Understanding the Supply Side Dilemma of Oil & Gas Commodities

The only 'given' for commodity trading experts is that oil and gas prices recently reached all time historical highs. Crucial questions about the supply side of the supply and demand matrix are largely unanswered. By **RON HARRELL,** Chairman & CEO, Ryder Scott Company LP.

SOME COMMODITY TRADING experts say that OPEC countries are hoarding stocks to bring up the price. Others suggest that increasing supply inventories in strategic oil-storage caverns in China, India and the US are boosting crude and gasoline prices. Others question whether those oil and gas supplies are really in the ground. They contend that we are witnessing the beginning of the ultimate decline in supply that some have predicted for years.

Recently, major petroleum reserves impairments have given impetus to this latter view, bringing into question the petroleum supplies of major Western oil and gas companies. However, OPEC is by far the bigger player in this supply-price conundrum.

Outside North America, most proved reserves are owned by governments and state-owned companies. Oil and Gas Journal (OGJ) figures show that OPEC, composed of state-owned organisations, controls 69% of world oil supplies with 870 billion bbl of proved reserves and 50% of gas with 3,062 trillion cubic feet (Tcf).

Matthew R. Simmons, Chairman and CEO at Simmons & Co. International, an oil and gas investment banking firm, is a leader of the faction questioning OPEC petroleum supplies. He recently questioned reserves estimates from OPEC, saying that the cartel's reserves have grown every year from 1981 to 2002 while it produced 175 billion bbl of petroleum.

Simmons says, "Isn't it amazing that the more they produce, the faster they grow?"

He added that most large oil and gas supply gains seem to be merely on paper while significant discoveries have been small. During that period worldwide, approximately 6% of gains in 'proved' reserves – a term that will be clarified later – came from exploring new fields and 108% came from what Simmons calls 'paper barrels'. These are estimated future production gains from improved recovery techniques. Simmons said that these gains have not been realised.

He questioned Saudi Arabia's reserves, which have not been reported on a field-by-field basis since 1979, after reviewing more than 2,000 Society of Petroleum Engineers (SPE) papers on Saudi oil fields, some of them going back four decades. Saudi Arabia, the main source of the world's oil supply, claims it holds 25% of all reserves.

In the 1980s, "OPEC countries simply raised their reserve levels arbitrarily," says Simmons. Saudi Arabia, for example, raised its reserves from 175 billion bbl to 261 billion bbl.

Defending his nation's figures, Nansen Saleri, the head of reservoir management at national oil company Saudi Aramco, recently said that Saudi Arabia has plenty of oil and more to be found. He said that the Saudis have huge proven reserves of 260 billion bbl and that figure is "very conservative."

Simmons countered, saying that the argument that OPEC's reserves are "conservative" hinges on the notion that modern technology enables far greater recovery of original oil in place – a contention that has not been supported elsewhere, except for some "exceptions," he said.

Simmons also questions reserves estimates from Western companies. He remarked that many current oil producers are now in irreversible decline, finding and development costs have doubled, daily oil and gas production is flattening out and the world's oil supply is now extremely mature.

"The 'trust me' era is over," he said. "Most of the world's proved reserves are simply statements and some of those statements have to be wrong."

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Trust in OPEC's numbers are especially important since OPEC virtually controls supply. However, the overriding caveat is that OPEC reserves are not subject to the same rigorous review as reserves reported from Western companies and are therefore more suspect.

The challenge for OPEC countries and now for some Western companies is to make their proved reserves estimates more credible to world markets. For both OPEC and non-OPEC producers, their ability to attract capital investment depends on greater credibility for their reserves estimates, future production and cash flow. Debt and equity markets are demanding it.

Proved Reserves Estimates

What do investors and exploration and production (E&P) companies mean when they mention proved reserves? The most succinct answer is that proved reserves are those estimated quantities of crude oil and natural gas that geological and engineering information indicate – with reasonable certainty – can be commercially recovered in the future from known reservoirs under existing economic and operating conditions.

Even if the physical, subsurface quantities are held constant, proved reserves estimates can and do vary as a function of the reserves definitions that are applicable to the estimate. For instance, the US Securities and Exchange Commission (SEC) requires filers to use prices and costs in effect on December 31st of each year in their calculations of oil and gas reserves and their economic values. This 'one-day price' is used to standardise the reporting conditions of

each public issuer. The SEC has never suggested that the reserves calculated using these economic assumptions represent proved reserves under other sets of definitions. The agency has never represented that the subsequent values are true market values. The estimates reported by companies to the SEC would very well vary significantly, up or down, if other economic parameters were substituted for the one-day price.

