RESERVOIR SOLUTIONS

A quarterly publication of Ryder Scott Petroleum Consultants March–May 2005/Vol. 8, No. 1

Roesle is new CEO, Harrell remains chairman

Hodgin is president, Richoux exec. VP; Two join board; Others promoted, hired

Don Roesle, former president at Ryder Scott, is the new CEO, assuming the top position in March after being elected by the board of directors. He is the sixth top executive in the 68-year history of Ryder Scott.

Former CEO **Ron Harrell** will remain chairman. (Please see article, "Harrell leadership brought public attention, growth to Ryder Scott," on Page 8.) **John Hodgin**, former executive vice president, is the new president. **Fred Richoux**, former managing senior vice president, is the new executive vice president.

Roesle, who started at Ryder Scott 30 years ago as a petroleum engineer, will remain chief operating officer. Shareholders also elected managing senior vice presidents **Dean Rietz** and **Guale Ramirez** as the sixth and seventh directors on the board.

Roesle has three decades of experience in the oil and gas industry as a reservoir engineer and manager. He has directed multidisciplinary project teams in major reservoir, field-development and economic studies worldwide.

Roesle began his career at Tenneco Oil Co. He joined Ryder Scott in 1975. Roesle has BS and MS degrees in petroleum engineering from the University of Texas.

Hodgin joined Ryder Scott as a geologist in 1977 and has been the geoscience group leader since 1983. He supervises staff and consulting geologists, geophysicists and petrophysicists in ongoing reservoir evaluation studies worldwide.

Inside Reservoir Solutions newsletter

From left, Don Roesle, CEO; Ron Harrell, chairman and John Hodgin, president.

Hodgin has managed and conducted numerous studies of fields in the United States and in most major, international petroleum provinces. After graduating from Texas A&M University with a BS degree in geology in 1974, he joined Gulf Oil Corp.

Richoux

Richoux joined Ryder Scott in 1978 as a petroleum engineer after having worked at Phillips Petroleum Co. for 11 years. For the past 27 years, he has conducted reservoir engineering studies, reserves reviews and determinations, field development studies, economic evaluations, and acquisition and divestiture work. Richoux managed the Calgary office from 1997 to 1999 and is currently a group leader. He joined the board in 2000. Richoux received a BS degree in electrical engineering from the University of Louisiana at Lafayette.

Rietz joined Ryder Scott in 1995 as a petroleum engineer specializing in reservoir modeling and became manager of the then new simulation group in 1998. He worked at Intera Technologies Inc. and H. J. Gruy and Assocs. before joining Ryder Scott. Rietz began his career at Chevron Corp. in 1984 where he worked as a petroleum engineer about five years.

Rietz has conducted and managed reservoir

See Rietz on Page 5

Reserves World

Industry challenges FASB pricing rule

Industry has turned up the heat in critiquing the FASB 69 requirement to use single-day, year-end prices in estimating petroleum reserves in U.S. 10-K filings. Exxon Mobil Corp. said that it reported year-end proved reserves using Dec. 31 oil and gas prices "for the first time" based on guidance from the U.S. Securities and Exchange Commission. "However, the use of prices from a single date is not relevant to the investment decisions made by the corporation," stated the company.

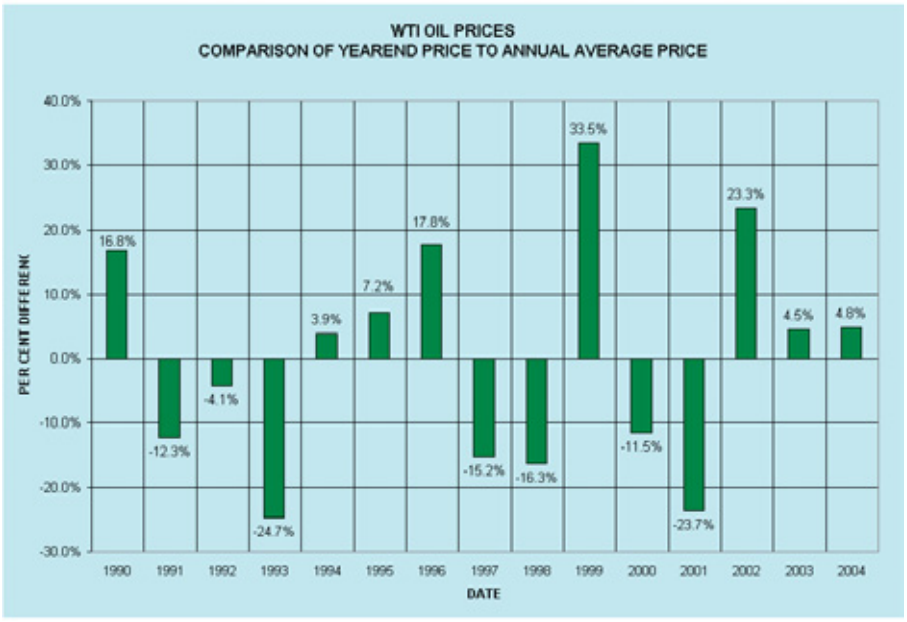
Industry has made recommendations to FASB and the SEC that they consider allowing filers to report reserves using historically averaged prices rather than a one-day "snapshot" that, in some years, is an aberration. See accompanying chart.

