! There are a growing number of imperfections in the marketplace."

That is the benefit to the investor and on the other hand, a problem for the managers of small-cap companies. Still, there are many institutions that are eminently successful in investing in small-caps, such as Palo Alto Investors and Centennial Associates, he notes.

Wellington Management LLP in Boston led a group that invested $4 million in a private-equity placement for FX Energy (FXEN). The funding allowed the latter to reprocess and shoot more seismic data across its Baltic concession in Poland. Likewise, Wellington last year invested $4 million in Infinity Inc. (IFNY) so that the Denver small-cap could fund its 2004 drilling program in the Rockies.

"Stock-pickers willing to follow their own ideas and do their own analysis can take big positions in small-caps…It's risky but risk leads to greater reward. I think the risks are mitigated if you buy stocks that clearly represent unrecognized value," Shimmerlik says.

Analysis can be done by screening for stock price versus easily identifiable value using traditional measures such as cash flow. "Many of these companies have opportunities where they don't have the cash flow yet, or enough cash flow, but have a demonstrated ability to tap capital or have acreage such as in a coalbed-methane play, or in a field they have acquired that has drilling or redevelopment opportunities.You have to put the time in, but the less well-known these small-caps are, often the better the value. The reward comes from digging."

Most investors have price-versus-risk thresholds and will only buy in at a particular time, says Shimmerlik, so E&P companies have to develop long-term relationships. "Management matters so much, especially in the case of small-caps. It's easy to accumulate assets but it's what they do with them and the capital they have to work with. In the end, these small-caps often make you money when they sell out to a larger company." □

E&P-ESE

These are definitions of some of the key terms that are used in oil and gas companies' investor presentations, press releases, annual reports and other documents. Investors who are new to investing in upstream energy stocks can find additional definitions of unique terminology in upstream companies' annual reports.

— **M** is the Roman numeral for a *thousand*. So, production of 67 Mcf of gas per day is 67,000 cubic feet.

— **MM** represents a *million* in the Roman-numeral system, so production of 67 MMcf of gas per day is 67 million cubic feet.

— **B** represents a *billion*, thus production of 67 Bcf of gas per day is 67 billion cubic feet.

— **T** represents a *trillion*, so proved reserves of 2 Tcf of gas are 2 trillion cubic feet of gas.

— **Bbl** represents a *barrel*. Production of 80 Mbbl of oil per day is 80,000 barrels.

— **Cf** represents *cubic feet* and is usually the measurement of natural gas.

— **Cfe** represents *cubic feet of gas equivalent*. It is usually the measurement of the mathematical combination of natural gas and oil or gas liquids. The conversion is usually 10,000 or 6,000 cubic feet of gas per one barrel of oil or gas liquids. (The ratio usually reflects the recent market value of 1 Mcf of gas in comparison with 1 barrel of oil or gas liquids.) Thus, 10 MMcfe is 10 million cubic feet of gas equivalent. If the true mixture is 50% natural gas and 50% liquids (oil or gas) and the mathematical rate is 10:1, then 10 MMcfe consists of 5 MMcf of gas and 500 barrels of oil or gas liquids.

— **BOE** is *barrels of oil equivalent*. It is usually the measurement of a mathematical combination of natural gas and oil or gas liquids. The conversion is usually 10,000 or 6,000 cubic feet of gas per one barrel of oil or gas liquids. Thus, 10 MMBOE is 10 million barrels of oil equivalent. If the true mixture is 50% natural gas and 50% liquids (oil or gas) and the conversion rate is 10:1, then 10 MMBOE consists of 500 Bcf of gas and 5 million barrels of oil or gas liquids.

— **Cf/d** is *cubic feet of gas per day*. Another abbreviation of this is cfpd.

— **Bbl/d** is *barrels of oil per day* or *barrels of gas liquids per day*. Another abbreviation is bpd.

— **NGLs** are *natural gas* *(Continued on p.16)*

Worth a Second Look

Analysts say small-cap E&P stocks still make good investment sense, despite recent market gains.

Interview by Brian A. Toal

Despite enjoying huge share-price appreciation in 2004, the stocks of small-cap E&P companies—those with market caps of less than $2 billion—still have plenty of sizzle left for investors looking for growth stories within the energy arena in 2005.

Obviously, because they're starting from a relatively small asset base, small-cap operators can grow reserves, production and net asset value (NAV) at a much higher rate than their larger-cap brethren. Therefore, they have higher leverage to the strong commodity prices that are being forecast for the next few years.

However, that's not all small-caps have going for them. Because they have lower cost structures than bigger companies, they can more efficiently tackle upstream projects whose margins might not be as attractive to larger independents burdened with major overheads and higher operating costs.

So which small-cap upstream stocks are worth a second look by investors? To find out, Oil and Gas Investor *recently sat down with three prominent small-cap E&P analysts. Participating in the discussion were Michael Scialla, small-cap E&P analyst for A.G. Edwards & Sons Inc. in Denver; David M. Heikkinen, E&P analyst for Hibernia Southcoast Capital in New Orleans; and Ronald E. Mills, small-cap E&P analyst for Johnson Rice & Co., also in New Orleans.*

Investor Why do small-cap E&P stocks make good investment sense relative to larger-cap upstream companies?

Scialla They probably have the greatest leverage to strong commodity prices, which are going to be around for the next couple of years. In fact, for the foreseeable future, we think we're looking at $5 to $8 for natural gas and about $40 for oil.

Investor Why the upbeat outlook for commodity prices?

Scialla In terms of domestic natural gas production, we're struggling very hard right now just to flatten out the decline curve. Even though there were around 1,070 rigs running in the U.S. toward the end of 2004—10% more than at the start of the year—there weren't any appreciable signs of the industry being able to grow gas output.

Meanwhile, on the oil side, with worldwide spare productive capacity now down to around 1 million barrels per day—much lower than in the past—any kind of supply disruption, or threat of disruption, is going to keep crude prices high.

Investor Why will smaller-cap producers benefit more from these supply/demand and commodity-price outlooks than larger-cap companies?

Scialla They have the ability to grow production, reserves and net asset value at higher rates than larger operators because they're starting from a smaller base. Also, small-cap producers generally have lower cost structures, which allow them to focus on plays that wouldn't be as attractive to larger-cap independents.

