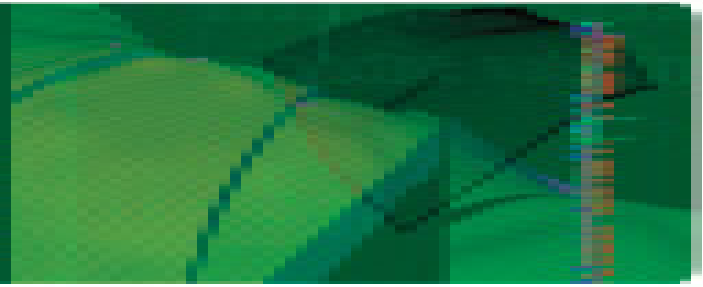


RESERVOIR SOLUTIONS



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“The time has come to certify reserves evaluators”

Certify the reserves certifiers, says Harrell



Harrell at presentation this March.

Ron Harrell, CEO at Ryder Scott, is urging the petroleum industry to establish or nominate an independent professional organization to administer examinations and certify qualified petroleum geologists and engineers in the practice of reserves estimation and evaluation. “The impetus for this started with Enron and the ensuing corporate responsibility laws, including Sarbanes Oxley,” he said. “We now have an environment that demands higher standards throughout the energy industry and particularly the oil and gas industry.”

Harrell sees this as an opportunity for industry professionals to take the lead before government does. “I would urge that we, as professional reserves evaluators, take the necessary, difficult steps to upgrade and demonstrate our competencies as professionals. We should act before the U.S. Congress or another authority orders us to do so,” he remarked.

Engineers or geologists certified as specialists would be recognized by the newly created organization 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, said Harrell. The evaluator would qualify for accreditation by virtue of education and special training, experience and job history, knowledge and scoring on certification exams.

Harrell initially contacted the Society of Petroleum Evaluation Engineers and American Association of Petroleum Geologists to discuss this initiative. He envisions a program offering petroleum geology and petroleum engineering options.

“We would need certification by a recognized professional organization or organizations, possibly SPEE and AAPG. We could rely on the Society of Petroleum Engineers to provide input particularly from the ‘Standards Pertaining to The Estimating and Auditing of Petroleum Reserves and Reserves Information,’ an SPE board-approved document,” said Harrell. “Reserves issues affect a relatively small number within SPE so the society may not have an interest in accreditation of evaluators. However, AAPG has experience in accreditation. It certifies petroleum geologists. SPEE is a logical choice because its members are involved in reserves estimates.”

The exam would test for competency in the technical aspects of evaluations as well as for knowl-

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edge of regulatory reserves reporting requirements and reserves definitions of various government agencies worldwide, including the U.S. Securities and Exchange Commission. "The examination, perhaps open book, would assure that candidates are able to demonstrate knowledge of 'best practices' in reserves estimation," said Harrell. "It would also test for competency in relevant commercial software."

Ethics would also be stressed, said Harrell. "Perhaps, the certifying organization would ask for attestations as to character, qualifications and other attributes of the candidate through letters of recommendation from respected individuals," he said.

To maintain the certification, geologists and engineers would have to fulfill requirements for continuous education, including ethics training, on an annual basis. "The ethics training is particularly significant considering social and

business customs and cultures worldwide," said Harrell.

Integrated, multidisciplinary reserves evaluations require interaction between geoscientists and engineers. For that reason, all applicants would be required to exhibit competencies in engineering and geoscience, but with much more detailed knowledge for their respective areas whether geological or engineering, suggested Harrell.

The certification program would require board direction and staff administration. "The program would require constant monitoring to handle grievance issues and potential 'decertification' with cause," said Harrell.

He suggested that the program, including the exams, could be Web based, which would allow access by producers and consultants virtually anywhere in the world. Harrell is asking for organizers to lead and assist in this initiative. He sees organizers incorporating specific program attributes from nonscientific certification programs, including the U.S.-based Certified Public Accountant standards.

"I welcome input from qualified individuals, respected organizations and relevant agencies," he said. Harrell can be contacted at ron_harrell@ryderscott.com.