Deloitte & Touche LLP in February urged the SEC to permit price assumptions consistent with plans and budgets. See article in this section.

Also in February, Cambridge Energy Research Assocs. in a research report said, "The volatility of year-end pricing and its arbitrariness (to the point of being highly unrepresentative) are a source of frustration for companies and investors alike." See article in this section.

The Wall Street Journal reported on Feb. 22 that other companies (besides Exxon) have begun reporting their reserves according to the Dec. 31 guideline.

Please see Prices on next page



Publisher's Statement

Reservoir Solutions newsletter is published quarterly by Ryder Scott Company 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 100 employees, including 61 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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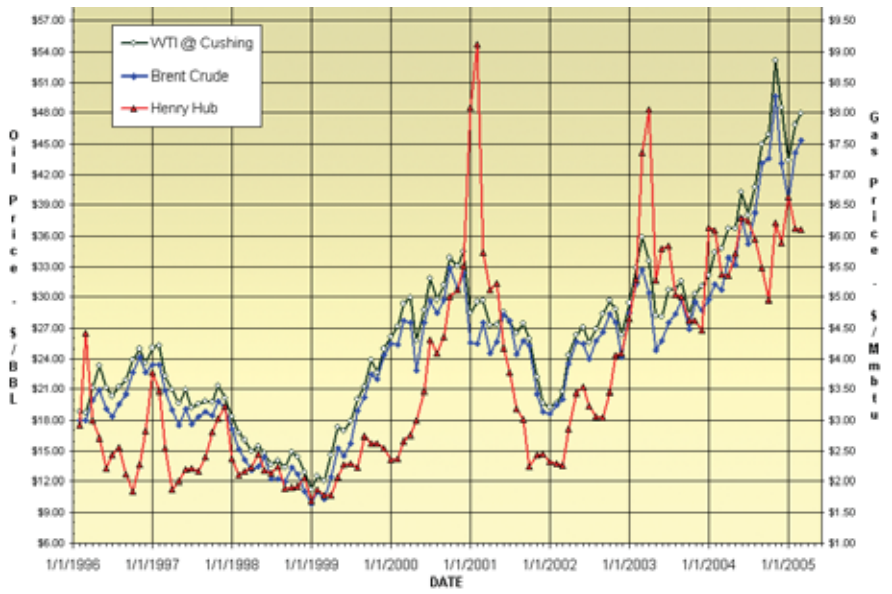
Price history of benchmark oil and Henry Hub gas



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

Prices—Cont. from Page 2

Exxon's use of year-end prices, instead of long-term, planning prices, reduced proved reserves by half a billion BOEs while dropping its reserves replacement ratio from 112 percent to 83 percent.

WSJ stated that "Exxon argues that … (the planning) price, which doesn't vary much year to year, is the most realistic for investors." An SEC spokesman was quoted as saying that the agency's guidance "provides companies comparability across companies."

Canada shows flexibility on NI 51-101 pricing rule

For Exxon Mobil Corp., the most significant effect of using year-end prices was the removal of a half-billion barrels of crude from the proved category for the Cold Lake bitumen project in Canada.

"On Dec. 31, prices were unusually low due to seasonally depressed asphalt sales and industry upgrader problems," Exxon said.