Some of the unconventional reservoir plays, for instance, have very slim margins for many large-cap companies burdened with either a lot of overhead or high operating costs. Smaller operators, because of their lower cost structures, are able to take advantage of these plays—plays that can be very meaningful to them in terms of growth.

Heikkinen For small-cap producers that know how to create value for the capital they employ, we, too, see an opportunity for them to grow at a faster rate than large-cap E&P companies, particularly in a strong commodity-price environment.

After all, it's much easier to grow a 200 billion-cubic-foot (Bcf) company than one that's 2 trillion cubic feet (Tcf) in asset size. Smaller operators can move the growth needle much faster.

With an outlook for continued strong commodity prices—we're modeling $40 oil and $6.50 gas in our 2005 estimates—these smaller-cap, niche-focused producers are going to benefit from higher cash flows from operations. These higher cash flows will allow them to accelerate the development of their asset bases by putting more capital to work.

Although we follow large- and mid-cap producers, it's the smaller-caps that have the greatest opportunity to create value, in terms of growing reserves and production profitably from compara-

From the top, David Heikkinen, Ronald Mills and Michael Scialla.

tively smaller bases.

Investor Might these small-cap producers be tempting targets for larger-cap independents?

Heikkinen Yes. What's notable in this regard is that the 23 upstream companies we follow should generate around $9.4 billion in free cash flow in 2004 and about $10.7 billion in free cash flow in 2005.

That free cash flow is not only going to be aimed at share-repurchase programs, but also at making acquisitions. So to the extent that the values of smaller-cap E&P companies aren't being fairly reflected in their stock prices, those companies have the potential of becoming fairly valued in the M&A market through their takeover by larger-cap producers.

Mills We're also looking for strong commodity prices during the next couple of years, with a 2005 estimate of $39.75 for oil and $6.25 for gas.

In our view, supply-side events today have more legs than demand-driven events in the past. For instance, from 2001 to late 2004, we saw the U.S. rig count rise from 650 to more than 1,000, yet annual domestic natural gas production fell sequentially during that period. So our ability to increase gas supply at the flip of a switch, which we've enjoyed historically, no longer exists.

Concurrently, on the oil side of the equation, Saudi Arabia says it only has about 1 million barrels of spare productive capacity while the other OPEC countries have none.

So unlike 1997 and 2001, when we saw a big run-up in commodity prices as the result of increased demand—yet an ability by the industry to bring on supply to meet that demand—the ability to ramp up global oil and domestic gas production has now become limited. In such a supply-constrained environment, which is resulting in stronger-than-expected commodity prices, all E&P companies should do well.

Small-cap producers, however, will have the greatest leverage to strong commodity prices because of their ability to grow reserve and production volumes at a higher rate than their larger-cap counterparts.

Investor Within your respective coverage universes, which small-cap E&P stocks are worth a second look by investors in 2005?

Scialla One of our top picks is Southwestern Energy (NYSE: SWN), a Houston-based producer that's drilling the Cotton Valley sand in East Texas' Overton Field and is in the early stages of developing the Fayetteville Shale play in the Arkoma Basin in Arkansas.

Through 2004, the company has drilled more than 180 low-risk Overton Field wells, all of them successful. This has allowed companywide daily production to grow from 126 million cubic feet equivalent (MMcfe) at year-end 2003 to 150 MMcfe at year-end 2004. Reserves, meanwhile, have jumped from 500 Bcfe to an estimated 650 Bcfe.

With the drilling of another 80 Overton wells in 2005 and between 160 and 170 wells in its Fayetteville Shale play, we expect Southwestern to increase daily output another 20% by year-end 2005 as reserves climb to 800 Bcfe-plus. Meanwhile, it should grow proved-reserve NAV to $32 per share from a midyear 2004 level of $24.

This is a terrific drillbit growth story that's occurring in two fairly low-risk plays that contain repeatable drilling opportunities.

Heikkinen In the small-cap space, we look for companies that create value by comparing the present value of reserves added to the cost to find and develop those reserves.

Within that group, Southwestern Energy ranks among the highest value creators for 2005. We see the company adding $1.54 of value for every $1 it spends. The real upside for this company is its 500,000-acre Fayetteville Shale project. This is an unconventional resource play that has reserve potential of more than 4.6 Tcf.

Currently, all indications are positive on the 23 Fayetteville Shale wells that it has drilled to date—out of the thousands of wells it may have to drill, which give the company considerable potential beyond 2005.

Near-term, we see Southwestern growing its NAV from $36 per share at year-end 2004 to $56 by year-end 2005, largely through the development of Overton Field and the Fayetteville Shale project.

Mills One of our top picks is Range Resources (NYSE: RRC), a Fort Worth-based producer with core areas in the

Financial Forecasts

Company/Ticker	Avg. 2004/2005 EPS (Est.)	Avg. 2004/2005 CFPS (Est.)	Recent Price*	12-Month Price Target
Southwestern Energy (NYSE: SWN)	2.75/3.55	6.40/7.84	$46.60	$62
Quicksilver Resources (NYSE: KWK)	0.68/1.64	1.73/3.25	$35.80	$41
Range Resources (NYSE: RRC)	0.77/1.48	2.87/3.95	$19.80	$25
Energy Partners Ltd. (NYSE: EPL)	1.31/1.83	5.37/6.32	$19.29	$24
Denbury Resources (NYSE: DNR)	1.50/1.80	3.56/3.85	$25.34	$3
GMX Resources (Nasdaq: GMXR)	0.17/0.49	0.48/1.00	$6.31	$10
Edge Petroleum (Nasdaq: EPEX)	1.23/1.33	3.57/4.32	$14.18	$18

* Stock price is as of Jan. 10, 2005

Appalachian Basin, the Midcontinent and the Gulf Coast.

Since last June, the company has made two significant acquisitions in the Appalachian region. It bought out its partner, First Energy Corp., in the Great Lakes Energy Partners IV joint venture. This brought it an additional 255 Bcfe of Appalachian reserves and 35 MMcfe of daily production.