Ryder Scott makes major financial contribution to SPE

Ryder Scott has committed to donating \$50,000 over five years to the Society of Petroleum Engineers for its SPE.ORG project aimed at enhancing the society's Web site.

"The project to which Ryder Scott lent its support is absolutely central to advancing our mission of providing the means to collect, disseminate and exchange critical technical information," said SPE President **Kate Baker**.

"Ryder Scott's leadership will inspire others and we are deeply grateful for this generosity."

The donation is large for a company the size of Ryder Scott.

"This action is an extraordinary step of faith by this company and far exceeds anything remotely similar in our history," said CEO **Ron Harrell**. For information on the project, go to www.spe.org, click on About SPE and then go to the SPE Foundation.

Publisher's Statement

Reservoir Solutions newsletter is published quarterly by Ryder Scott Company LP Petroleum Consultants. Established in 1937, the reservoir evaluation consulting firm performs hundreds of studies a year. Ryder Scott has issued reports on more than 200,000 wells or producing entities in North America.

The firm has also evaluated hundreds of international oil and gas properties involving thousands of wells. Ryder Scott multidisciplinary studies incorporate geophysics, petrophysics, geology, petroleum engineering, reservoir simulation and economics. With 100 employees, including 60 engineers and geoscientists, Ryder Scott has the capability to complete the largest, most complex reservoir-evaluation projects in a timely manner.

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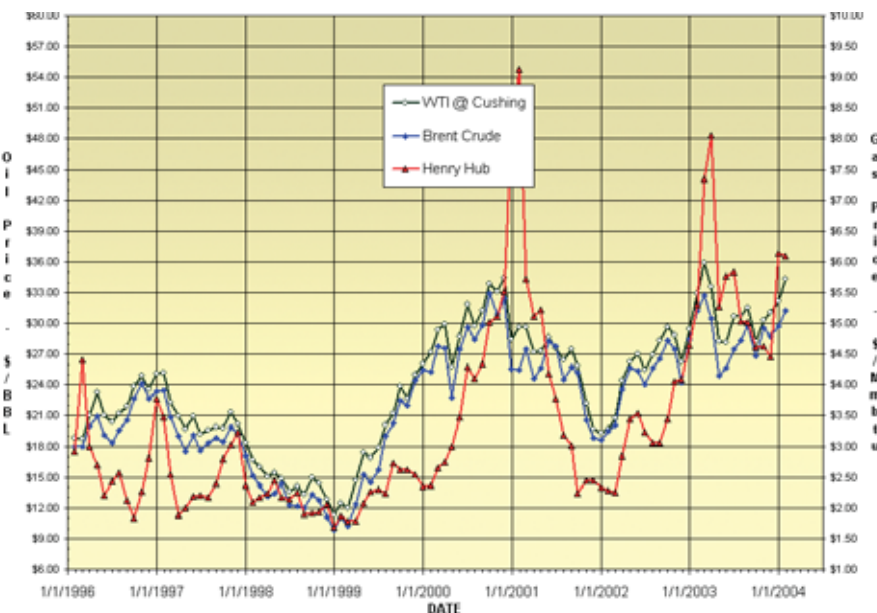
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Price history of benchmark oil and Henry Hub gas



The historical price chart shows published, monthly-average, cash market prices for WTI crude at Cushing (NYMEX), Brent crude and Henry Hub gas.

Harrell to address SPE group on SEC and reservoir technology

Event: The SPE Gulf Coast Reservoir Study Group Luncheon Meeting
Date: March 25, 11:30 a.m. to 1 p.m.
Place: The Courtyard on St. James Place, 1885 St. James, Houston, TX
Topic: The SEC and the Reservoir Evaluation Technology Gap
Speaker: Ron Harrell, CEO at Ryder Scott Petroleum Consultants
Cost: \$30 member, \$35 non-member
Registration: Go to www.spegcs.org/en/calendarevents/registrations



Harrell

Harrell will address some of the most troubling and misunderstood aspects of the petroleum reserves reporting requirements imposed by the US Securities and Exchange Commission (SEC). Numerous ongoing compliance and enforcement issues stem from the SEC's insistence on absolute conformance to reserves definitions issued more than a quarter century ago with limited if any regard to the technological advances since 1978. After his presentation, Harrell will open up the discussion for questions about technical matters and commercial conditions required for the designation of proved reserves.

