



YE 2012: More oil, less gas; property portfolios change

Saddled with weak gas prices, E&P companies are boosting the ratio of oil to gas as indicated by fourth-quarter preliminary reserves estimates for year-end 2012.

“The E&P business was able to largely mitigate the effects of lower natural gas prices by continuing to execute their strategy to grow liquids production and reserves,” said **Dave Goodin**, president and CEO at **MDU Resources Group**, in a Feb. 5 earnings call. “In the fourth quarter alone, our oil production was 59 percent higher than the fourth quarter in 2011 and 36 percent higher for the full year. We were impacted by realized natural gas prices that were down 25 percent for the last year and as a result we shifted our focus towards higher returns related to oil production.”

Gas benchmarks used for YE reporting were low. The 12-month average for the Henry Hub gas cash market price was \$2.76 per MMBtu, a 33 percent drop from last year’s \$4.12. Colorado Interstate was \$2.57 and AECO Canadian was

\$2.33.

Oil remained strong. WTI Cushing, Oklahoma spot price was \$94.71 a barrel, a slight downtick of little more than 1 percent from the 2011 average. Europe Brent spot price topped the oil benchmarks at \$111.21.

Unit Corp. said it grew reserves by 29 percent while incurring a \$165-million to \$180-million non-cash ceiling test write down because of “significantly lower net 12-month commodity prices.” Prices received for NGLs and gas dropped 34 percent and 33 percent, respectively.

Warren Resources Inc. also said it increased gas reserves 17 percent to 8.54 MMboe despite posting a 29 percent drop off in PV-10 cash flow from the prior year, some of which was attributable to the decline in gas pricing. **Penn Virginia Corp.** said it realized a 13-percent decrease in pro forma proved reserves because of a 161 Bcf (26.9 MMboe), or 28 percent, decrease in proved gas reserves. That was partially offset by a 10 MMboe, or 28 percent, increase in proved oil and NGL reserves.

Bill Barrett Corp. announced that it built its production mix the past 2 years to 24 percent oil at year end. The Denver company wrote down gas reserves values and ceased drilling for gas in the Uinta and Piceance basins in the Rocky

Mountain region.

Roland O. Burns, CFO at **Comstock Resources Inc.**, said his company made a “large downward revision” of 534 Bcf, because of the “very low SEC price” that

(Comstock) had to use to estimate proved reserves. “Undrilled gas projects were not economic at the \$2.84 per Mcf price that the company had to use,” he told investors on Feb. 12.

Laredo Petroleum Holdings Inc. said it increased proved reserves 21 percent to 188.6 MMboe with its percentage of proved oil reserves climbing to 52 percent from 36 percent at year-end 2011. **Randy A.**

Foutch, chairman and CEO, said the company has significant resource potential in a 145,000-net-acre Permian-Garden City tract where it is drilling horizontal wells in the middle, lower and upper Wolfcamp and Cline zones.

Range Resources Corp. curtailed plans to drill for dry gas and removed 67 Bcfe of proved undeveloped gas reserves because it no longer expected to drill those wells within the next five years. With few exceptions, the U.S. Securities and Exchange Commission disallows booking PUDs past five years.

Despite the PUD debooking,

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New petroleum engineer

Claudia Oramas was promoted to associate petroleum engineer this year. She estimates reserves and evaluates field performance and economics under the guidelines of the SPE-PRMS and U.S. SEC rules.



Oramas

Previously, Oramas worked at Ryder Scott as a senior petroleum technician for four years. She assisted in preparing cashflow reports and in managing production data, petrophysical studies and engineering and geological information.

Oramas has worked with U.S. and international companies, including those in Mexico,

China, Colombia, Venezuela and Argentina, where she assisted in a waterflood study of several fields. That experience includes assisting in reserves-estimation studies of fields in Colombia and Trinidad & Tobago.