Range also acquired the assets of a private Appalachian operator, which gave it another 205 Bcfe of reserves and 15 MMcfe of daily output. Importantly, both of these acquisitions offer accelerated development opportunities in the Appalachia.

So whereas the basin has historically served as the cash flow generator for Range to fund growth in the Midcontinent and the Gulf Coast, these Appalachian acquisitions create a third growth area for the company.

We see companywide reserves growing from 658 Bcfe at year-end 2003 to an estimated 1.3 Tcfe at year-end 2005. Meanwhile, annual production should rise from 58 Bcfe to 86 Bcfe.

Investor What about other operators that focus on unconventional plays?

Scialla We like Fort Worth-based Quicksilver Resources (NYSE: KWK), which is involved in a major coalbed-methane (CBM) play in Canada, as well as drilling in the Antrim Shale play in Michigan and the Barnett Shale play in the Fort Worth Basin in Texas.

Notable is the company's CBM play in Alberta, where it has more than 500,000 net acres under lease. So far, it has drilled about 700 wells in this play targeting the 2,500-foot Horseshoe Canyon coals; however, Quicksilver has another 3,000 potential locations to drill, more than 500 of which should be drilled in 2005. The company, whose stock trades at a substantial premium to NAV, had a strong 2004, doubling CBM production to around 40 MMcf per day while doubling its Canadian reserves to about 300 Bcf.

For 2005, we see this producer growing annual production by 25%. Longer-term, Quicksilver is looking at remaining reserve potential in the CBM play of 500 Bcf to 1 Tcf-plus, which could add another \$10 to \$20 to the company's current NAV. The Barnett Shale play, where it has just begun to drill wells, would be additive to that.

Heikkinen In our view, Quicksilver will generate \$1.39 of value in 2005 for every \$1 it spends companywide.

We estimate that its CBM-play production will exit 2005 at 78 MMcf per day, up from a 2004 exit of 37 million per day, while it adds nearly 216 Bcf of reserves.

Our value-creation metric also takes into account the company's 180,000-net-acre Barnett Shale play where the 2005 production exit rate could rise to 31 MMcf per day from a 2004 exit of 10 million per day as reserves grow to 36 Bcf from 10 Bcf.

Currently, the company is in a position to grow its NAV from \$35 per share at year-end 2004 to \$42 at year-end 2005.

Investor Any hot players in the Gulf of Mexico?

Mills One is Energy Partners Ltd.

(NYSE: EPL), a New Orleans-based operator with leases in the Bay Marchand area and elsewhere in the Gulf of Mexico. Two years ago, it bought Hall-Houston, a private Houston-based operator. The move not only expanded Energy Partners' presence in the Gulf beyond Bay Marchand, but also enhanced the exploration expertise of the company.

The company, which grew reserves from 300 Bcfe at year-end 2003 to an estimated 335 Bcfe at year-end 2004, could end 2005 with 374 Bcfe of reserves as annual production, which rose from 46 Bcfe in 2003 to 49.8 Bcfe in 2004, climbs to 56 Bcfe. These gains will, to a large extent, be the result of developing discoveries already made, including a recent one at South Timbalier 41.

This operator has maintained a balanced risk profile, with 60% of its capex aimed at low-risk development projects; 15%, at high risk, deep-shelf drilling; and 25%; at moderate-risk exploration.

Investor Any other small-caps worth a closer look?

Scialla Denbury Resources (NYSE: DNR) is a Plano, Texas-based operator with a niche focus on carbon-dioxide, oil-recovery projects in Mississippi. Just from these projects alone, the company has grown daily oil output from 5,000 barrels in 2003 to 7,500 barrels in 2004. In 2005, production should climb to 10,000 barrels a day. Reserves, which were 128 million equivalent barrels in 2003, should grow to 135 million in 2005.

Notably, these properties should provide sustainable reserve and production growth—as much as 28% annually—for at least the next five years. Currently, the stock is trading at a 148% premium to a mid-2004 NAV of $17.50; however, we think its unbooked reserve potential could be worth another $16 per share.

Heikkinen With only $50 million in market cap, Oklahoma City-based GMX Resources (Nasdaq: GMXR) is involved in a lucrative joint venture with Penn Virginia Corp. in the East Texas Carthage Field, a tight-sands gas play.

With 10,000 net acres in this field, the company should grow reserves from a year-end 2004 level of 53 Bcfe to 83 Bcfe by year-end 2006 as it triples annual production, to 3.1 Bcfe.

An efficient operator, GMXR is creating $1.54 of value for each $1 of capital it employs. Our estimated year-end 2005 NAV is $10 per share. Recently, the stock has been trading at $6.40.

Mills Houston-based Edge Petroleum (Nasdaq: EPEX) is a $180-million-market-cap E&P company focused on South Texas. In December, the company acquired from Contango Oil & Gas some 18 Bcfe of South Texas reserves close to its Queen City Field.

A debt-averse operator with a strong management team, Edge has a balanced exploration and development program that should help it grow reserves from a 2003 level of 63 Bcfe to an estimated 105 Bcfe at year-end 2005. Annual production during the same period should also rise, from 8.1 Bcfe to 17.5 Bcfe. □