Several other producers in the Alberta oil sands were stung by the sizable, anomalous price differentials between bitumen and benchmark prices. However, the Alberta Securities Commission, after hearing comments from Canadian filers, opted to allow them to use an average price for bitumen for the year instead of the previously required year-end, constant price. (Canadian Securities Administrators Staff Notice 51-315).

Bitumen prices were significantly higher shortly before and after the dip. Considering that the price of bitumen fluctuates widely, we dropped the requirement to use year-end pricing, said **Glenn Robinson**, senior petroleum evaluation engineer at the ASC, at an Energy Forum event in Houston in late February.

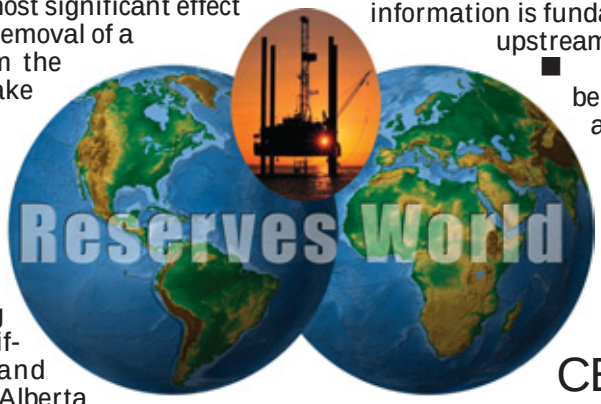
Deloitte calls for sweeping changes in reserves reporting

Deloitte & Touche LLP accountants in February called for sweeping changes in the financial reporting of petroleum reserves estimates. **Peter J. Newman** and **Victor A. Burke**, managing partner and chairman, respectively, of the D&T Global Oil & Gas Group, wrote in a D&T-published document, "Presenting the full picture," that market regulators and accounting standard setters should adopt the current framework for definitions and categorization of petroleum reserves as jointly developed by the Society of Petroleum Engineers, American Association of Petroleum Geologists and World Petroleum Congress.

Other recommendations include the following:

- In estimating reserves, companies should be permitted to interpret the phrase "current economic conditions" so as to apply reasonable price and cost assumptions that are consistent with overall plans and budgets, even though this reduces the consistency of estimates across different companies in the industry. (The SEC insists on a "standardized measure.")
- Regulators should support the industry initiative to establish a body of standards and guidelines to "govern" the competence of reserves estimators.
- The first and most important step in restoring confidence is to require that reported reserves estimates be prepared by suitably certified engineers in accordance with the standards and guidelines of SPE/Society of Petroleum Evaluation Engineers.
- The SEC has stated that the Sarbanes-Oxley Act does not address internal control over the preparation of supplementary financial information, including unaudited reserves estimates. However, SOX should apply to controls over reserves reporting as that information is fundamental to the accounts of upstream companies.
- Mandatory disclosures should be expanded to include probable as well as proved reserves.

To discuss any of these points, D&T asks respondents to contact Newman at pjnewman@deloitte.co.uk, Burke at vburk@deloitte.com or a Deloitte contact.



CERA report remarkable for historical insight

Cambridge Energy Research Assocs. Inc. published a study on U.S. oil and gas reserves reporting requirements Feb. 22 that was remarkable not so much for any groundbreaking recommendations but for the detailed historical perspective — no surprise considering the report is the handiwork of co-author **Daniel Yergin**, who wrote the epic history of the oil industry, "The Prize."

Some of the observations and recommendations from the 121-page study included the following:

- "The requirement for recognizing proved reserves has …shifted from 'reasonable certainty' toward 'absolute certainty.'" The report added, "This makes reporting so conservative as to distort the message by presenting only a portion of the overall picture with the exclusion of any volumes that are the subject of even limited uncertainty

…In so doing, a principle-based reserve reporting system has increasingly become a rule-based one, without the kind of transparency and discussion that the SEC habitually employs elsewhere."

