



A faster Path to Profit

Low overhead and outsourcing let independents profit from fields the majors leave behind

Travel light, move fast, hit hard, and get out quick.

That's the basic operating strategy behind the U.S. military's Special Forces units, which have performed so effectively in the Middle East recently. It's also the basic premise behind a new paradigm in the energy industry that is making it feasible to extract previously unrecoverable oil and gas reserves while simultaneously lowering the level of risk involved for both the energy companies and the investors backing them.

The argument can be made that reliable energy is the world's most critical resource. Matthew R. Simmons, chairman of Simmons & Company International, Ltd., a 30-year-old independent energy-industry investment bank based in Houston, believes that the resolution of all the world's major problems — food, water, health care, etc. — flows from a reliable source of affordable energy. "Without reliable energy," he says, "all other needs are stalled."

That poses a problem, because worldwide production of both oil and natural gas is not growing as quickly as the rate of worldwide demand (*see related story, page 14*). Barring the discovery of major new oil and gas fields in the very near future, one of the few viable options is to extract more resources from proven reserves.

Extraction at a proven oil field is typically done at three different levels. In the United States, primary extraction generally recovers 10 percent to 12 percent of the

field's resources, and secondary extraction nets another 10 percent to 12 percent, explains S. Jeff Johnson, chairman, chief executive officer and president of Cano Energy Corp., an independent crude oil and natural gas exploration and production company based in Fort Worth, Texas. Tertiary extraction, he says, can result in the recovery of as much as 30 percent of a field's oil reserves.

Secondary and tertiary recovery has been enabled largely by advances in technology over the past two decades (*see story, page 30*). No one, however, has yet found a way to blunt the economic law of diminishing returns — and that is a law that weighs particularly heavy on larger companies.

The Benefits of Technology

Oil companies spent a huge amount of money on technology in the late 1990s and into the current decade. There was a widespread belief that technology had funda-

mentally changed the nature of the business. Among the benefits energy companies expected to reap were the drilling of far fewer dry holes, a marked reduction in the cost of finding and producing oil and gas, and a much smoother path to significant production gains.

Simmons states simply, "None of those beliefs were true." Instead, research shows that 145 companies spent \$410 billion on new technology during the last five years of the 20th century and for their efforts ended up with a net decline in production.

To be sure, there have been some real benefits. Technology has allowed very small fields to be exploited successfully and made it easier to pick the last of the "low-hanging fruit," Simmons says. For the big oil companies, however, the expected financial benefits failed to materialize. Cost reductions were often illusory, resulting mostly from changes in accounting procedures.

The bottom line is that there are still significant known reserves of gas and oil in the ground in many fields, and that the technology to recover those resources exists. However, in the majority of cases, most of the technology, research and data are in the hands of big energy companies, which are often publicly held. The potential return on investment by extracting the remaining

resources simply does not represent a compelling enough motivation for the company or its shareholders.

And that's where the new paradigm comes in. By relying on partnerships and alliances with other companies, independent contractors such as Cano Energy are able to leverage the technology, data and research of larger companies and make it economically feasible to tap those reserves.

"Overhead is the key," says Johnson. "A smaller company can operate more efficiently than a larger company. It is much easier for us to go in and utilize the previous investment in the field. In many cases, the technology originally developed by or for the major oil companies has become more cost-effective over time, and we can also benefit from that."

The new paradigm is attractive to the large companies that own the technology and exploration research, as well as to potential investors. The big companies get the opportunity to realize a return on assets that would

potential investors in April, it tapped Landmark's expertise to perform data loading and to develop a 3-D visualization model.

"The 3-D model was based on net pay, structure, well location maps and other information provided by Cano Energy," explains Lee Taylor, an account executive at Landmark Graphics. "Landmark provided meeting facilities and personnel to host a tour of the facilities as well as present the Davenport 3-D model."