SMALL-CAP UPSTREAM STOCKS TO WATCH*

E&P Companies/Tickers	Market Cap ($MM)	Long-Term Debt to Equity	Price to Book	Quarterly Revenue Growth % (year-over-year)	Quarterly EPS Growth % (year-over-year)
Plains Exploration & Production (PXP)	1,900	1.00	2.39	120.55	NA
Forest Oil Corp. (FST)	1,700	0.75	1.30	52.11	-1.49
Quicksilver Resources Inc. (KWK)	1,700	1.26	6.29	35.90	35.97
Southwestern Energy Co. (SWN)	1,600	0.74	4.11	56.74	136.42
Unit Corp. (UNT)	1,600	0.19	2.70	84.25	83.56
PrimeWest Energy Trust (PWIu)	1,500	0.33	1.29	25.91	110.67
Houston Exploration (THX)	1,500	0.37	2.17	36.90	35.70
Cimarex Energy Co. (XEC)	1,400	0.00	2.22	51.00	71.48
Denbury Resources Inc. (DNR)	1,400	0.45	2.80	4.78	16.91
Cabot Oil & Gas Corp. (COG)	1,400	0.67	3.42	-4.82	-22.60
Vintage Petroleum Inc. (VPI)	1,400	1.40	2.84	39.09	75.11
Range Resources Corp. (RRC)	1,300	1.23	3.65	14.07	-41.67
Bill Barrett Corp. (BBG)	1,200	0.90	0.98	152.57	NA
St. Mary Land & Exploration (SM)	1,100	0.23	2.56	19.70	72.57
Stone Energy Corp. (SGY)	1,100	0.46	1.36	10.62	10.98
Spinnaker Exploration Co. (SKE)	1,100	0.13	1.37	26.03	83.10
Encore Acquisition Co. (EAC)	1,100	0.84	2.45	42.22	23.46
Magnum Hunter Resources (MHR)	1,000	1.09	1.66	55.57	119.19
Berry Petroleum Co. (BRY)	982.2	0.14	4.26	64.08	129.58
Black Hills Corp. (BKH)	972.2	1.11	1.36	-31.94	-2.04
Whiting Petroleum Corp. (WLL)	862.0	1.76	1.83	59.42	63.62
Swift Energy Co. (SFY)	730.5	0.80	1.64	45.37	98.43
Comstock Resources Inc. (CRK)	711.9	1.15	2.14	37.78	-7.40
Penn Virginia Corp. (PVA)	696.4	0.81	2.93	25.51	15.33
Remington Oil and Gas Corp. (REM)	688.8	0.02	2.36	27.96	52.92
KCS Energy Inc. (KCS)	652.5	1.16	4.33	26.09	35.84
Dorchester Minerals LP (DMLP)	635.9	0.00	3.14	15.02	NA
Energy Partners Ltd. (EPL)	635.8	0.51	2.43	25.88	35.16
Harvest Natural Resources (HNR)	586.0	0.06	2.64	65.46	-88.92
Petroleum Development Corp. (PETD)	581.8	0.18	3.93	54.98	63.64
Delta Petroleum Corp. (DPTR)	574.9	0.30	2.87	186.28	80.95
Meridian Resource Corp. (TMR)	436.5	0.24	1.46	34.83	93.75
ATP Oil & Gas Corp. (ATPG)	432.3	0.25	5.85	53.13	NA
Ivanhoe Energy Inc. (USA) (IVAN)	390.1	0.04	3.24	103.55	NA
Brigham Exploration Co. (BEXP)	358.0	0.25	2.02	30.68	-19.08
McMoRan Exploration Co. (MMR)	305.3	NA	NA	72.11	NA
Goodrich Petroleum Corp. (GDP)	305.2	0.48	5.78	52.39	280.77
Apco Argentina Inc. (APAGF)	272.3	0.00	2.91	3.30	-7.22
Endeavour International Corp. (END)	268.0	0.00	4.65	NA	NA
Gasco Energy Inc. (GSX)	263.1	0.05	5.40	207.14	NA
Warren Resources Inc. (WRES)	261.7	0.68	NA	22.91	NA
TransGlobe Energy Corp. (TGA)	246.7	0.00	6.71	97.77	650.00
Clayton Williams Energy (CWEI)	240.3	1.72	1.85	35.53	NA
Callon Petroleum Co. (CPE)	233.1	1.03	1.28	66.68	NA
Mission Resources Corp. (MSSN)	219.2	1.64	2.17	44.50	NA
CanArgo Energy Corp. (CNR)	216.6	0.02	2.20	-19.49	NA
Carrizo Oil & Gas Inc. (CRZO)	216.4	0.41	1.97	21.25	31.25
Toreador Resources Corp. (TRGL)	209.8	0.17	3.55	0.20	130.19
PetroQuest Energy Inc. (PQUE)	208.2	0.18	1.83	129.00	1580.00
Tri-Valley Corp. (TIV)	208.0	0.00	60.38	-92.86	NA
Tipperary Corp. (TPY)	204.6	2.37	5.11	47.78	NA
Canadian Superior Energy (SNG)	182.9	0.08	2.01	-1.02	NA
Edge Petroleum Corp. (EPEX)	178.5	0.23	1.87	48.87	6.43
Exploration Co., The (TXCO)	171.8	0.14	2.69	63.05	600.00
Wiser Oil Co., The (WZR)	164.1	6.23	6.37	-8.86	NA
Double Eagle Petroleum (DBLE)	151.1	0.00	6.42	77.81	85.42
Transmeridian Exploration Inc. (TMXN.OB)	140.1	4.06	14.93	430.19	NA
Jed Oil Inc. (JDO)	134.5	0.00	4.53	NA	NA