- The SEC should adopt "a single global standard" for proved reserves. "The most generally accepted are the SPE/WPC/AAPG definitions, which would make them a logical foundation for a globally consistent disclosure framework," the study stated.
- The SEC has become a de facto global regulator, because of globalization of capital markets. In 1978, when the SEC rules were effective, two-thirds of the reserves reported by registrants were in the U.S. By

Please see Reserves on Page 8

82% of "disclosing" companies use consultants

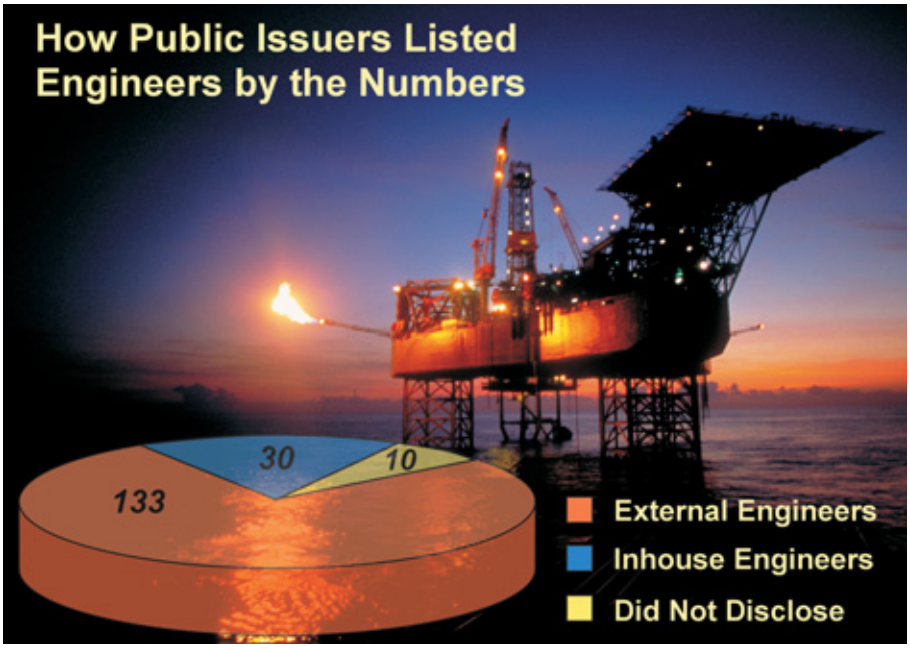
Ryder Scott again most listed consultant in the Herold survey of 2003 annual reports

In a recently published John S. Herold survey, more than 8 of 10 producers that identified sources of petroleum reserves estimates cited independent engineering consultants vs. internal engineers. The 82-percent figure is four percentage points lower than the prior year's 86-percent figure for consultant use, but second highest in the past 10 years.

Founded in 1948, John S. Herold, a Norwalk, CT-based independent research firm, provides subscription-based financial, operational and capital-markets data on the energy industry.

The Herold survey tracked companies reporting under U.S. Securities and Exchange Commission guidelines in their year-end 2003 10-K filings. The latest compilation is aggregated from 173 companies compared to 198 companies the year before and 404 companies three years ago, indicating a slowing of consolidation.

Ryder Scott retained its top position as the most listed independent consultant of record for preparing these SEC-case year-end reserves reports. The firm was listed in 40 annual reports, followed by 22 listings for the No. 2 consultant. The almost 2-to-1 edge is the widest gap ever.



In the 2003 annual reports published in 2004, 163 of the 173 companies indicated they used either independent or internal engineers. The remaining 10 companies or 6 percent of the total did not release that information.

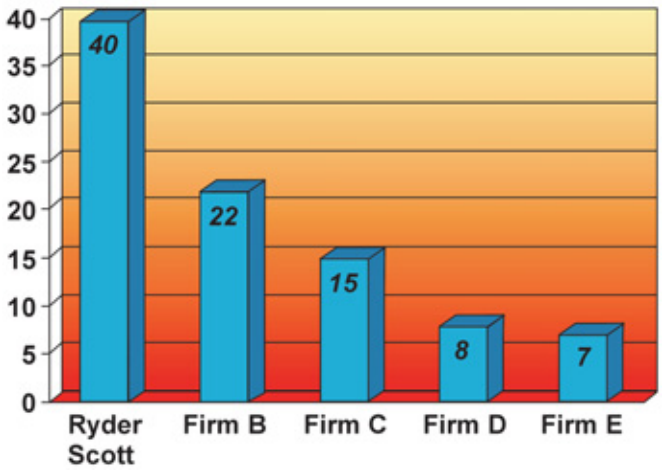
The 94 percent that disclosed reserves preparation sources is the highest on record and 2 percent higher than the previous year, representing a continuing trend toward transparency in reporting. Of those disclosing companies, 133 used engineering firms (82 percent) and 30 indicated internal preparation of year-end reports.