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Hodgin to address landmen at technical workshop, April 22



Hodgin

Executive vice president **John Hodgkin** will be the keynote speaker at the Houston Association of Professional Landmen Annual Technical Workshop, April 22, to be held at the Rice Hotel Lofts in downtown Houston. The workshop, expected to draw about 200 attendees, will focus on energy economics and finance for landmen.

Hodgin will discuss the Sarbanes-Oxley Act and the reporting of petroleum reserves. Burlington Resources Inc., Anadarko Petroleum Corp. and Challenger Minerals Inc. are hosting the event with video conferences at their respective locations.

For further information, go to www.hapl.org.

In memoriam



Mooney

Tom D. Mooney, a contract geologist at Ryder Scott who began his career at Sinclair Oil Co. in 1960, died unexpectedly on Feb. 23. "We lost a wise geologist, a colleague and most of all a close friend," said **John Hodgkin**, executive vice president. "Tom would want us to have a wry smile on our face when we think of him not unlike the one he always had for us."

Mooney had worked at Ryder Scott for more than seven years and had been a geological consultant since 1985. While at Sinclair for two years as a geologist, he did well site work in the Permian Basin. Mooney was an exploration and development geologist at Continental Oil Co. from 1962 to 1970 and held the same position at Inexco Oil Co. from 1970 to 1975.

He was the exploration manager at Aminoil USA from 1975 to 1981 where he was involved in acquisitions. The next four years, Mooney was a senior vice president and president at Centura/Minden Oil & Gas Inc. and was in charge of exploration and operations.

Mooney had experience in virtually all major U.S. oil and gas provinces as well as experience internationally. He had BS and MS degrees in geology from the University of Arkansas in 1959 and 1961, respectively. Mooney was a member of the American Association of Petroleum Geologists, Houston Geological Society and West Texas Geological Society.

Rietz to discuss use of simulation



Rietz

Dean Rietz, managing senior vice president and manager of reservoir simulation at Ryder Scott, will present "Reservoir Simulation Models and Their Use in the Estimation of Reserves" at an April 7 luncheon hosted by the Houston chapter of the Society of Petroleum Evaluation Engineers. "Reservoir simulation is increasingly being used to

forecast and estimate reserves. However, as with any reservoir engineering technique, certain precautions must be taken when relying on simulation for this purpose," said Rietz.

The luncheon will be at the Petroleum Club Coastal Suite, 800 Bell St., from 11:30 a.m. to 1 p.m. The cost is \$30 for members; \$35 for non-members. For further information, please contact SPEE at bkspee@aol.com.

Press turns to Ryder Scott for expert analysis

Writedowns spur media to find out about reserves estimation processes

The international press turned to Ryder Scott to provide expert background analysis on the reserves estimation process following recent reserves writedowns earlier this year. On Jan. 12, *Reuters* wire service interviewed **Dan Olds**, petroleum engineer, who was quoted as follows:

"Companies and their advisers factor in future oil prices, emerging production techniques, the potential volumes of oil and gas and the availability of pipelines when judging how many proven barrels a field holds, said ... Olds, who audits oilfield reserve estimates.

"It's an ongoing consideration by the SEC," said Olds, who heard from SEC officials at an October forum hosted by the Society of Petroleum Evaluation Engineers. "I think the SEC has become more proactive in recent years."

The collapse of pipelines and energy-trading firm Enron invited heightened scrutiny for the broader energy industry, Olds said, and prompted the SEC to hire its own petroleum engineers. Energy companies may also be feeling pressure to revise figures to comply with the new corporate governance and accounting reforms under the Sarbanes-Oxley law, Olds said.

On Jan. 13, *The Wall Street Journal* interviewed and quoted Olds. That day, the *Houston Chronicle* also interviewed and quoted Olds as well as **Mike Wysatta**, business development manager, who referred to a Society of Petroleum Evaluation Engineers forum survey indicating 82 percent of the attendees didn't think the SEC adequately took current technology into account.