Other regulatory agencies, most notably Canada, allow filers to use a forward looking estimate of future prices and costs in their reserves reports.

Which procedure is more reliable? To the extent that no one can accurately forecast future economic conditions over a 20-plus year period, most evaluators would prefer to use an estimate of future pricing and costs somewhat different from a single one-day price that can be radically affected by seasonal temperature swings and other non-predictable events.

One should take note that reserves quantities are to be estimated to a level of "reasonable certainty" in the eye of the evaluator. This is meant to imply a reasonably high order of certainty but is limited to 'volumetric' aspects, which involve analysis of reservoir rock characteristics permeability, porosity and water saturations as well as the study of analogous fields to assist in generating recovery factors. Interpretive latitude is not applied to the economic aspects of future revenue projections.

Commodity analysts and others in the financial sector should focus on proved reserves when assessing supplies, because those quantities are considered more reliable than those under other categories such as probable and possible reserves.

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How Valuable Are Proved Reserves?

To get an idea of how much value proved oil and gas reserves represents, one need only examine worldwide reserves figures. OGJ estimates that at the beginning of 2003, worldwide reserves were 1.266 trillion bbl of oil and 6,076 Tcf of natural gas. Some critics say that those numbers are overstated. However, a long complicated discussion on that topic is best left for another day.

Let's just look at 3% of that total for oil and 3% of that total for gas – a tiny portion of worldwide figures. Those percentages represent quantities of proved oil and gas reserves reported to the SEC. The latest OGJ annual survey reported that the 154 publicly owned US oil and gas producers that filed 10-K reports at year-end 2002 reported 37 billion bbl of oil and 187 Tcf of gas. At US$35/bbl and US$5/thousand cubic feet (Mcf), for example, those reserves represent a total value of more than US$2 trillion.

That dollar figure for SEC-reported reserves is conservative, because it does not include non-US companies reporting to the SEC. Even so, US$2 trillion is comparable to the gross national product of Germany, the fifth largest domestic economy in the world. Recall that this is just a small fraction of the so-called world's petroleum reserves.

In the final analysis, the staggering value of world proved reserves and lesser, yet very significant value of SEC-reported reserves dictate that those quantities are estimated in accordance with internationally accepted practices.

One World, Several Standards

The problem is that no one international standard exists for all purposes. Reserves definitions promulgated by the SPE/World Petroleum Congresses come closest. However, SPE recommends that those definitions, which it adopted in 1997, are to be used as the technical standard for estimating reserves. These definitions are not directly applicable for a company filing reserves quantities with the SEC, which cites language and guidance from the Financial Accounting Standards Board (FASB). Similarly, a company that files with regulators of the London Stock Exchange does not use SEC-reporting standards. At the same time, evaluators, in many cases, have to be knowledgeable of more than one standard. For instance, their companies may need an SEC-case reserves study for reporting purposes and a study conforming to SPE definitions for internal purposes.

Bridging the Knowledge Gap

The knowledge required by evaluators is spread throughout various references and some of that knowledge has not been formally documented and published. Once the industry amasses this knowledge, presents it to qualified reserves evaluators, tests them on the material and certifies them, then we will have taken a huge step forward in gaining credibility for our reserves numbers.

It is probably fair to state that most of the value represented in proved reserves quantities has been estimated by competent, well trained professionals. In my opinion, it is also fair to say that many other individuals charged with estimating reserves are not well trained in some of the fundamentals necessary to issue reliable estimates that conform to relevant definitions.

This grouping of companies and estimators would be the real beneficiaries of a worldwide programme to independently certify qualified petroleum geologists and engineers in the practice of reserves evaluations, estimating and reporting. For this reason, I have urged the E&P industry to establish an independent professional organisation to test and certify evaluation professionals.

This is not to disparage the fine technical skills of the reservoir evaluation professionals in our business. Nor am I suggesting that any area of industry or any company falls short in presently having qualified reserves evaluators on staff. I do suggest, however, that the industry, including investors, will be well served by knowing that these evaluators, whether employed by E&P companies or independent consultants, have met specific elevated standards and are fully qualified to prepare reliable reserves estimates fully compliant with the requisite reserves definitions

This certification programme will also fill a need to have a single set of recommended practices, including ethics training, made up of various subsets of standards and sponsored or endorsed by such respected organisations as SPE, SEC, FASB, SPEE, WPC and others. The resulting sets of standards would be compiled into reference material to be studied by evaluators preparing to be tested for certification.

Why Certification of Reserves Evaluators?