The survey indicated that year-end reserves work in North America is spread among 45 small and large U.S. and Canadian shops. The five most-listed consultants had 92 citations.

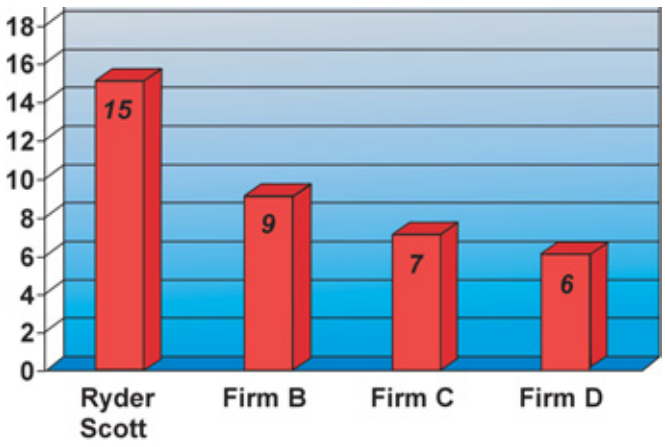
Five of the 10 largest U.S.-registered oil and gas companies used independent consultants

Please see Herold Survey on next page

10-K Listings for Top 5 Consultants



Consultant Listings in 10-Ks of 50 Largest E&P Companies



Herold Survey—Cont. from Page 4

compared to three out of 10 the prior year. Also, 34 of the 50 largest companies, as ranked by total assets in the latest "OGJ200," referred to outside consultants in their annual reports. (The OGJ200 is an *Oil & Gas Journal* list of the largest 200 publicly traded U.S. oil and gas producers.) Only 14 of the 50 largest companies cited outside consultants in their 1998 annual reports of five years earlier.

The big-company trend in using third parties to evaluate reserves appears to be holding steady. Increased scrutiny from regulators was most likely an important factor.

Ryder Scott was listed by 15 companies of the 50 largest. Three other consultants were listed 9, 7 and 6 times, respectively.

Since Ryder Scott has been following the survey for the past ten years, the firm has consistently led the rest of the field as measured by the following:

- The number of listed client companies
- The size of listed client companies

As the best available marketplace barometer, the Herold survey indicates that Ryder Scott is used more often overall and more often by large companies than any other consulting firm in the world for preparing year-end reserve estimates in accordance with U.S. SEC guidelines.

For more information on Herold services, including its widely used annual reserves replacement cost analysis, please contact John Cannon at jcannon@herold.com or go to www.herold.com.

Rietz—Cont. from Page 1

simulation studies of various international oil and gas fields. He received a BS degree in petroleum engineering from the University of Oklahoma and MS degree in petroleum engineering from the University of Houston, where he is an adjunct professor.

Rietz

Ramirez, international group leader, joined Ryder Scott in 1981 as a petroleum engineer. During the last decade, he has managed multidisciplinary evaluation teams and coordinated more than 50 major international projects. Before joining Ryder Scott, he was a petroleum engineer at Natomas North America and Sun Production Co. where he began his career in 1976. He has a BS degree in mechanical engineering from Texas A&M University.

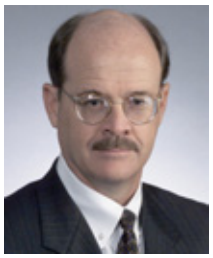
Ramirez

Tom Tally, geologist, recently joined Ryder Scott after serving as a consulting geologist for the firm since 2000. He worked at Enron Corp. during 1994 to 2000 as leader of a geological team engaged in reserves analysis and valuation for upstream investment.

Tally also worked as a geology supervisor in acquisitions and in exploration and development for Fina Oil and Chemical Co. for 12 years starting in 1992. He began his career at Aminoil USA in 1979. Tally has BS and MS degrees in geology from Northeast Louisiana University.

Tally

Also, **George Dames**, a geologist and former senior vice president, was promoted to managing senior vice president.