Olds was quoted as follows:

"Enron has caused additional scrutiny of the energy industry, even though Enron wasn't about oil and gas production," noted Dan Olds, a petroleum engineer with Ryder Scott Petroleum Consultants in Houston.

But oil and gas producers, particularly those operating in the deep waters of the Gulf of Mexico, are

loath to spend what can amount to millions of dollars and years of work on a flow test, when they can evaluate a reservoir's potential with newer methods such as downhole testing.

"Companies want to consider really hard if a test is actually necessary," said Olds, who also serves as secretary-treasurer of the Society of Petroleum Evaluation Engineers.

When developing many of the deep-water fields in the Gulf of Mexico, companies often bypassed the traditional flow tests "and went forward with multi-million dollar projects," Olds said. "They felt the information from these other methods was conclusive enough to spend their money on."

On Jan. 15, *Bloomberg* wire service interviewed CEO **Ron Harrell**. Excerpts from the article are as follows:

"Anytime a Shell does something like this, it makes the investing public worry about the others," said ... Harrell ... of Ryder Scott Co. in Houston, which does the most third-party reserve estimates for SEC filings. "It's an area of concern."

... The SEC requires signed sales contracts, approved authorizations for expenditures, environmental permits and other documents in "developing frontier areas."

"The SEC has been fairly narrow-minded about this area," said Harrell of Ryder Scott Co. "Letters of intent are

interesting but they are not enough to determine the project will go forward."

... Boosting reserves to fool investors is rare, consultants said. "Cases of fraud or intentional misinformation are nonexistent," said Harrell of Ryder Scott, which conducted an independent analysis of reserves by Russia's OAO Tyumen Oil Co. before BP Plc invested \$6.35 billion last year and hasn't seen an outright fraud case in 35 years. "We don't see them."

On Jan. 19, the *Oil and Gas Journal* published an article featuring Harrell. The following excerpts appeared:

... Harrell said Shell's revision illustrates growing concerns with SEC reserves reporting regulations,



established 26 years ago. "Since that time, the technology that we use to evaluate reserves has increased dramatically beyond the tools and techniques that we had in 1978. The way oil and gas is marketed today is drastically different than in 1978. So trying to incorporate the business world and the technology world of today with requirements that were written a long time ago just brings about problems of interpretation," Harrell said. Annual reserves reports are either prepared by companies themselves or by third-party engineers. Many companies also conduct midyear or quarterly reserves updates, he said.

Project partners frequently have different reserves estimates for the same field. Harrell said this is because reserves reporting depends on the quality and quantity of data and figures also vary depending upon the individual making the estimate. "There is no way to take out the effects of professional interpretation on the data that we have," he said. "It is highly interpretative, so that is why we use the term 'estimate.'"

... Harrell said the Sarbanes-Oxley Act, passed by

the US Congress in 2002 to deter corporate fraud in financial reporting, already had prompted renewed interest in more third-party intervention in reserves reporting. "I think Sarbanes itself probably will advance that cause a little more than the Shell event will, but if there is another Shell and another Shell, then all bets are off. I wouldn't anticipate that, but I wouldn't rule out the possibility. If it's happened once, it could happen again, but I have no specific expectation of any one company," Harrell said.

On Jan. 18, the *Los Angeles Times* published an interview with Harrell as follows:

For petroleum firms, reserves amount to nothing less than "the value of the company," says ... Harrell. "All companies today are taking a hard look at their reserves," Harrell notes, as much because of the requirements of the Sarbanes-Oxley corporate governance law as questions arising from Shell's cutback.

"... There is no way to take out the effects of professional interpretation on the data."



Portraits of Harry M. Ryder and David Scott Jr., who cofounded Ryder Scott in 1936, are hung outside the Ryder Scott boardroom by Joan Bueling of Dakota Framing and Photography, Houston, in February. Ryder Scott discovered in 2000 that it had photos of Ryder and Scott only after Donald T. May, who joined the firm in 1936, identified them in old, archived photos. May became reunited with the firm after finding its Web site and sending a letter to CEO Ron Harrell. Portraits of John F. Buckwalter, president, 1956–1972; Raymond V. Cruce, CEO, 1972–2000 and Ron Harrell, CEO, 2000 to present, also are displayed in the "Hall of Fame." Ryder headed up the firm from 1937, its year of incorporation, to 1946. Scott left the firm ten years later.