The impetus for this started with the Enron scandal and the ensuing corporate responsibility laws, including the Sarbanes Oxley Act of 2002. We now have an environment that demands higher standards throughout the energy industry and particularly the oil and gas industry.

Industry sponsored certification is an opportunity for professionals in reserves estimations and evaluations to take the lead before government does. As professional reserves evaluators, those of us in the industry have to take the necessary, difficult steps to upgrade and demonstrate our competencies as professionals or suffer the consequences of inaction. We need to act now before the US Congress, European legislative bodies or other authorities order us to do so.

The US Congress is already considering mandated third-party reserves audits. On May 4, US Representative John Dingell, a member of the House Committee on Energy and Commerce, asked the SEC and Financial Accounting Standards Board why they had not adopted a requirement for third-party reserves audits. The committee has jurisdiction over accounting standards set by the FASB.

If our industry wants to set the standards rather than the government, then surely industry prescribed certification is a step in that direction and a better long-term solution than mandated third-party reserves reviews.

The certification programme, although in its infancy, is now underway. Potential sponsoring organisations American Association of Petroleum Geologists (AAPG), WPC, SPE and Society of Petroleum Evaluation Engineers (SPEE) are currently giving serious consideration to the certification proposal. It is hoped that a meeting of representatives of those organisations in June will result in the formation of an exploratory committee that will further research the idea. Committee members will subsequently report back to their respective sponsors with initial recommendations.

Is this simply a plan to mandate a requirement that all reserves reports be prepared by certified evaluators or to increase business for engineering and geological consultants? NO! Indeed, it is anticipated that many E&P companies, both large and small, will be anxious to obtain certification for certain key individuals within their companies. This will reassure investors that their reserves have been properly prepared and reported by internal personnel that have met international standards for reserves reporting. An ensuing boost in investor confidence may, in fact, discourage or silence current calls that third-party reserves audits be required.

Ultimately, whether through mandates or self imposed requirements, improvements in the petroleum reserves evaluation sector will result in more reliable estimates and a better understanding of that sometimes murky supply side of oil and gas ·

Testing & Certifying Evaluation Professionals: How it Works

Engineers or geologists certified as specialists would be recognised by the organisation as having an advanced level of skill as well as substantial experience in established reserves evaluation methods. The testing agency would have to ensure that recognition as a certified specialist is meaningful and reliable. The four facets proposed as the foundation for certification are:

(1) Recommended practices in reserves estimation
(2) Basic ethics training
(3) Relevant reserves definitions
(4) Continuing education

The evaluator would qualify for accreditation by virtue of education and special training, experience and job history, knowledge and scoring on certification exams. The exam would test for competency in the technical aspects of evaluations as well as for knowledge of regulatory reserves reporting requirements and reserves definitions of various government agencies worldwide, including the SEC.

The examination, perhaps open-book, would assure that candidates demonstrate knowledge of recommended practices in reserves estimation. It would also test for competency in relevant commercial software.

Ethics would also be considered. Perhaps, the certifying organisation would ask for attestations as to character, qualifications and other attributes of the candidate through letters of recommendations from respected individuals. The ethics training is particularly significant considering social and business customs and cultures worldwide.

To maintain the certification, geologists and engineers would have to fulfil requirements for continuous education, including ethics training, on an annual basis. Certification alone will not necessarily change human behaviour, including unethical conduct, but the additional training required for a candidate to pass a meaningful examination will, at least, expose such individuals to a code of ethics as well as to accepted techniques and evaluation practices.

Integrated, multi-disciplinary reserves evaluations require interaction between geoscientists and engineers. For that reason, all applicants would be required to exhibit competency in both the engineering and geoscience aspects, but with much more detailed knowledge required for their respective areas of specialisation whether geological or engineering.

The certification programme would require board direction and staff administration. The programme would require constant monitoring to handle grievance issues and potential 'de-certification' with cause.

The entire programme, including the exams, should be Web based, which would allow inexpensive access virtually anywhere in the world. I have been successful in attracting qualified, respected organisers to lead and assist in this initiative. We can incorporate specific programme attributes from non-scientific certification programmes, including the US-based Certified Public Accountant standards.

Candidates for certification would need to (a) provide evidence of their educational and professional qualifications (b) recommendations of respected peers (c) successfully complete an open-book examination of recommended practices in reserves estimation, ethics and selected reserves definitions, and (d) consent to maintaining a satisfactory level of competency by annual recertification through continuing education.

The programme could be made available to anyone at a nominal cost through the Internet. No one would be 'grandfathered' into the programme.

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