	Market Cap ($MM)	Long-Term Debt to Equity	Price to Book	Quarterly Revenue Growth % (year-over-year)	Quarterly EPS Growth % (year-over-year)
Parallel Petroleum Corp. (PLLL)	130.8	0.99	2.35	-11.29	-54.29
Coho Energy Inc. (CHOHQ.PK)	121.6	36.24	13.45	-27.86	NA
Vaalco Energy Inc. (EGY)	119.8	0.10	2.79	94.02	1354.55
Petrohawk Energy Corp. (HAWK)	110.9	0.71	2.22	70.60	NA
Canada Southern Petroleum (CSPLF)	107.7	0.00	2.85	40.10	-97.00
Barnwell Industries Inc. (BRN)	106.1	0.29	3.95	23.29	78.65
Petsec Energy Ltd. (ADR) (PSJEY.PK)	106.1	0.00	2.10	-33.23	-96.03
Harken Energy Corp. (HEC)	103.9	0.18	1.99	11.83	NA
Panhandle Royalty Co. (PHX)	91.7	0.37	3.20	24.16	17.44
Contango Oil & Gas Co. (MCF)	91.7	0.03	2.37	-19.95	-61.38
Premier Oil Plc (ADR) (PMOIY.PK)	87.8	0.26	0.22	-27.37	NA
Credo Petroleum Corp. (CRED)	85.1	0.00	4.21	8.74	-0.74
Quest Resource Corp. (QRCP.OB)	84.8	70.36	33.22	265.90	-96.97
Abraxas Petroleum Corp. (ABP)	83.7	NA	NA	39.77	NA
Galaxy Energy Corp. (GAXI.OB)	78.2	0.46	2.68	NA	NA
Arena Resources Inc. (ARD)	74.9	0.02	4.06	165.23	235.71
Adams Resources & Energy (AE)	72.9	0.24	1.50	37.90	426.53
American Oil & Gas Inc. (AOGI.OB)	71.9	0.00	8.51	766.67	NA
Gulfport Energy Corp. (GPOR.OB)	70.1	0.06	1.51	35.75	NA
Far East Energy Corp. (FEEC.OB)	69.7	0.00	11.24	NA	NA
PrimeEnergy Corp. (PNRG)	68.8	2.05	4.35	27.64	0.98
Dynamic Oil & Gas Inc. (DYOLF)	66.0	0.30	1.87	-19.12	NA
NGas Resources Inc. (NGAS)	64.9	0.09	1.70	71.09	-97.37
Chaparral Resources Inc. (CHAR.OB)	63.0	0.65	1.22	-5.28	72.22
DRC Resources Corp. (DRJ)	61.3	NA	NA	NA	NA
Royale Energy Inc. (ROYL)	56.2	0.34	3.27	-7.95	-47.93
Torch Energy Royalty Trust (TRU)	56.2	0.00	2.36	-11.32	-14.49
GMX Resources Inc. (GMXR)	51.7	0.03	1.64	43.37	59.26
GeoGlobal Resources Inc. (GGR)	44.1	0.00	7.88	NA	NA
Austral Pacific Energy Ltd. (APXYF.OB)	43.7	0.00	2.64	NA	NA
U.S. Energy Corp. (USEG)	43.7	1.11	6.81	963.87	NA
Dune Energy Inc. (DENG.OB)	36.0	0.08	3.62	NA	NA
CGX Energy Inc. (USA) (CGXEF.PK)	34.9	0.00	6.49	-84.55	NA
PYR Energy (PYR)	34.4	0.82	4.25	924.14	NA
Magellan Petroleum Corp. (MPET)	33.0	0.00	1.31	-15.16	NA
Ness Energy International (NESS.OB)	28.2	0.04	1.64	2696.55	NA
National Energy Group Inc. (NEGI.OB)	26.3	NA	NA	28.03	41.99
Whittier Energy Corp. (WHIT.OB)	20.3	1.14	2.39	90.37	70.37
Capco Energy Inc. (CGYN.OB)	19.9	1.36	4.66	39.80	NA
Torrent Energy Corp. (TREN.OB)	19.9	0.00	9.51	NA	NA
Daleco Resources Corp. (DLOVE.OB)	18.4	0.10	1.04	-17.96	NA
GulfWest Energy Inc. (GULF.OB)	17.9	1.96	1.19	15.07	NA
Isramco Inc. (ISRL)	15.0	0.23	0.49	61.93	NA
Hallador Petroleum Cos. (HPCO.OB)	14.9	0.00	1.07	6.79	NA
Aspen Group Resources (ASPGF.PK)	13.4	0.90	1.09	-65.84	NA
Forum Energy Corp. (FRUEF.OB)	13.2	0.99	2.10	NA	NA
Teton Petroleum Co. (TPE)	13.1	0.00	0.73	NA	NA
Aspen Exploration Corp. (ASPN.OB)	12.5	0.02	2.49	102.32	337.50
Oceanic Exploration Co. (OCEX.OB)	12.2	0.00	52.62	31.65	NA
Abacan Resource Corp. (ABACQ.PK)	12.1	0.65	0.26	NA	NA
Sonoran Energy Inc. (SNRN.OB)	11.3	NA	NA	-80.00	NA
GeoResources Inc. (GEOI)	10.9	0.28	1.63	42.51	145.65
Mexco Energy Corp. (MXC)	10.3	0.33	1.82	-5.97	1.56
Pyramid Oil Co. (PYOL.OB)	10.0	0.03	3.06	38.66	220.93
Fieldpoint Petroleum Corp. (FPPC.OB)	9.8	0.39	2.38	52.29	NA
Tag Oil Ltd. (TAGOF.OB)	8.4	0.00	4.23	NA	NA
Kestrel Energy Inc. (KEST.OB)	8.3	0.32	4.39	41.38	NA
Shannon International (SHIR.OB)	8.2	0.19	2.38	NA	NA
Continental Energy Corp. (CPPXF.OB)	7.9	NA	NA	NA	NA
Pioneer Oil and Gas (PIOL.OB)	7.5	0.00	4.93	56.16	1950.00
United Heritage Corp. (UHCP)	7.0	0.16	0.27	26.09	NA
Blue Dolphin Energy Co. (BDCO)	6.8	0.45	2.06	-61.33	NA