ASC, critics debate whether Canadian reporting regulations undervalue juniors

Critics are saying that NI 51-101, the new set of regulations governing petroleum reserves reporting in Canada, could undervalue junior issuers compared to those exempt from the rules, mainly senior cross-border issuers. The Alberta Securities Commission disagrees.

Most all of those large companies sought and recently received exemptions from these new regulations. They are allowed to report under U.S. Securities and Exchange Commission regulations.

Jim Jarrell, a petroleum engineer who does investment research at Ross Smith Energy Group, said that because of the exemptions, the intended objectives of NI 51-101 are diminished. "The idea behind NI 51-101 was to protect retail and institutional investors, but the exemptions have reduced its impact and created some confusion" he said. "There is also a belief that the rules are particularly hard on smaller companies."

The Jan. 15 Ross Smith's *Expert's View* periodical stated that the ASC has set as a goal that companies report no negative proved reserves revisions at year-end 2004. "Because of this, we are concerned that evaluators could be unjustifiably conservative in estimating proved reserves for year-end 2003," Jarrell remarked.

He added that by holding non-exempt companies to the "high degree of certainty" level in reporting proved reserves, NI 51-101 establishes a higher standard than that of the SEC, which requires "reasonable certainty" in proved reserves. In a backhanded way, Calgary's biggest energy companies agree. They said that the new regulations would leave them at a competitive disadvantage with U.S. firms.

Glenn Robinson, the senior petroleum evaluation engineer at the ASC, referred to the debate on high degree vs. reasonable, saying, "I don't buy what they are saying those words mean. That is why we came up with statistics." Canada allows for the use of deterministic, judgmental P numbers in estimating reserves and suggests a P90 certainty for proved reserves at the reporting level.

The Globe and Mail newspaper in Toronto, Ontario, reported Feb. 9 that large company "concerns about the ASC policy centred on three issues: a requirement that all reserves be examined to some degree every year by external engineers; a require-

ment that companies include expected future expenses, rather than just those actually incurred, when calculating finding and development (F&D) costs, a key measure of the efficiency of a company in locating new reserves; and worries over inconsistencies in how companies would measure those expected future costs."

Robinson said that companies have been pressured to manage F&D costs to the extent that now this is causing big writedowns. "F&D costs are the worst indicator," he remarked.

Robinson also finds fault with focusing on proved reserves. He argued against an accounting rule in Canada that required the use of proved reserves only in ceiling tests, a calculation commonly used to determine whether a reserves write down is required.

"A company should be able to use proved plus probable reserves in the ceiling test," he said. "It's a better measure of value." Last

September, Canada adopted the use of proved plus probable reserves with respect to cost-center impairment calculations, otherwise known as ceiling tests.

Jarrell said that complying with NI 51-101 is labor intensive from the administrative standpoint, putting a strain on independent engineering services. Ross Smith, stated, "We are concerned that there are insufficient engineering services to draw from in order to support the evaluations/audits that now have material administration requirements."