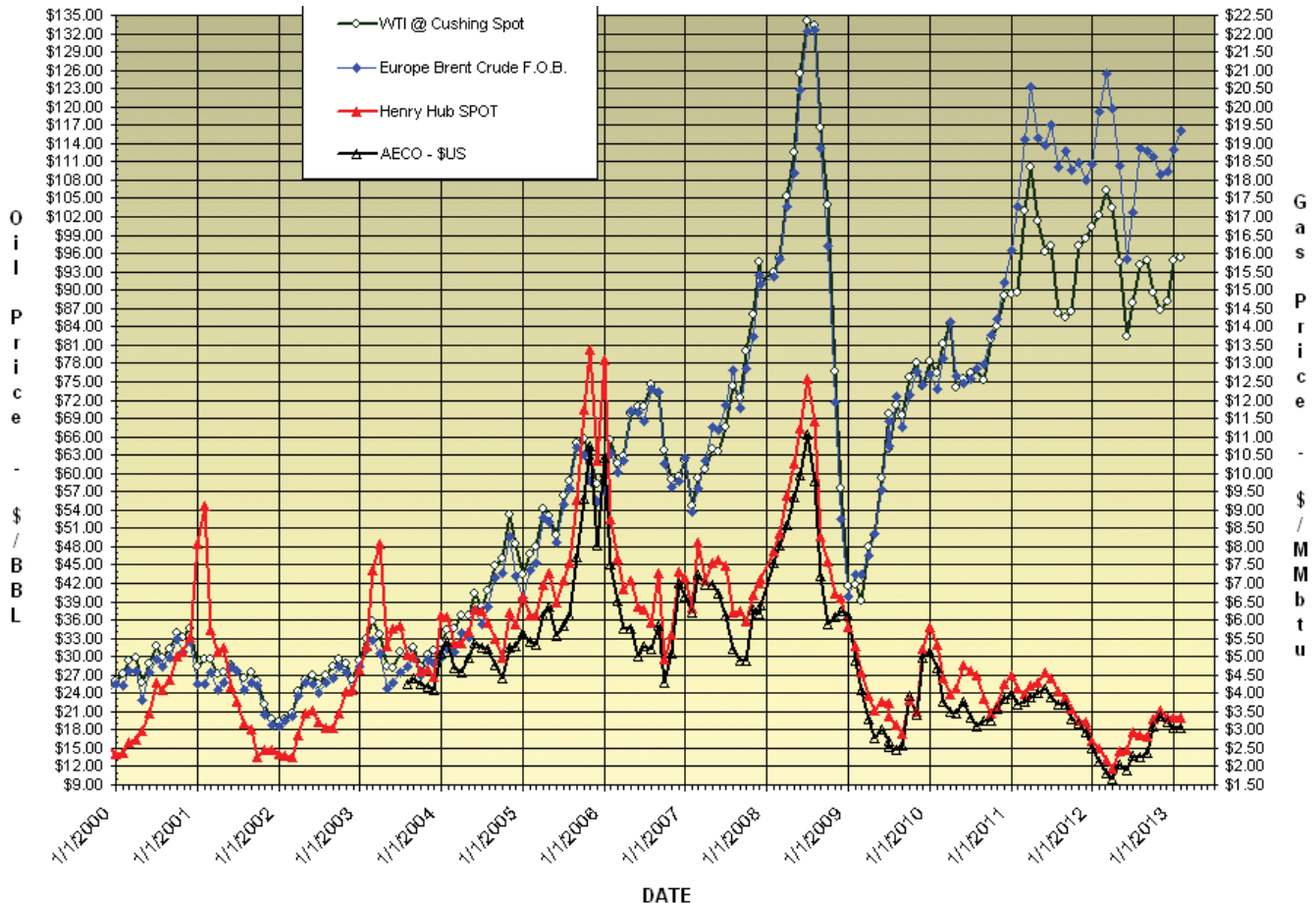
She analyzes the economics involving operating, fixed and capital costs and oil and gas prices, including applying differentials and shrinkage. Oramas also created and maintained client databases for decline-curve analysis and cashflow reports using various program applications. She also managed production information using various databases and applications.

Oramas has several years of experience using the economic-analysis programs used throughout industry. She has a BA degree in mathematics from the University of St. Thomas and an MS degree in petroleum engineering from the University of Houston.

Ryder Scott moving up

The Ryder Scott Houston office has moved its main floor from 38 to 46 in the 1100 Louisiana building so it could consolidate on three consecutive floors—44,45 and 46. That is the only address change except the four digits after the main zip code. The new zip code is 77002-5294.

Price history of benchmark oil and gas in U.S. dollars



Published, monthly-average, cash market prices for WTI crude at Cushing (NYMEX), Brent crude and Henry Hub and AECO gas.

Range—Cont. from Page 1

gas-heavy Range said it increased its proved reserves 29 percent to 6.5 Tcfe and has redirected capital to liquids-rich areas. YE 2012 proved reserves by volume were 74 percent gas, 22 percent gas liquids and 4 percent crude.

Pioneer Natural Resources Co. said that a significant decline in gas prices resulted in moving PUD gas reserves to probable reserves in the Raton field in southeastern Colorado, Edwards trend in south Texas and Barnett shale play in north Texas. As a result, the company recognized negative price revisions of 82 MMBoe during 2012.

Goodrich Petroleum Corp. said it “incurred negative reserves revisions of 121 Bcfe of gas reserves at year-end that were on the books the prior year.” The downward revisions were primarily related to the loss of PUD gas reserves in the northwest Louisiana and east Texas areas where those volumes were uneconomic under SEC pricing. Overall, proved oil and gas reserves decreased from 490 Bcfe to 331 Bcfe.