The Davenport project was the first resulting from discussions between Cano and Landmark starting in January of this year. "Jeff Johnson contacted us to explore ideas about how a company of Cano's size could leverage Landmark's facilities, personnel and technology," Taylor recalls. "I visited Cano and laid out a few ideas of my own on how Landmark could address the things Jeff wanted to accomplish."



ing a project. The joint venture model provides critical mass in both technical expertise and finance. It enables us to align our capital so we can take larger interests in projects and be in a better position to negotiate the terms of the deal."

While the traditional joint venture model in the energy industry involves partners competing against each other, the new model eliminates or greatly reduces that problem. "We are aligned with Cano, and Cano with us," says CMI President Tom Morrow. "There are no overrides or success fees, so any incentive to make a project look better or worse is removed. We both do our economic evaluations from the same set of data."

In a typical deal, Cano brings its geological, geophysics and other expertise and its deal-making capabilities to the table. "We not only evaluate the geological and geophysics opportunities together, we also share a close and seamless strategy on the trades," Morrow explains. "Their strength

comes from being a smaller company — agile and able to move fast. We bring the strength of a larger company and marry it with Cano's small-company efficiency. Cano gets the benefit of CMI merging two or three companies together to take a project off the street."

Eugene Island 268, a natural gas project that CMI and Cano are working on together, is a powerful example of the speed inherent in this new model. Seismic research and analysis indicate the field has four potential "pays," industry jargon for a profitably producing well. Two wells are already operating and producing about 6 million cubic feet of gas per day; the other two will be drilled in the future.

"From the time Cano entered the project, it was only about 45 days to the first production, which makes for quick cash flow," notes Hauf. "And there is additional upside in the project because with the platform we are using, we have the ability to drill up to three more wells for other objectives. They would be more exploratory in nature, but very analogous to what is there."

"The joint venture model provides critical mass in both technical expertise and finance."

otherwise be sitting idle or greatly underutilized. Investors stand to benefit from immediate cash flow once a well starts to produce, as well as significant tax advantages (*see related story, page 8*). All parties to the deal benefit from an increased mitigation of risk.

Partnerships Expand Opportunities

As in the outsourcing model that has become a critical strategy for companies in many other industries, the new energy industry paradigm allows companies to focus on their core competencies while relying on best-in-class strategic partners to supply products, services and expertise in other areas.

One example of this strategy is Cano's relationship with Landmark Graphics, a Houston-based subsidiary of Halliburton, Inc. When Cano wanted to do a presentation on its Prue Sand, Davenport Unit for

At that meeting, Taylor invited a team of Cano executives to visit Landmark's Houston offices to get a better feel for the services and facilities it could put at Cano's disposal. They had further discussions about how the two companies could team up on several of Cano's ongoing projects, and the Davenport Unit became Landmark's first consulting services project.

Another company partnering with Cano is Challenger Minerals Inc. (CMI), in Houston, the upstream subsidiary of Global-SantaFe that plays a business development role for the parent company's drilling management services groups.

"Our basic business model is predicated upon partnering," says Chuck Hauf, CMI's vice president and general manager of new ventures. "We believe that more minds are better than one when evaluat-

Efficient Use of Capital

The new paradigm helps to mitigate risk on several levels. The first is through efficient use of capital. A conventional exploration and production company is saddled with huge overhead. It has to finance infrastructure and personnel from the day exploration commences through the end of production. Companies such as CMI and Cano look only at other companies' prospects, and their offers are usually contingent on the well studding (i.e., drilling commencing).

"As a result, we don't have the traditional carrying costs of inventory that go with end-to-end projects," says Morrow. "That insulates us from some of the traditional risks in this industry."

The financial risk to CMI joint venture partners like Cano can also be mitigated through the use of turnkey drilling and completion services offered by Applied Drilling Technology Inc. (ADTI), another Global-SantaFe subsidiary based in Houston.

"Cano has a very successful business

model in its own right, and they are in no way obligated to use any of our other services; none of our joint venture partners are," Hauf explains. "But most of them — all of them, really — like turnkey because it is a risk mitigation tool." With turnkey, drilling and completion become a fixed cost rather than an open-ended variable cost.