Dames

Thompson

Frison

J. Wilson

S. Wilson

Williams

Andy Thompson, manager of the Calgary office and former senior vice president, became a managing senior vice president. Petroleum engineers **Al Frison**, **Jeff Wilson**, **Scott Wilson** and **John Williams** were promoted to vice presidents.

Harrell to deliver keynote at OTC

Harrell

Ron Harrell, chairman at Ryder Scott, will deliver a keynote presentation at the Offshore Technology Conference "Oil and Gas Reserves Estimates" panel session, which is scheduled for Wednesday, May 4, from 9:30 to noon. He will also be a panelist.

The session will convene in Room 306 at the Reliant Center at Reliant Park. Organizers envision a debate focusing on reserves estimates and differences of interpretation. To register, go to http://www.otcnet.org/2005/registration/index.html.

Technical challenges in estimating reserves Part 2: Downdip limits and isopachous maps

Editor's Note: This is a revised excerpt from "Oil and Gas Reserves Estimates: Recurring Mistakes and Errors," (SPE Paper No. 91069). To order a copy of the full paper, go to www.spe.org and access the e-library.

Ryder Scott personnel see a wide variety of internally produced petroleum reserves estimates and most of them are well prepared. However, the firm has noticed common technical errors in reserves estimates.

This multipart article offers guidelines to help reduce the chance of errors in geoscientific and engineering analysis. This second newsletter article focuses on downdip limits and isopachous maps.

Downdip limits in vertically stratified reservoirs

The down-dip extent of a productive area is defined by fluid contacts and lateral limits from structural or stratigraphic barriers. Assuming vertical communication and a common downdip contact in stratified or layered reservoirs without adequate support from pressure data is likely to result in an overestimation of in-place volumes.

Figure 6 illustrates a log section marked to indicate three porous intervals shown as A, B, and C. These three zones, all assumed to be capable of commercial production, may be part of a single pressure-connected reservoir or may collectively comprise three separate reservoirs. Well data alone may not resolve this uncertainty.

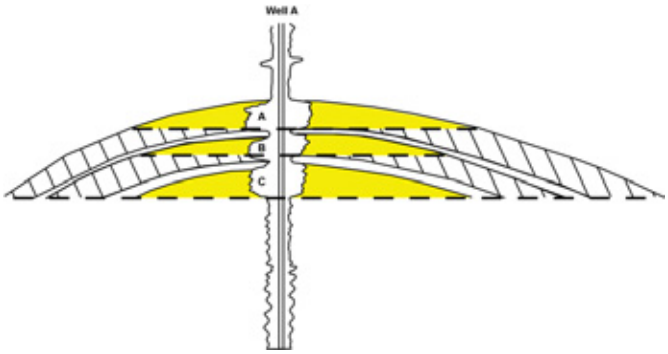


Figure 6. Potential error—Assuming a common downdip contact in a stratified reservoir

The cross section in Figure 6 illustrates the difference between the productive volume of the three zones with a common downdip contact (lowest known hydrocarbon or LKH)—represented by cross-hatched and shaded (yellow) areas—and those same shaded areas in each zone with separate LKHs.

Most reserves definitions require that the evaluator, in estimating proved reserves, assume that the three reservoirs have separate downdip limits, if additional data does not contradict this.

Isopachous maps

The estimation of volumetric reserves depends on three main types of isopachous maps: (i) map of gross thickness of reservoir unit, (ii) map of net effective thickness generally based on application of a minimum porosity cutoff value, and (iii) map of net effective pay thickness generally based on the application of a maximum saturation cutoff value.

Figure 7 illustrates the two main regions of a net pay isopach map; the wedge zone and the area of maximum fill-up.

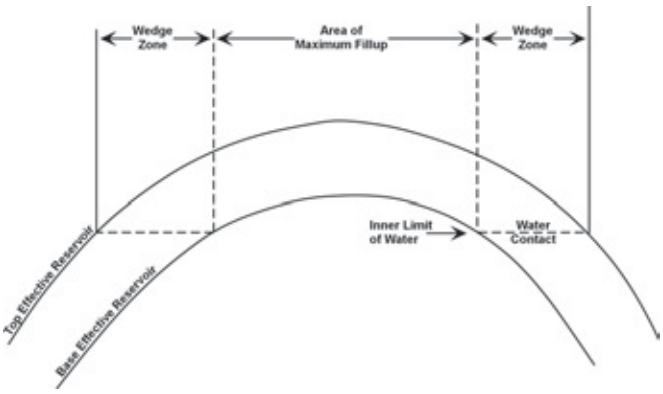


Figure 7. Illustration of wedge zone and area of maximum fill-up

Net pay isopach maps—Downdip wedge zone—The wedge zone in Figure 7 defines the rock volume in areas where the fluid contact intersects the reservoir top and base. The correct placement of contours representing net pay thickness in the wedge zone is governed by the rate of structural gain above the elevation of the downdip fluid contact and the vertical distribution of net pay.