In the 4Q, **Occidental Petroleum Corp.** recorded pretax charges of \$1.8 billion mostly for impairments in the oil and gas Mid-Continent business units of which more than 90 percent were related to gas properties acquired more than four years ago on average, said **Cynthia L. Walker**, CFO and executive vice president.

While the performance of the properties was generally as expected, gas prices declined approximately 50 percent since the acquisitions. For the year, Oxy’s reserves replacement was 143 percent or about 400 million barrels.

Reserves additions from the Bakken shale in North Dakota and Cold Lake oil sands in Alberta helped **Exxon Mobil Corp.** replace 115-percent of its reserves. More than half of Exxon’s proved reserves of 25.2 billion BOE was “made up of more valuable crude oil and other liquids, an improvement over the prior year when 51 percent of Exxon’s reserves were gas,” the company said.

Cimarex Energy Co. said that “with continued focus on liquids-rich production, the amount of proved reserves comprised of liquids at year-end 2012 increased to 45 percent as compared to 41 percent at year-end 2011.” Overall, reserves grew 10 percent to 2.3 Tcfe.

Because of lower natural gas prices, **Noble Energy Inc.** said it debooked 94 MMBoe associated with the termination of the vertical-well program in the Wattenberg gas field and 26 MMBoe associated with dry gas fields.

Anadarko Petroleum Corp. said gas prices decreased by about 31 percent on average for the year, but only about 2.5 percent of its reserves were affected. “Much of our investment is in liquids business, absent Marcellus where we’re making attractive returns in the current gas price environment,” said **Robert G. Gwin**, senior vice president finance and CFO, in March.

While increasing proved oil reserves 30 percent, said **Abraxas Petroleum Corp.**, it bolstered its oil position at year end with 58 percent oil vs. 46 percent at YE 2011. Proved totals for oil, gas and NGLs were more than 30 million BOEs.

Escalated cases under NI 51-101 not enough to offset gas prices

Canadian majors and juniors were also contending with low gas prices.

However, the effect of using an escalated price under National Instrument 51-101 softened the blow for gas producers filing in Canada. In the U.S., filers are required to report proved reserves under unescalated, constant-price cases.

The difference between the two reporting regimes was apparent in the annual filings of dual issuers, such as **Encana Corp.**, Canada’s largest gas producer. Encana reports to the Alberta Securities Commission and to the SEC in a 40-F filing.

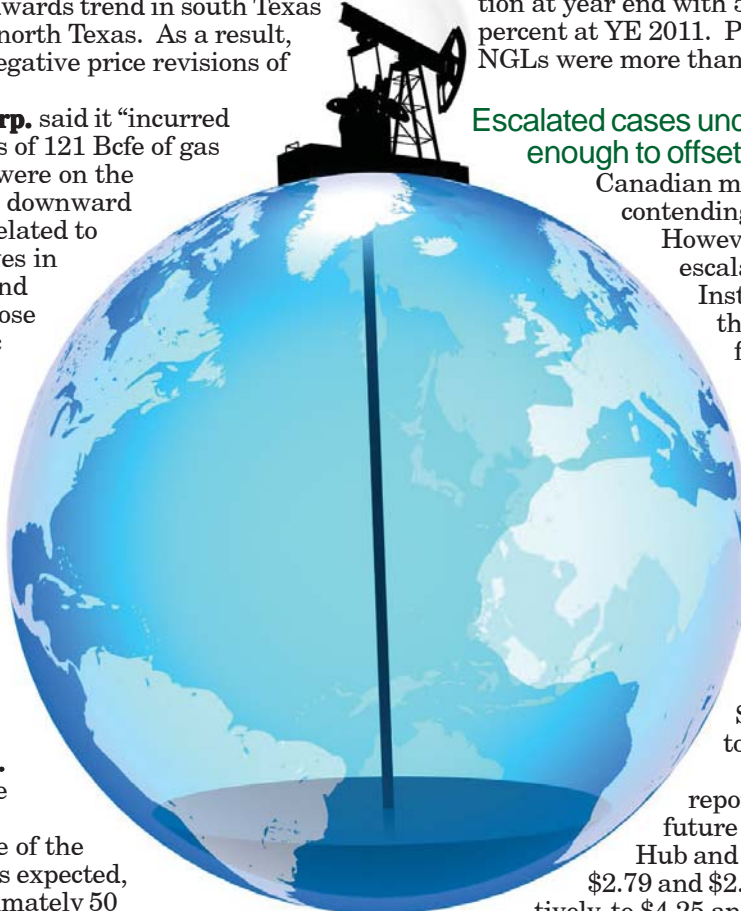
In its 2012 Canadian report, the company escalated future estimated prices for Henry Hub and AECO benchmarks from \$2.79 and \$2.41 per MMBtu, respectively, to \$4.25 and \$3.83 by YE 2014. Even so, Encana’s net proved gas reserves dropped almost 14 percent, from 13,441 Bcf to 11,617 Bcf. Using constant-case SEC pricing and the same benchmarks, net proved gas reserves tumbled almost 32 percent from 12,840 Bcf to 8,792 Bcf.