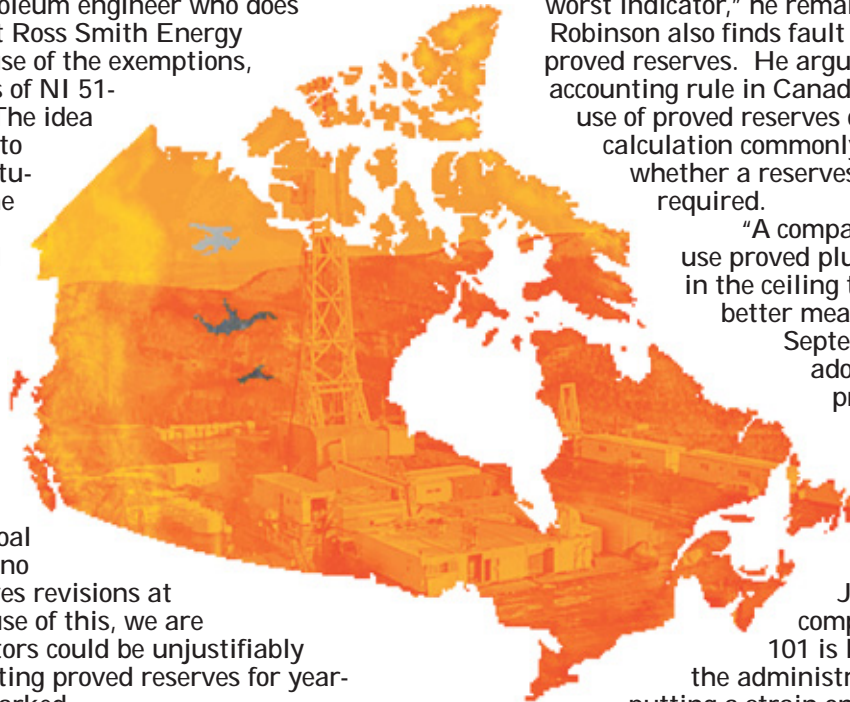
Jarrell said that he expects that some consultants will have to hire contractors to ensure completion of work, but that this can result in lower quality reserves reports.

The *Expert's View* stated, "In the opinion of the ASC, third-party evaluators have in the past been coerced into inflating reserves." Robinson said that outside evaluators face coercion on a daily basis.

"The internal evaluator gets his arm twisted (for greater reserves), so he goes to an external consultant and wants higher numbers," he said. "If he doesn't get them, he'll go down the street and get another consultant. What's in it for a third-party consultant, except that they get to keep clients year after year?"

He said that Canadian regulators have issued

Please see ASC on next page



A look at credit rating agencies and reserves: Part I

Editor's Note: Part II will examine what credit analysts say about reserves consultants and ratings.

Some E&P companies were put on credit watch lists following their recent petroleum reserves writedowns, which has sparked an interest in how the credit rating agencies analyze the E&P sector. **Andrew Oram**, vice president at Moody's Investors Service, said its approach to E&P analysis starts with the qualities of an E&P company's property base, its unit full-cycle economics pattern and quality of its reserves engineering.

When assessing debt-repayment risk for institutional investors, Moody's looks at "what is," — namely, the absolute and proportional-scales of the reserves components, risk characteristics, unit economics and trends within the reserves components and the debt burden supported by that asset portfolio. The credit rating agency also looks at reserves addition components, history of reserves revisions and characteristics of key production concentrations.

Then Moody's conducts qualitative and forward-looking assessments of an E&P company. Some of this involves assessing the probabilities for unit-volume repeatability or the likelihood of full production replacement and growth at competitive (or at least supportable) unit full-cycle costs.

ASC—Cont. from Page 1

rules to control coercion and any transferal of responsibilities to third parties. "The national instrument says that the companies are responsible for their reserves estimates," Robinson remarked, citing the F3 report that is signed by the company and filed with securities regulators.

The F3 form states that "management of the Company are (sic) responsible for the preparation and disclosure of information with respect to the Company's oil and gas activities in accordance with securities regulatory requirements."

For more information on Ross Smith's *Experts View*, send an e-mail to Jarrell at jjarrell@rseg.com.

Editor's Note: Ryder Scott does not argue against the notion that third-party consultants are pressured by clients, in some cases, to issue higher reserves estimates. The firm, however, maintains that giving into this pressure violates an independent consultant's guiding principles and in the long run, will result in loss of credibility, business and ultimately viability.

"Often, the \$64,000 question is to what degree and for how long, may flush hydrocarbon prices offset rising unit full-cycle costs and support the volume replacement challenge," said Oram. "After the bond-indenture ink is dry, institutional investors have far less protection than the power banks derive from their corporate or borrowing-base loan agreements." A bond indenture is a contract that specifies the promises of a bond issuer, financial covenants and the rights of investors.

"Analysis of a firm's production base, as it is and as it reasonably might evolve from the replacement and growth program, is the starting point of our analysis," said Oram. "The fatter and more durable the cash-flow cover from the proved-developed base relative to an E&P's fully loaded reserve replacement costs, the greater the likelihood for internally funded growth."