A common technique in both hand-drawn and computer-aided mapping involves the use of a net-to-gross ratio to represent the change in vertical net pay proportionate to the change in elevation above the intersection of the fluid contact and the structure on the top of the effective reservoir unit. A net-to-gross ratio based on the net pay thickness of the reservoir unit to its gross thickness represents an average distribution for the entire interval.

In zones where the vertical distribution of net pay is fairly constant, average net-to-gross ratio may be a fair representation. However, the use of that ratio in a reservoir where the net-pay distribution varies over the vertical interval is unlikely to be correct.

This misapplication may lead to overstating or understating reservoir volumes and associated reserves. The next article, Part 3 in June, will display three figures illustrating the relationship between net-to-gross ratios and reservoir volumes and provide more information on isopach mapping.

Ryder Scott seeks attendees for pro bono reserves conference May 6

Ryder Scott will offer a free one-day conference on various petroleum reserves topics, Friday, May 6, either at its Houston offices or, if needed, at a nearby downtown location with more seating capacity. Those attending the Offshore Technology Conference at Reliant Center in Houston, which concludes Thursday, May 5, can participate in the Ryder Scott reserves conference by extending their stays an extra day.

Details, as they are available, will be posted on the Ryder Scott Web site at www.ryderscott.com in the What's New section.

The deadline for submission is April 15. Late submissions will be considered on a case basis.

How to register

Those wanting to attend the reserves conference should submit applications via e-mail with the subject heading, "Reserves Conference," to **Mike Wysatta**, editor of *Reservoir Solutions* newsletter, at mike_wysatta@ryderscott.com.

An applicant should include the following:

- His or her name, company title and affiliation, address, phone, fax and e-mail
- Primary job duties and number of years of experience as a decision-maker on reserves estimating and reporting

Ryder Scott will send confirming invitations via return e-mail as applications are considered and processed up to April 15. Late invitations will be sent after that, if space is available. The invitee should confirm receipt and acceptance of the invitation via an e-mail reply to finalize the reservation.

Capacity is limited. Qualified candidates will be considered in the order that their e-mails are received.

Conference curriculum

The reserves conference is targeted to senior-level geologists, engineers and technical managers who make daily decisions on reserves estimates and regulatory reporting. Ryder Scott has not fully finalized the curriculum.

However, reserves booking practices vis-à-vis U.S. Securities and Exchange Commission guidelines will be the major component. Other possible topics may include the following:

- Canadian regulatory guidelines for reserves
- Certification of reserves evaluators
- Booking coalbed methane reserves

The SEC portion will be based on a four-hour course, "SEC Reserve Booking Principles," presented by **Bob Wagner**, a senior vice president and petroleum engineer at Ryder Scott. He designed the presentation and delivers it to corporate reserves staffs that receive continuing education units.

Those attending the one-day conference will qualify for six to eight hours of CEUs.

Don Roesle, CEO at Ryder Scott, will chair the conference.

RS to present, exhibit at HEES

Ryder Scott will present and exhibit at the upcoming Society of Petroleum Engineers Hydrocarbon and Economics Evaluation Symposium, April 3 to 5. **Ron Harrell**, chairman at Ryder Scott, will present, "Certifying Reserves Certifiers: The Time Has Come," April 4 at 4 p.m. at the Hotel InterContinental in Dallas.

A year ago, Harrell began urging the E&P industry to take steps to educate, test and certify qualified petroleum geologists and engineers in the specialty practice of evaluating and estimating petroleum reserves. The primary benefit of the voluntary certification program would be to heighten understanding and upgrade competencies through a rigorous curricula designed by experts in the field.