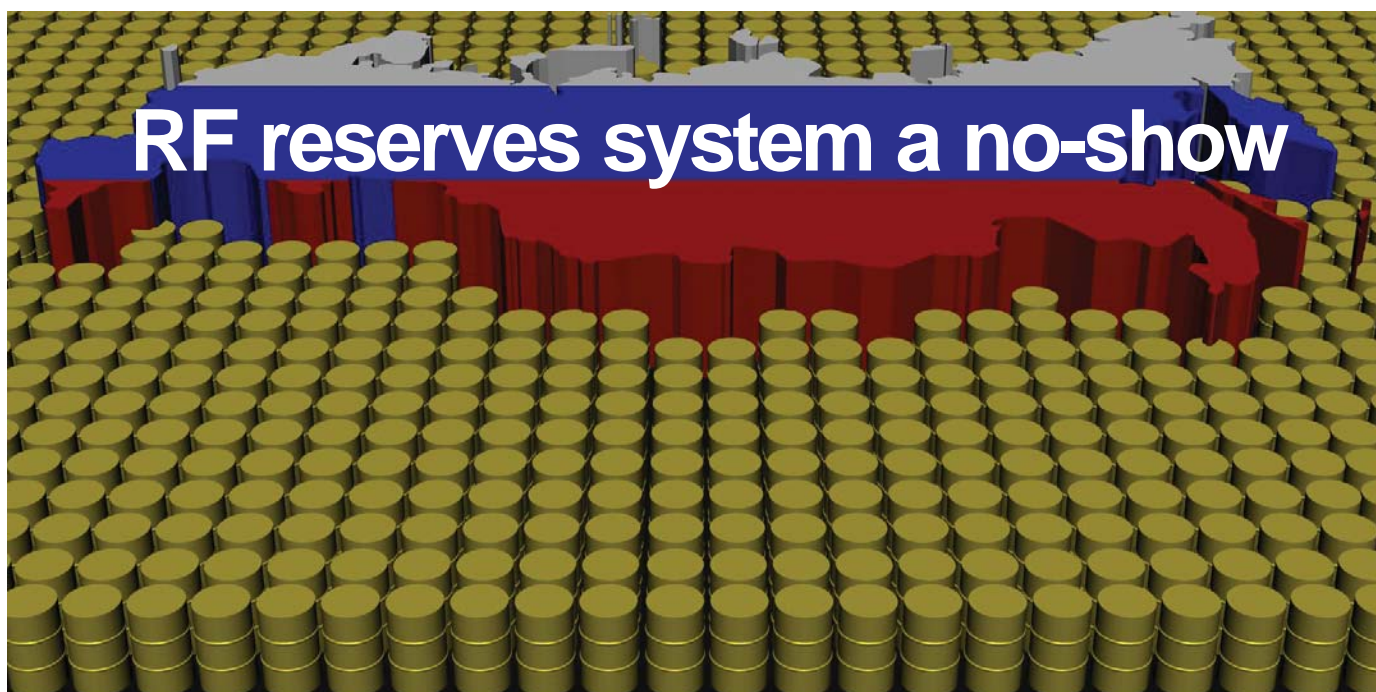
Last year, Encana reduced the value of its reserves by \$1.19 billion on falling prices for the fuel. “We believe that natural gas prices will settle out in the \$4 to \$5 range in the next couple of years,” CEO **Randy Eresman** said last year. “We have a considerable volume which is exposed to that potential upside.”

Major oil producers in Canada fared better even though the oil-sands benchmark price, West Canada Select, was weak throughout the year. In December, WCS traded at a record \$42.50 a barrel less than U.S. crude.

With a reserves base of about 95 percent oil, **Suncor Energy Inc.** decreased YE 2012 proved-plus-probable reserves about 3 percent before adjustments. The company, Canada’s largest oil producer, saw increases in 2P reserves mainly from assets and extensions in

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RF reserves system a no-show

Sergei Donskoy, minister of Russia's Ministry of Natural Resources and Environment, said that his agency will enforce a new, final petroleum reserves classification system this year, reported Interfax news agency on Feb. 14.

At the February meeting, **Vladimir Putin**, president of Russia, charged a working government committee with putting together a new approach to the country's reserves classification system, but Donskoy told Putin that his agency had already presented a new system.

In late March, the ministry had not yet rolled out a new set of reserves reporting regulations.