Proved developed producing reserves (PDP), proved developed non-producing reserves (PDNP), total proved developed reserves (PD), risk characteristics of concentrations within those categories and expected production trends are central to assessing the durability and proportional scale of the production base underpinning debt repayment, capital spending, reserves replacement and exploration. "PD reserves and PDP reserves in particular are the foundation that generates the capital needed to fund all the risk and cash-absorbing activity," said Oram.

Moody's does not risk proved undeveloped reserves (PUDs) as severely as the typical 50 percent risking (plus or minus) by banks, but the agency does fully load them for the capital needed to take them to production and sensitizes them for the risk mix, location and result patterns in the PUD portfolio. Moody's keys its leverage tests primarily on debt divided by PD reserves, adjusting for the E&P's PD reserves life and PD reserves mid-cycle value.

"In this tough volume environment, for some, the volume progression has been in PUD growth and not in material PD reserves or production growth," said Oram. "For acquisitions, Moody's looks at production and hedged cash-flow multiples."

Kenneth Austin, assistant vice president—analyst at Moody's, added that the public market understandably seems not to be engineering-oriented in looking for the credit insights. To bridge that gap for investors, he differentiates property portfolios by considering production potential, timing, risk and capital needs inherent in different formations and basins and

Please see Credit on next page



Credit—Cont. from Page 7

within each of the reserves sub-categories, including PDPs, PDNPs and behind pipe, and PUDs. "In fairness to the investing public, much of this information, including the reserves subcategories, is not in the public domain," Austin said.

Generally, the market seems to assess leverage by dividing total debt by EBITDA (earnings before interest, taxes, depreciation, and amortization), by total capital or by total proved reserves, including the PUD component.

"Including PUDs without their capital cost (capex) is double leveraging," he remarked. "This might work in the short run but really doesn't signal whether an E&P's business is gaining ground or losing ground over time relative to its debt burden. The PUDs largely still have to be funded and the capex is part of the full 'mortgage' on the reserves and future cash flow," said Austin.

So the ratings analysts break out PD reserves and further assess leverage by debt on PD reserves and by debt plus all future required development and P&A (plugging and abandonment) expenses divided by total proved reserves with PUDs being a component of that denominator. "Most in the market seem not to do that," he said.

PUD is not a dirty word for analysts though. "PUDs are a standard component of the reserve portfolio but they still have to be funded. They do not always work out like everyone thinks they will and growth in PUDs doesn't always translate into production growth. We are cautious of companies carrying a very high proportion of PUDs," said Austin.

Like Oram, Austin also sees a slippage in some of the companies that he tracks though the strong price environment has protected a number of them. He said that growth through the drillbit and acquisitions are more difficult in today's environment and that the size of new field discoveries and annual production figures are down in the aggregate.

"Drilling has become more selective and companies are not finding what they did in the past. In this

environment, companies are also paying a premium for their acquisitions," said Austin.

RS supports Potential Gas Committee



Through funding and volunteerism, Ryder Scott supports the U.S. Potential Gas Committee (PGC), a panel of about 140 volunteer members from all segments of the natural gas industry who are concerned with U.S. gas resources. Ryder Scott

petroleum engineers **Don Roesle**, president and COO; **Ron Rhodes**, managing senior vice president; and **Larry Connor**, senior vice president, are members. The committee functions independently but with assistance from the Potential Gas Agency of the Colorado School of Mines. "The PGC is watched closely because it is seen as a non-political and scientific voice in a debate that has become increasingly controversial," said Rhodes.

The committee has published biennial estimates of the potential supplies of U.S. gas resources since 1964. The estimated gas in the judgment of the PGC can be recovered conventionally with adequate economic incentives as measured by price-to-cost relationships. Current and future technologies are also considered. PGC estimates are base line in that they attempt to provide a reasonable appraisal of the total gas potential and are not limited by assumptions on field development duration, life span of the gas industry or commodity prices.

The latest published report from year-end 2002 is available by contacting the Potential Gas Committee, c/o Potential Gas Agency, Colorado School of Mines, Golden, Colorado 80401 or e-mail jbcurtis@mines.edu; Phone: 303-273-3886.

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