A secondary benefit would be to help restore a loss of investor confidence in publicly reported reserves estimates.

"The industry-administered program might head off government initiatives to make third-party reserves audits mandatory, creating an opportunity for industry to take the lead," Harrell said.

At $35/bbl and $5/thousand cubic feet (Mcf), for example, which is significantly lower than fourth quarter 2004 prices, reserves reported to the SEC and investors represent a total value of more than $2 trillion (U.S.). This is a mere 3 percent of worldwide reserves, which are reported in a variety of ways.

"These values should be estimated in accordance with internationally accepted practices by highly competent evaluators. Evaluator certification is a step in that direction," said Harrell.

Glenn Newbeck (left) with World Energy publishers and Omar Nur, petroleum engineer at Ryder Scott, examine onscreen information at NAPE this year at the Ryder Scott booth. The firm will exhibit at Booth 141 at the SPE-HEES, April 4-5.

He will update attendees on the latest developments, including recommendations and action items of six committees formed by the American Association of Petroleum Geologists and the Society of Petroleum Evaluation Engineers, both potential sponsors of the examination-based certification program.

Ryder Scott personnel will be at Booth 141. The firm is also a gold sponsor.

Harrell leadership brought public attention, growth to Ryder Scott

During his five-year tenure as CEO and before that, **Ron Harrell** brought public attention to Ryder Scott through his tireless efforts in public speaking and committee leadership roles. He made 5 to 10 appearances every month, delivering presentations on oil and gas appraisals, reserves definitions and estimates and other topics.

As a member of the Society of Petroleum Engineers reserves committee that drafted revised reserves definitions in 1997, Harrell had a direct influence on how those standards were drafted. The SPE/World Petroleum Congress boards adopted those definitions, which have become international technical standards for the classification of oil and gas reserves.

In addition, Harrell was the chairman of the 1999-2000 SPE reserves committee. Harrell also has led the way in exploring emerging issues on reserves reporting requirements with the U.S. Securities and Exchange Commission. During his term as CEO, he chaired the four Society of Petroleum Evaluation Engineers forums that addressed SEC interpretive positions on reserves definitions. With the SEC participating, these forums were precursors to reserves revisions of 2004.

"Ron's involvement with the SPE reserves committee not only benefited industry, but indirectly benefited our firm by association. His leadership in the SPEE-SEC forums further heightened our already established reputation as a leader in SEC compliance," said **Don Roesle**, incoming CEO.

Harrell retired from the top post at Ryder Scott as the chief architect of a business development program that culminated in a significant jump in work volume and annual sales revenue during a record 2004.

Previous CEO **Ray Cruce** had built Ryder Scott's business through face-to-face meetings over several decades. Harrell continued that approach while supplementing it with modern public relations methods to reach wider audiences beginning in the late 1990s. Up to that time, Ryder Scott, like many professional services firms, including accounting and law firms, was not a big proponent of commercial endeavors.

"Ron has always had a vision of Ryder Scott as more of a global energy consultant. That vision helped us expand our international work," said Roesle. "The business landscape has changed in recent years and Ron's leadership and vision have helped us adapt."

Under Harrell, the firm published newsletters, wrote technical papers, distributed freeware, developed a Web site and exhibited at trade shows. As CEO, Harrell was interviewed as a reserves expert by *Dow Jones*, *Reuters*, *Bloomberg*, major daily newspapers, television news programs, all major trade publications and various other news outlets.

Harrell said that he will continue to lead an industry effort that he initiated to test and certify geologists and engineers in the practice of estimating petroleum reserves.

As an 11-year veteran petroleum engineer, Harrell joined Ryder Scott as a reservoir engineer in 1968. He became vice-president in 1970, director in 1980 and president in 1998.

Well wishers can send their regards to Harrell at ron_harrell@ryderscott.com.

Reserves—Cont. from Page 3

2003, registrants' U.S. reserves had fallen to 17 percent.

- Different fiscal regimes have the potential to create difficulties in comparing reserves in one area with those of another.
- The SEC should update its rules and consider new technology, including 3D seismic, simulation and modeling, probabilistic estimates and integrated data from various techniques that support well data.
- Industry and the SEC should create a forum for considering new issues, such as the impact of new technologies and consistency in the handling of LNG, GTL, oil sands and other nontraditional oil and gas sources.

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