History of RF-2005

At year-end 2011, the FGU State Commission on Mineral Reserves (GKZ) said that a new classification system was not ready for its planned implementation in 2012 and that a one-year delay to 2013 would allow further improvement of the system's evaluation methodologies.

Originally, Russia had planned to implement the Ministry's RF-2005 Russian Federation classification scheme in 2009, a planned first step to bring the old Soviet system in line with more modern standards. In the intervening four-year period, industry discussion for any improvements was planned and industry was expected to conduct

test projects to acquaint itself with the system.

That never occurred and rather than issuing a ministerial decree four years ago, the government postponed the rollout to 2012.

Reportedly, the government now considers the RF-2005 guidelines to be outdated, but has not published an updated official version. In the meantime, Russia enforces reporting rules set up in Soviet times, which most agree do not reflect current international standards. The worldwide oil and gas industry considers the 2007 SPE Petroleum Resources Management System (SPE-PRMS) to be the de-facto international standard for reserves reporting.

Originally SPE mapped RF-2005 to its older 1997 SPE/WPC reserves definitions in 2005. The results of that work are posted at www.spe.org/spe-app/spe/industry/reserves/mapping.htm.

One of the first attempts to map the Russian system to SPE-PRMS was done by **John Hodgkin**, then president at Ryder Scott, and **Dmitri Zabrodin**, vice president at FDP Engineering LLP. They referenced the 2005 SPE mapping work in a remapping exercise to compare the new SPE-PRMS guidelines to RF-2005.

Hodgkin presented their work at the International Geoscience Conference in Tyumen, Russia, in late 2007. They found a "high

degree of commonality with both classification systems," he said.

Two years ago, joint-committee members representing the GKZ and SPE mapped the RF-2005 standards to the SPE-PRMS. However, the GKZ asked that publishing of the mapping be delayed until additional economic criteria could be incorporated into the Russian system. The SPE mapping exercise was not expected to change the Russian system, but alignment would have ensured greater consistency of petroleum reserves and resource estimates.

Three reserves reporting classification systems—each promoted by a group of experts—are vying for GKZ acceptance, according to unconfirmed reports over more than a year.

Behind the delays

The numerous government delays in finalizing new reserves rules have a sound basis. First of all, a key issue is whether a new system will help companies or create problems. It certainly will not streamline the reporting processes. All Russian majors and most medium and small producers commission third-party consultants to estimate reserves using SPE and SEC classifications for acquisitions, divestitures, regulatory reporting and bank loans.

Those companies have the additional burden to report reserves

← Estimated Ultimate Recovery →										SPE-PRMS
CUMULATIVE PRODUCTION	RESERVES IN EXISTING FIELDS (EXPANDED RESERVES)					EXPECTATIONS FROM FUTURE DISCOVERIES (PROSPECTIVE RESOURCE)				
	KNOWN RESERVES									
	PROVED RESERVES		PROBABLE RESERVES		POSSIBLE RESERVES					
	A	B	C ₁	C ₂		C ₃ D ₀		D ₁	D ₂	
RESERVES					RESOURCES				RF-2005	
PROVED PLUS PARTLY PROBABLE		PROVED OR PRELIMINARY EVALUATED			POSSIBLE		INFERRED			
← Low Range of Uncertainty High →										

The RF-2005 classification system had a “high degree of commonality” with the SPE-PRMS, said then Ryder Scott president John Hodgin in 2007 when he and Dmitri Zabrodin were one of the first to map the systems. This chart compares the two.

to the government using Russian guidelines. A new system will not change that.

So why hasn't the state agency considered simply adopting SPE-PRMS? The answer is not simple.

From Russia's standpoint, the system results in selective depletion of sweet spots rather than achieving maximum possible recovery from

entire reservoirs as dictated by current rules. Selective depletion is explicitly prohibited by law.

The Russian view is that selective-depletion fields get “destroyed” and “remedial works” are quite costly and not necessarily efficient. Once sweet spots are depleted, the license holder cannot efficiently produce the remaining

volumes. Producing from both rich and poor areas of the reservoir boosts efficiency and is good reservoir management, Russia contends.

Conversely, under the SPE-PRMS, each individual well is projected to produce until its economic limit is reached and then it is shut down. The producer exploits better areas of the reservoir while bypassing poorer areas.

That is at direct odds with Russian authorities, who say that individual wells are not licensed; entire reservoirs and fields are licensed, so that any negative cash flow to keep marginal wells active beyond their economic lives is offset and “subsidized” by cash-positive wells. In that way, the entire reservoir or field reaches its eco limit.

The wholistic Russian philosophy resides on a reasonable understanding, or better yet, an “enlightened view” that oil and gas accumulations are created only once and as such, those limited resources should not be wasted in the form of dead oil.