	Market Cap ($MM)	Long-Term Debt to Equity	Price to Book	Quarterly Revenue Growth % (year-over-year)	Quarterly EPS Growth % (year-over-year)
Crested Corp. (CBAG.OB)	6.3	NA	NA	NA	NA
EuroGas Inc. (EUGS.PK)	5.1	NA	NA	NA	NA
Gastar Exploration Ltd. (GSREF.PK)	NA	NA	NA	NA	NA
Petrogen Corp. (PTGC.OB)	NA	NA	NA	NA	NA
Service & Supply Companies/Tickers					
FMC Technologies Inc. (FTI)	2,000	0.37	3.69	24.98	14.08
Tidewater Inc. (TDW)	1,900	0.28	1.50	1.59	32.41
Helmerich & Payne Inc. (HP)	1,600	0.22	1.74	30.86	NA
Unit Corp. (UNT)	1,600	0.19	2.70	84.25	83.56
Cal Dive International (CDIS)	1,500	0.34	3.27	27.09	146.84
Key Energy Services Inc. (KEG)	1,400	0.78	1.98	20.45	NA
McDermott International (MDR)	1,200	NA	NA	-30.24	69.74
Petroleum Geo Services ASA (PGS)	1,200	3.14	3.14	-15.68	NA
Superior Energy Services (SPN)	1,200	0.65	2.87	18.85	27.35
Maverick Tube Corp. (MVK)	1,200	0.35	2.26	76.70	680.00
Stolt Offshore SA (ADR) (SOSA)	1,100	0.99	3.87	-22.19	NA
Todco (TH)	1,000	0.06	2.15	59.15	NA
Carbo Ceramics Inc. (CRR)	1,000	0.00	4.38	35.19	38.03
Hydril Co. (HYDL)	966.6	0.00	3.78	56.09	82.98
Oceaneering International (OII)	907.3	0.39	2.14	11.64	34.69
Oil States International (OIS)	902.0	0.38	1.78	41.98	34.78
Lone Star Technologies (LSS)	900.1	0.47	2.23	106.21	NA
Grey Wolf Inc. (GW)	894.9	1.25	4.06	60.66	NA
Compagnie Generale de Geo (GGY)	828.2	0.60	1.61	22.92	NA
Global Industries Ltd. (GLBL)	823.1	0.24	1.92	14.11	NA
Atwood Oceanics Inc. (ATW)	712.8	0.67	2.41	12.97	NA
Offshore Logistics Inc. (OLG)	682.4	0.54	1.40	15.26	106.13
Veritas DGC Inc. (VTS)	677.0	0.38	1.37	11.70	NA
RPC Inc. (RES)	649.9	0.03	3.82	28.13	297.75
Core Laboratories NV (CLB)	584.1	0.63	3.14	11.24	15.14
NS Group Inc. (NSS)	577.1	0.01	3.98	65.98	NA
Tetra Technologies Inc. (TTI)	566.5	0.61	2.52	-3.11	-22.02
W-H Energy Services Inc. (WHQ)	558.1	0.65	2.12	19.76	11.73
FX Energy Inc. (FXEN)	471.0	0.00	9.56	61.13	NA
Willbros Group Inc. (WG)	442.1	0.35	2.12	29.47	NA
Newpark Resources Inc. (NR)	411.4	0.60	1.38	15.90	50.00
GulfMark Offshore Inc. (GMRK)	405.5	0.90	1.42	2.92	NA
Dril-Quip Inc. (DRQ)	401.4	0.13	1.92	2.81	32.62
Pioneer Drilling Co. (PDC)	366.4	0.00	2.82	76.47	NA
Parker Drilling Co. (PKD)	361.3	3.15	2.35	6.12	NA
Gulf Island Fabrication (GIFI)	262.5	0.00	2.11	-43.54	-58.41
Seitel Inc. (SELA.OB)	182.0	NA	NA	-30.09	NA
Natco Group Inc. (NTG)	142.5	0.62	1.51	28.13	NA
Petroleum Helicopters Inc. (PHEL)	132.6	1.88	1.21	12.59	4750.00
Dawson Geophysical Co. (DWSN)	109.2	0.00	2.17	46.69	605.88
Infinity Inc. (IFNY)	92.9	1.01	2.74	26.02	NA
Ico Inc. (ICOC)	75.5	0.46	1.06	24.23	NA
T-3 Energy Services Inc. (TTES)	74.1	0.12	0.72	-0.94	248.57
CE Franklin Ltd. (USA) (CFK)	65.3	0.54	1.54	15.84	191.67
Allis-Chalmers Corp. (ALY)	64.1	0.94	1.78	46.97	-75.76
Natural Gas Services Group (NGS)	56.2	0.64	2.54	4.62	6.06
Horizon Offshore Inc. (HOFF)	34.9	1.80	0.30	18.59	NA
Bolt Technology Corp. (BTJ)	27.1	0.00	1.25	4.72	-37.10
Metretek Technologies Inc. (MTEK.OB)	27.0	0.42	2.44	-19.93	NA
Boots & Coots Int'l Well (WEL)	25.6	16.29	46.15	-58.91	NA
Omni Energy Services Corp. (OMNI)	19.5	3.32	1.38	40.60	NA
TGC Industries Inc. (TGCI.OB)	16.2	0.12	14.67	227.29	844.44
Torch Offshore Inc. (TORC)	13.4	2.02	0.24	47.90	NA
Trico Marine Services (TMARQ.PK)	6.5	6.32	0.10	-6.63	NA
Unifab International Inc. (UFAB.PK)	2.9	NA	NA	-37.39	NA
Black Warrior Wireline Co. (BWWL.PK)	2.5	NA	NA	17.43	NA

* Market cap and other data are as of Jan. 10, 2005. Source: Yahoo!

How to Choose a Small-Cap Investment

There are nearly as many varieties of investors as there are kinds of exploration and production companies. For some, small- and midcap E&P companies make investment sense.

Although Diane Weaver had been investor-relations director at Quicksilver Resources Inc. for only six months, her previous financial experience helped her form some strong initial impressions. "Investors' biggest focus seems to be an exploration and production company's potential growth, with respect to its acreage and new discoveries," she says.

On that score, Quicksilver fares well. It has production in four different basins—Michigan, Indiana/Kentucky, Alberta for coalbed methane and its newest play, the Barnett Shale in Texas, where it has more than 137,000 net acres.

Institutional ownership of the Fort Worth-based producer is fairly high, with 10 institutions holding 30% of its total outstanding common shares, or 50% when insider holdings are excluded. "We don't attract many short-term investors," Weaver says. "Our biggest difference from other E&P companies is our growth potential and expertise. Our focus is on unconventional gas and our biggest plays are shale and coalbed methane."

Small- and midcap E&P companies—defined as those having a market capitalization of $2 billion or less—present interesting investment opportunities.

"I think these companies are generating more investor interest because of the geopolitical situation and the potential for a super-spike in pricing. The buyside realizes that it needs to have a reasonable exposure to the group," observes Kim M. Pacanovsky, who follows non-major E&P companies for Key Banc Capital Markets in New York.

"Also, the quality of companies in the group today is much higher than it was five or six years ago. The last deep downturn in pricing did a lot to weed out the dead wood. There also have been a lot of mergers and acquisitions, creating a generally higher-quality group of companies."

Greg Barnett, president of EnerCom Inc., a Denver-based investor-relations and financial-services company that specializes in oil and gas, says, "What we've seen, for as long as we've been doing this, is that investors buy stocks in companies that are well-run, well-managed, have good financial and operation metrics, and have a vision for growth.