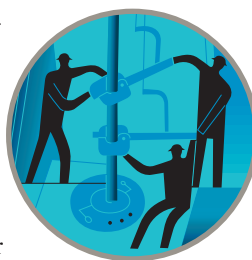
Joint venturing reduces exposure by spreading the risk among more participants, as well. While taking a 50 percent position in a wild-cat well is a tough decision for a single company to make, if five partners each take 10 percent, the deal becomes much more attractive.

Finally, joint venturing lets companies such as Cano broaden their holdings, lowering risk in much the same way that a classic diversification strategy lessens risk in a stock portfolio. On its own, Cano might only have the resources to invest in

two or three projects at a time. Working with joint venture partners, it can take smaller interests in a greater number of projects, thus boosting the likelihood of higher returns.

As Johnson points out, the new business model presents attractive opportunities for individual investors as well as for independent exploration and production companies.

"The big companies left behind both the fields and the technology because they couldn't find a cost-effective way to use them," he says. "With the new business model, the only real outlay is for manpower; the services and technology are there and paid for. We are facing a serious energy supply problem in the very near future, so increasing oil and gas prices are a strong probability. This new business model gives individual investors a chance to share in any profits that might result." ■



TECHNOLOGY BOOSTS **independents'** growth

In an industry where the five largest companies collectively produce more oil than Saudi Arabia, Kuwait and Yemen combined, it might come as a shock to learn that small, independent companies account for fully 40 percent of U.S. domestic oil production. What's more, according to the U.S. Department of Energy, independents produce more than 65 percent of the nation's

natural gas and drill 85 percent of its exploratory wells. Technology is the explanation behind those startling facts, and it is also a critical component in the paradigm-shifting business model being embraced by a new breed of lean, agile energy exploration and production companies such as Cano Energy Corp. Key developments include:

- ▶ 3-D seismic imaging and 4-D time-lapse imaging that enable greatly improved characterization of geologic structures and reservoir fluids below the earth's surface. Recovery rates for oil-in-place typically ran between 25 and 30 percent with 2-D technology; 3-D boosts recovery rates to 40 percent to 50 percent, 4-D up to 70 percent.
- ▶ New drilling techniques such as sidetrack (horizontal) drilling, which allows lateral extensions to be drilled from existing wellbores, and high-pressure coiled-tubing drilling, which lets drillers reenter wells with flexible steel tubing unreel from a truck-mounted spool driven by a hydraulic motor.
- ▶ Refinements in drilling hardware such as the polycrystalline diamond drill bit, which uses a diffusion bonding technique to combine the cutting assembly with the bit.

- ▶ High-resolution electrical logging technology, which improves the level of precision with which geologists can predict how much a well will produce.
- ▶ Advanced drilling platform types, including semisubmersible, jack-up, TLP (tension leg platform) and SPAR (deep-draft caisson vessel), which have made offshore drilling possible and opened up deepwater offshore fields.
- ▶ ASP (alkaline-surfactant-polymer) technology, which uses a chemical mix to reduce the surface tension between oil and water during the pump-out process, thus permitting easier (and less costly) secondary and tertiary extraction of residual oil at fields the majors have abandoned (see story, page 30).

As great an impact as technology has had on the energy exploration and production

business, industry observers say even more advances are needed. Matthew R. Simmons, chairman of Simmons & Company International, Ltd., in Houston, contends that the need for a "next-generation toolkit" has never been greater, although the road map for critically needed new tools remains hazy.

One promising view of the oilfield's technology future is that of Houston-based Baker Hughes, Inc. The company has trademarked the name "Downhole Factory" for its vision of a production management system that combines fiber optics, robotics, artificial intelligence and other "previously unimagined" technologies to refine oil or convert natural gas into electric power right within the wellbore itself. The company hopes to have its Downhole Factory operational before the end of the current decade. — M.J.MCD.