Also, Russia resents any intrusion by the West into the country's national affairs. Government officials may be reluctant to promote the adoption of SPE-PRMS, because it undermines their mandate that license holders develop entire lease areas to maximize cumulative production and returns to the state.

Evaluation sector facing ethical dilemma in state licensing

Tim Smith, president of Don Ray George & Assocs., presented, “Think you can evaluate reserves anywhere,” at the Ryder Scott reserves conference. He discussed general ethical considerations for licensed engineers practicing under Texas statutes.

Smith also presented situational ethics in evaluation engineering. He focused on industry efforts, spearheaded by the Society of Petroleum Evaluation Engineers starting in 2010, to get laws passed in Texas and Louisiana that allow engineers licensed outside those states to legally evaluate in-state properties. Smith is a former SPEE president and the sitting chairman of the SPEE reserves definitions committee.

He said that both states had taken positions that in-state licen-

sure was required for the lawful evaluation of oil and gas resources beneath their soil. “This was unheard of for evaluation engineers. Those positions are cases of first impression,” Smith remarked.

The new laws extend reciprocal treatment only to licensed evaluators in states which have not disallowed licensed engineers from other jurisdictions from evaluating resources in their states' subsurface.

Thirty-three states license petroleum engineers, but Texas and Louisiana are the only two to have enacted reciprocity laws that allow evaluations across state lines which is an industry-wide practice. Smith polled an audience of more than 200 engineers for those holding licenses in two or more states and a show of hands was sparse.

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Statistical methods require special considerations

Based on portfolio analysis, industry-accepted statistical methods to estimate petroleum reserves in large, integrated drilling projects, especially in unconventional resources, require special considerations to comply with U.S. Securities and Exchange Commission disclosure rules, said **Herman Acuña**, managing senior vice president, at the Ryder Scott reserves conference.

Increasingly oil and gas companies are using stochastic methods to estimate a range of reserve estimates and their associated probabilities in resource plays with varying drilling-portfolio sizes. Probabilistic methods are used more often than deterministic when technical uncertainty is high at early field-development stages. However, for unconventional resource estimations, stochastic methods are used throughout field life to analyze expected statistical repeatability from the assets.

At the heart of the issue is the use of probabilistic aggregation and portfolio effect. With more drilling opportunities, a company better diversifies its risk profile, reduces the uncertainty of the total portfolio and books more proved reserves at both the well and portfolio levels. Conversely, a company with fewer opportunities has greater uncertainty in its portfolio and should book fewer proved reserves at a well level.

The Society of Petroleum Evaluation Engineers (SPEE) recommended industry guidelines in Monograph 3, "Guidelines for the Practical Evaluation of Undeveloped Reserves in Resource Plays," published in 2010, rely on probabilistic aggregation and the portfolio effect to determine reasonable certainty, said Acuña.

"Certain aspects of both the SPE-PRMS (Society of Petroleum Engineers Petroleum Resources Management System) and SEC definitions may conflict with the aggregation process," said Acuña. "At a minimum, those aspects may require special consideration in their application to resource-play estimates of reserves."

Acuña showed an example based on the monograph, which demonstrated that a company with a diversified portfolio of 100 well locations in the Spraberry trend may be able to book 73 Mbbl of 1P undeveloped reserves per well vs. 59 Mbbl of 1P undeveloped reserves per well for another company in the trend with only eight wells in its drilling portfolio.

"The same wells must be assigned different 1P reserves based on the company's acreage position," he emphasized.

In Part 210, Item 1202 of Regulation S-K, the SEC states that "the reported reserves should be simple arithmetic sums of all estimates at the well, reservoir, property, field or project level." The problem with that is the simple addition of probabilistically determined P90 reserves for individual wells or future drilling locations in large projects yields an underestimated, aggregated total.

In probabilistic analysis, P numbers represent the likelihood, as a percentage, that the actual reserves will meet or exceed an estimate. P90 reserves estimates have at least a 90 percent probability of being equaled or exceeded.

"The SEC rule is stricter than other guidelines,"



Herman Acuña at Ryder Scott reserves conference.

said Acuña. "It's still a gray area. A firm opinion from the SEC on this matter is urgently required to avoid future problems of compliance."

The SEC has stated that aggregation "can result in larger reserves estimates than simple addition would yield" and that a public issuer should use "a straightforward reconciliation of this for financial reporting purposes."

Acuña also explained that in annual reserves rollovers, companies that use actual well results should adjust the original estimated ultimate recoveries (EURs) per well on the basis of the remaining portfolio. In an example, a company with EURs of 73 Mbbl per well—which is based on drilling 100 wells in the Spraberry trend during the SEC's five-year maximum period for developing proved undeveloped reserves—cannot use that same per-well estimate if it scales back to 50 wells. With half the wells, the EUR per well drops to 71 Mbbl.