> **"This is not an** *industry that's going to be here today, gone tomorrow…Oil and gas is always in style."*
>
> *Greg Barnett, EnerCom Inc.*

"It's the same today as it was back in the 1980s, when oil prices crashed, and in the 1970s, when oil prices spiked. Investors who go long will buy and hold stocks that they believe will generate value."

EnerCom's 2004 oil and gas conference in August in Denver saw record attendance and registration. The conference has grown steadily since EnerCom created it in 1996, despite weak oil and gas prices in 1998 and 1999, because investors look beyond current commodity prices for high-quality E&P investments, Barnett says.

"It's a pretty simple industry," says Philip McPherson, research director at investment bank C.K. Cooper & Co. in Irvine, California. The firm has scheduled its own conference February 18, 2005, in Palm Springs for investors interested in E&P companies with smaller market caps.

"It basically comes down to production growth, reserve growth and repeatability—the ability to establish a niche or core area that can be developed so a larger company will buy them out. We don't want some small company with 3,000 acres in the Rockies, 3,000 acres in the Gulf Coast and 2,000 acres on the Barnett Shale that's simply participating in two or three wells in each area, and getting modest income as a result."

The Independent Petroleum Association of America (IPAA), which has seen its Oil and Gas Investment Symposium (OGIS) in New York grow, and expanded the program to London and San Francisco, now plans to focus on small-caps in February 2005 in Palm Beach, Florida.

There is a need for information, says Paul Korus, vice president and chief financial officer of Cimarex Energy Co. in Denver and chairman of the IPAA's OGIS board of directors. "Most questions seem to be narrowly focused on future production and volume growth and where it's coming from. Investors also ask about what's happening with capital spending—will it rise and at what pace, and is it due to cost increases that are being passed along or the ability to drill more prospects."

The E&P sector clearly has been a good investment overall in recent years. Barnett says, "At the beginning of our conference in 2004, I showed a chart that, had someone bought the stocks of the companies presenting in 2003 that also presented in 2004, those stocks would be up 60%. Going back to 2001, they were up 100%. The broader Dow Jones and S&P 500 were up 10% or 11% during that same period."

Experts foresee even greater interest in the E&P stocks now that they have made such a good showing in 2003 and 2004. Yet general investors have not flocked to the sector as much as one might expect, which suggests potential future growth could be significant.

"Historically, the S&P 500 has a much larger oil and gas component than it does today," McPherson explains. "If it goes from 6% or 7% to even 8%, the percentage of money among money managers who will be involved is quite substantial.

"The hard part for a basic portfolio industry is that the oil and gas industry is hard to compare on an apples-to-apples basis between onshore and offshore, oil and gas, and other factors. Generally, we've been successful in converting some of these money managers, although they don't want to be burned. But particularly in terms of North American natural gas, they seem ready to see the favorable supply fundamentals, with declining production rates amid high drilling levels, and the uncertainty of liquefied natural gas' contribution to supplies."

Pacanovsky thinks investors will focus on a company's ability to grow organically. "That's the reason you're seeing much higher valuations for long-lived producers than for pure-play Gulf of Mexico companies," she says. "Investors are paying for long-life reserves and inventory."

Potential investors also are looking more closely at who's on a company's board of directors because of corporate accountability issues that arose from operating abuses that led to the Sarbanes-Oxley Act two years ago, she adds. "People are paying more attention to a company's directors. So are the companies."

Plenty of variety

Within the small- and midcap sector, there is a great deal of variety as to assets held and capital-spending strategy. "Each company focuses on different regions and operates differently," says Barnett. "Some are exploration-oriented. Some are acquire-and-exploit.

"The common thread is that they're trying to deploy capital in such a way that generates above-industry-average returns. If investors see that, they'll buy the stock instead of investing in another company or another industry."

Institutional investors develop a similar game plan for their own growth on a year-to-year basis. "There are about 65 funds focused on natural resources, such as the oil and gas industry. The rest are more general. So if an institutional investor, in looking at his proprietary model and databases, decides that economic benchmarks show that energy will outperform the market, they'll begin to invest in that industry and attend conferences like ours.

"As long as companies are publicly traded, they'll come in and out. Some are value players who buy when prices are low. Others are hypergrowth investors, who want to capture sharp upswings when the sector is moving up. Since we started EnerCom in 1994, we've seen investors come in and go out of the group. It all depends on their investment discipline and how their portfolio performs. That will direct what they want to look at, year-to-year."

He suggested that investors' concerns about E&P companies can be boiled down to two basic questions: What commodity prices does a company use for its budget? What new technology does it use to buy more reserves and produce more oil and gas?

Barnett continues, "That's the simplified, compacted version of what I've seen at conferences and thousands of road trips I've taken with our clients. For example, if a company is drilling a well in the deepwater Gulf of Mexico, it's going to talk about the technology involved, from seismic to drilling muds to production—everything that's involved in drilling a $100-million well and bringing in an economic level of oil and gas.

"Looking forward, if you combine all these economic qualities, investors will want to know how a company is developing its budget—essentially, how it's running the piggy bank. That gets into the heart and soul of how an E&P company thinks and how it's prepared to handle price cycles that are becoming shorter and more pronounced in terms of peaks and troughs."

Experts emphasize that commodity prices are not the best basis for an investment. McPherson says, "Investors need to look at the fundamentals because these companies are dealing with a shrinking asset base. Each company has its unique attributes. Its locations are important." He considers the number of a company's proved undeveloped (PUD) properties that are being moved to proven and developed to be an important consideration.

"I have no problem with a company that has a large number of PUDs…but if a company doesn't intend to spend the money and develop the assets, it can be misleading. Investors have to watch that," he says. "They also need to watch for companies that are trying to get into new areas during high commodity prices without learning about the area first. We view operations as one of the key components for a potential takeover. Nobody is going to buy a company out at a premium if it's just a nonoperating partner."

McPherson considers The Exploration Co. of San Antonio one example of a company that has developed significant expertise in a specific region over an extended period. "It's been working the Maverick Basin in Texas for more than a decade, but is starting to see some production benefits after having worked in seven depths of potential production.

"It first tried to target each zone, but realized that was too much for a small company. So for the past year, it's targeting three zones that it found work the best, after a decade of experience there. It has six or seven rigs drilling right now, which is pretty extraordinary for a small-cap company," he says. (For more on the company's Maverick Basin prospects, see *Oil and Gas Investor*, February 2005.)