"For proved SEC reserves, the companies should use only the number of wells to be drilled in a five-year period to define the statistics of their portfolio," said Acuña.

He examined the effect of statistical aggregation in acquisitions and divestitures and said that breaking up the portfolio changes the risk profile for both the buyer and the seller. "In general, the seller will debook more than what it sold and the buyer will book less than what it bought if they rely on the original report," Acuña said. "Is industry ready to take a 'hit' after A&D transactions?"

Please see Acuña on Page 8

O&G shale brochure posted on site

Ryder Scott posted its shale brochure at ryderscott.com/ShaleReserves.pdf. Hard copies are available through email request at mike_wysatta@ryderscott.com.

Ryder Scott uses every scientific method available for oil and gas shale evaluation including the following:

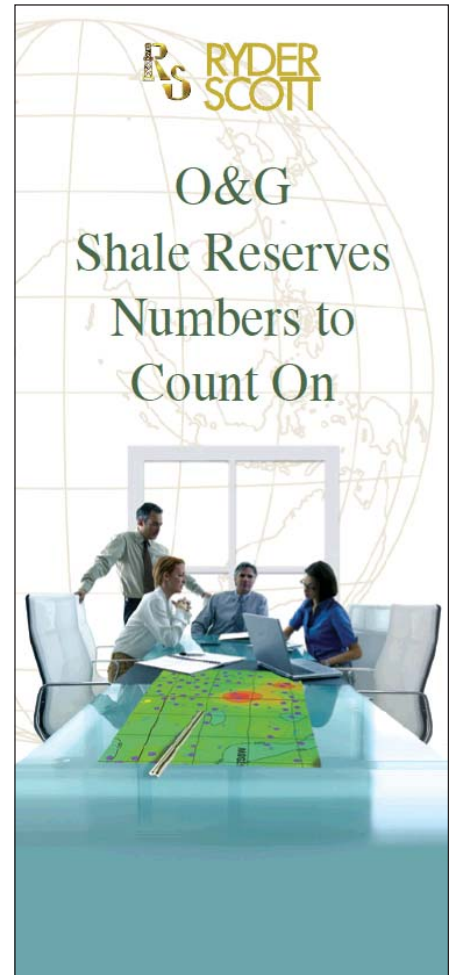
- ◆ Core Analysis for porosity, water saturation and total organic carbon
- ◆ Laboratory desorption and adsorption analysis
- ◆ Petrophysical analysis with core data correlations
- ◆ Petrophysical analysis with the Passey method
- ◆ Geophysical analysis of seismic data
- ◆ Microseismic analysis for fractured rock-volume estimates
- ◆ Volumetric analysis including free and absorbed components
- ◆ Flowing material balance analysis
- ◆ Square-root-of-time plots
- ◆ PVT analysis
- ◆ Rate-transient analysis including modeling transient- vs. boundary-dominated flow
- ◆ Numerical simulation
- ◆ Frac breakthrough modeling

Ryder Scott evaluates oil and gas shale plays for about 100 clients that include government agencies, national oil companies, international oil companies and independents.

The partial list is as follows:

Adams Resources Exploration Corp.
American Oil & Gas Inc.
Americas Petrogas Inc.
Anadarko Petroleum Corp.
Anatolia Energy Corp.
Anschutz Exploration Corp.
Ante5 Oil & Gas
Antero Resources Corp.
Apache Corp.
Arena Energy LP
Aurora Resources LLC
Beusa Energy Inc.
BP America Production Co.
BTA Oil Producers LLC
Buckner International
Caddis Capital LLC
Cade Oil and Gas LLC
Calibre Energy Inc.
Carrizo Oil & Gas Inc.
CDX Gas LLC
Central Petroleum Ltd.
Chesapeake Energy Corp.
Chevron Corp.
Cheyenne Oil & Gas
China National Offshore Oil Corp.
ConocoPhillips Co.
Continental Resources Inc.
Cornerstone Natural Resources LLC
Devon Energy Corp.
Dominion Resources Inc.
El Paso Corp.
Energen Resources Corp.
Energy Corporation of America
Enerplus Corp.
ENI Petroleum Company Inc.
EQT Corp.
Euro Pacific Capital Inc.
Exco Resources Inc.
Fidelity Exploration & Production Co.