Growing sophistication

The executives who run most small- and midcap E&P firms are more sophisticated financially than their predecessors, several of whom had to sell out when they were not able to service heavy debt they assumed.

"Companies are paying more attention to earnings than simply keeping an eye on cash flow. There's more accountability," says Pacanovsky. "Senior managements of the companies I follow are very much aware that this industry has destroyed a lot of capital in its history. The lessons have been learned.

"Obviously, oil and gas companies have the wherewithal to have more conservative balance sheets because the cash flows are so strong now. But if there was a downturn in pricing, I expect to see more conservatism than in the past. In general, the tolerance is about 50% debt-to-capitalization. A company might go up to that level for a nice acquisition, but then would focus on paying debt down to get back to a reasonable comfort zone."

"The last deep *downturn in pricing did a lot to weed out the dead wood." Kim M. Pacanovsky, Key Banc Capital Markets*

Today, companies of all sizes have more options available for financing. They have worked for years to be appropriately staffed and appropriately financed.

Barnett says, "When it's been right to have a little more debt and less equity, they'd done it. This is not an industry that's going to be here today, gone tomorrow. It's an industry that I don't think ever will fall out of favor. Oil and gas is always in style.

"It's really hard to hide bad news in a business that depends on outside services and partners. At the end of the day, you have to hire a rig and drill a well. You either have the lease or you don't. You have the capital to pay for the rig or you don't. You drill a producing well or a dry hole. There are many safeguards. It is still an industry that has to deliver a product. That part is unmistakable."

In the end, however, investors and executives have the same goals: to build a company's value, and to make money. Korus has worked on both sides. "When you're in the oil and gas business, you realize how difficult it is to generate economic prospects to drill. People who aren't in the business assume that more cash flow translates into more prospects and more production," he says. "If it was that easy, why are we paying all these high-price geologists and geophysicists? Why are all the majors going to far-flung parts of the world looking for oil and gas?

"Domestic producers need to have more of a short-term orientation because they can't lock up huge overseas prospects and wait 10 years for a project to come to production. For a domestic independent, even producing from a prospect in as little as nine months, it may seem that an investor is not getting returns soon enough.

"Yet they face similar problems in getting returns from investments spread across several industries. If they can make the connection, they can understand. We all want shareholder value increased, however, and I can't think of a company out there that isn't trying to accomplish that." ☐

(Continued from p.5) *liquids* and these are usually measured in barrels rather than in cubic feet.

— **Btu** is a *British thermal unit* and is a measurement of stored energy, primarily used to describe the heat content of natural gas. One million Btu is generally the equivalent of 1,000 physical cubic feet; however, some natural gas contains fewer or more impurities than others and therefore has a higher or lower stored-energy content and, thus, market value. Natural gas is traded on Nymex in Btu rather than cubic feet.

— **API gravity** is a measurement of the gravity (density) of crude oil and other liquid hydrocarbons by a system recommended by the American Petroleum Institute (API). The measuring scale is in degrees. The higher the degree, the lighter the oil and the greater the market value because it needs less refining. Some oils produced in North Africa and the Middle East, for example, have API gravity measurements of more than 40 degrees. Heavier oils, such as some produced in southern California, may have API gravity measurements of less than 20 degrees. The oil that is traded on Nymex is West Texas Intermediate, which is a middle-grade oil of approximately 32 degrees.

— A **reservoir** is a porous and permeable subsurface formation that contains oil or gas and is surrounded by rock that separates the oil or gas contents from other reservoirs.

— A **field** is an area that contains a single reservoir or related reservoirs with the same geological structural feature or stratigraphic condition.

— A **trend** or **play** is an area or region where there is a great deal of drilling and production activity and involves a group of related fields and prospects.

— An **exploratory well** is drilled to find oil or natural gas.

— A **dry hole** occurs when no oil or gas is found in the exploratory well, or the quantity of oil or gas that was found is insufficient to justify the expense of bringing the well into production.

— A **delineation well** or **appraisal well** is drilled near a discovery well to help define the boundaries of the oil or gas reservoir and to further assist in deciding whether to incur additional spending to produce the oil or gas. A delineation or appraisal well can be deemed a dry hole.

— A **development well** is drilled where there has been a discovery, as a result of an exploratory well, and is usually drilled after delineation or appraisal. Oil or gas is produced from this well. A development well is rarely a dry hole.

— **Working interest** is the percentage of ownership that the company has in a joint venture, partnership, consortium, project, acreage or well.

— **Farm-in** or **farm-out** is an agreement in which the owner of a working interest in an oil and gas lease gives some or all of the interest to another party who wants to drill on the leased acreage. The party farming out the working interest usually retains a royalty or reversionary interest from the party that is farming in.

— **Gross acres** or **gross wells** are the total acres or wells in which a working interest is involved. Net acres and net wells are calculated by factoring in working interest. For example, if a company's working interest in 100,000 acres is 50%, then its ownership is 50,000 net acres. If the company's working interest in 100 wells is 30%, then its ownership is 30 net wells.

— A **PSC** is a production-sharing contract in which a host country receives oil or gas from an E&P company as a royalty payment. The E&P company usually bears all expenses of finding the oil and gas. If successful, the host country may contribute the expense of bringing the discoveries into production.

— **Net pay** is the thickness of productive oil- or gas-saturated rock that has been encountered during drilling. A company may drill a 15,000-foot well and encounter 300 feet of net pay in several intervals of 100 feet each, for example. The development well is designed to produce only from the net pay.

— A **prospect** is a lease or individual well that may be drilled because geology indicates it will probably be productive.

— **Prospective acreage** is where there are geologic, seismic and/or other reasons to believe the subsurface may contain oil or gas. Drilling will be necessary to form a conclusion.

— **Proved acreage** is where the existence of oil or gas has been proven by drilling exploration and appraisal wells.

For a comprehensive guide through the technical aspects of the upstream oil and gas exploration and production industry, see Fundamentals of Petroleum, *a publication of the University of Texas-Austin's Petroleum Extension Service. The service can be reached at 512-471-5940 or 800-687-4132.* ☐