Global Natural Resources Corp.
Great Western Oil & Gas Co. LLC
Headington Oil Company LP
HighMount E&P LLC
Intervention Energy LLC
Ironwood Oil & Gas LLC
J.P. Morgan
Kerogen Resources Inc.
Korea National Oil Corp.
Lario Oil & Gas Co.
Lime Rock Resources
Lukoil Oil Co.
Macquarie Bank Ltd.
Mainland Resources Inc.
Marathon Oil Co.
Marion Energy Limited
MBI Oil & Gas LLC
Metalmark Capital Holdings LLC
Mitsui & Co. Ltd.
Montana Oil Properties Inc.
Murex Petroleum Corp.
Murphy Exploration & Production Co.
Newfield Exploration Co.
Nexen Inc.
Northern Oil & Gas Inc.
PDC Energy
PEMEX (Petróleos Mexicanos)
PetroFrontier Corp.
Petrogulf Corporation
Petroleum Development Corp.
PetroQuest Energy Inc.
PrimeEnergy Corp.
QEP Resources Inc.
Questar Corp.
Reliance Holding USA Inc.
Repsol YPF SA
Riverstone Europe LLP
Rosetta Resources Inc.
Royal Dutch Shell PLC



Ryder Scott posted its shale brochure at ryderscott.com/ShaleReserves.pdf. Hard copies are available through an email request to mike_wysatta@ryderscott.com. Ryder Scott evaluates oil and gas shale plays for about 100 clients.

Samson Oil & Gas Limited
Sanchez Oil & Gas Corp.
Sinopec
SM Energy Co.
Spotted Hawk Development LLC
Stairway Capital Management LP
State Commission on Mineral Reserves (Russia)
State Street Bank & Trust Co.
Stone Energy Corp.
Sundance Energy Inc.
Talisman Energy Inc.
Texakota Oil Co.
TNK - BP
Triangle Petroleum Corp.
United Energy Group Ltd.
Unocal Corp.
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Canada—Cont. from Page 3

the Firebag oil sands project in Canada and Amal field in the oil-rich eastern Sirte basin in Libya.

Perpetual Energy Inc., a junior, posted negative revisions of 6.6 MMBoe because of low gas prices throughout the company's eastern Alberta shallow-gas asset base. Most significantly affected were PUDs in the Viking formation. Perpetual said it reduced future development capital \$63 million, scrapping immediate plans to bring Viking reserves to production.

Sonde Resources Corp. in Calgary said that its 2P gas reserves declined 17 percent from 41,518 MMcf of working-interest gas to 35,553 MMcf gas at YE 2012. "This decrease is attributable to a combination of lower forecast natural gas prices and other economic factors, plus a decreased emphasis in 2012 on gas-oriented projects," the company said.

Tourmaline Oil Corp. in Calgary said it grew proved reserves by 80 percent in 2012 "despite a difficult gas price environment during the year and lower overall natural gas prices utilized in the 2012 independent report."

Publishing Change

The quarterly publishing cycle for *Reservoir Solutions* has changed. All four issues by volume will be in a calendar year. Publication dates are January, April, July and October. The change allows the newsletter to report on the September Ryder Scott reserves conference in October rather than in December.

Smith—Cont. from Page 5

"The other 31 states are 'sleeping giants,'" he said, highlighting an ethical dilemma. "Do we contact the licensing boards in those states before conducting an evaluation or should we avoid needlessly stirring the pot?"

He added, "We know what's professionally and morally right. Is it useful to notify those (licensing boards) which lack the education, training and experience to understand what evaluation engineers do and how our industry works?"

Smith noted that SPEE has limited resources for legislative activity, which is inherently risky, in part, because of politics. He suggested that self studies in ethics start with the Society of Petroleum Engineers Guide to Professional Conduct. Smith also said that the SPEE Discussion and Guidance on Ethics is tailored to the evaluation engineering practice.

Attendees of Smith's one-hour presentation received CEUs (continuing education units) in ethics, which is required annually for state-licensed petroleum engineers. "The presentation was tailored to licensed

Publisher's Statement

Reservoir Solutions newsletter is published quarterly by Ryder Scott Co. LP. Established in 1937, the reservoir evaluation consulting firm performs hundreds of studies a year. Ryder Scott multidisciplinary studies incorporate geophysics, petrophysics, geology, petroleum engineering, reservoir simulation and economics. With 130 employees, including 90 engineers and geoscientists, Ryder Scott has the capability to complete the largest, most complex reservoir-evaluation projects in a timely manner.

evaluation engineers seeking a professional development hour in ethics training," he said. "However, the examples demonstrated that ethics training is essential for evaluation engineers, whether licensed or not."

This and all presentations from the latest conference are posted at ryderscott.com/Presentations.

Acuña—Cont. from Page 6

He showed that a company's staying power to weather negative, early results in a project help ensure that it achieves its portfolio expectations if they were properly estimated. Acuña also discussed the SPEE concept of the proved aggregation factor which is a correction when applying well-scale distributions to portfolios with varying characteristics.

This and all presentations from the latest conference are posted at ryderscott.com/Presentations.

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