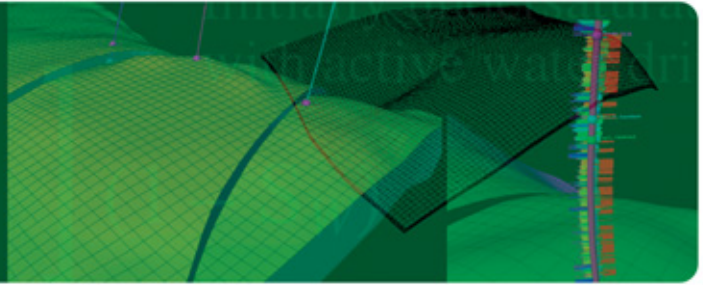


# RESERVOIR SOLUTIONS



A quarterly publication of Ryder Scott Petroleum Consultants

December 2003–February 2004/Vol. 6, No. 4



2003 SPEE forum

## SEC engineer says reserves writedowns caused by industry reliance on so-called “can’t-miss” technology

**Jim Murphy**, a petroleum engineer at the U.S. Securities and Exchange Commission, said Oct. 28 that undue reliance on so-called “can’t-miss” technology has been the cause of several petroleum reserves writedowns and impairments over the past two years.

“One thing in common (with the writedowns) is the properties were new fields with few (drilling) penetrations and not much production history,” he remarked. Murphy delivered these and other comments in his opening address to the more than 200 attendees of the Society of Petroleum Evaluation Engineers Forum with SEC engineers Murphy and **Ron Winfrey**.

A “live” survey of attendees, half of whom were petroleum engineers, indicated that 82 percent of the respondents did not think that the SEC adequately incorporates today’s technology. Winfrey said that he

wasn’t surprised by that percentage because the SEC reserves definitions are 25 years old.

“Twenty-five years ago, we didn’t have computers, so we couldn’t do probabilistic studies,” he remarked.

Murphy asked public issuers to remove boilerplate verbiage in annual reports stating that reserves estimates are inherently uncertain—language that he said is drafted by attorneys to protect the companies. Rather, he said, issuers should report reserves that meet the reasonable certainty test. “Prove it to us or take it out,” he remarked.


The boilerplate language to which Murphy referred is usually found in oil and gas reserves subsections in management discussions in 10-K annual reports and other filings.

*Please see SEC on Page 4*

### *Inside Reservoir Solutions newsletter*

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## ASC regulator says “high degree of certainty” needed



**David Elliott**, senior petroleum evaluation geologist at the Alberta Securities Commission, told attendees of the SPEE forum in late October that the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) and SPEE Calgary chapter had not quite finalized the Canadian Oil and Gas Evaluation Handbook (COGEH) Volume 2, but its publication was imminent.

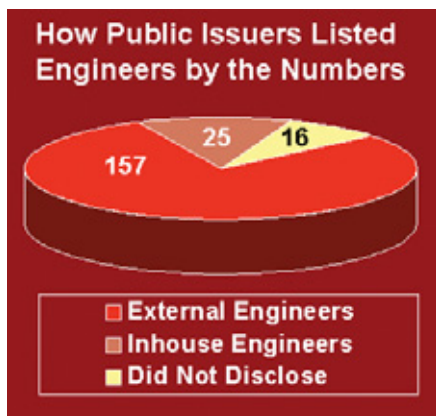
*Please see ASC on Page 7*

# Record 86% of disclosing companies use consultants for year end work, survey shows

Ryder Scott again most listed consultant in the Herold survey of the latest 10-Ks

In a recently published John S. Herold survey, almost nine out of 10 producers that identified reserves engineers in their 2002 annual reports cited independent engineering consultants vs. internal engineers. The 86 percent figure for consultant use is the highest since Ryder Scott has followed the survey beginning with 1994 annual reports.

It is a full 11 percent higher than two years ago and 10 percent higher than the prior record of 78 percent of three years ago. (Last year, the numbers were inconclusive because they were not fully tallied by Herold.) 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.

Reflecting intense consolidation from 2000 to 2002, this year's annual survey compiled year-end petroleum-reserves information from 198 companies—less than half

of the 404 oil and gas companies listed two years ago.

The Herold survey is mostly limited to companies in North America and to a few U.S.-registered overseas corporations issuing American Depositary Receipts. The surveyed companies reported their reserves under U.S. Securities and Exchange Commission guidelines.

Once again this year, Ryder Scott retained its top position as the most listed independent consultant of record for preparing these SEC-case year-end reserves reports. Ryder Scott was listed in 51 annual reports, followed by 32 listings for the No. 2 consultant. This 5-to-3 edge over the closest competitor is the widest gap ever.

The 51 listings of Ryder Scott is a significant increase from the 32 listings of two years ago despite industry consolidation. While the number of oil and gas companies decreased 50 percent over that

#### 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 as many as 1,000 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 117 employees, including 66 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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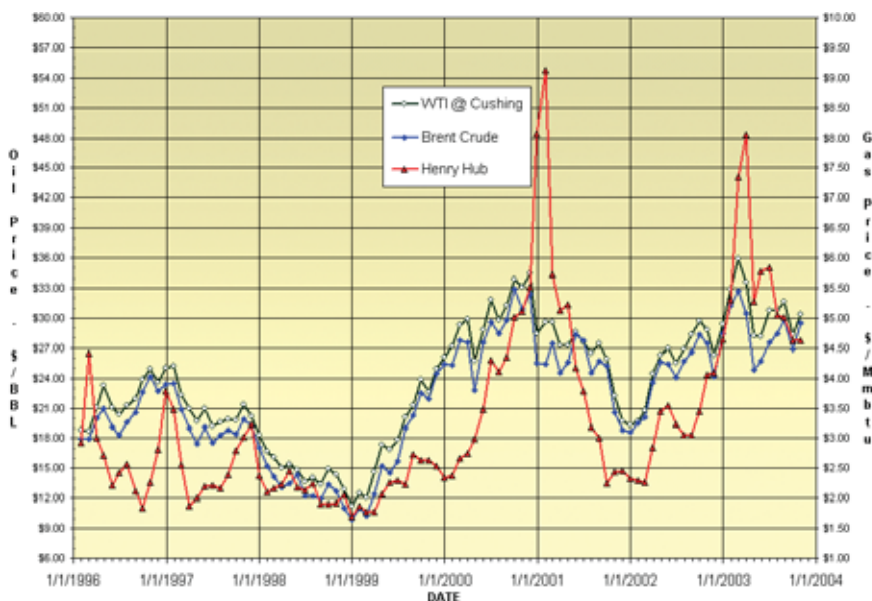
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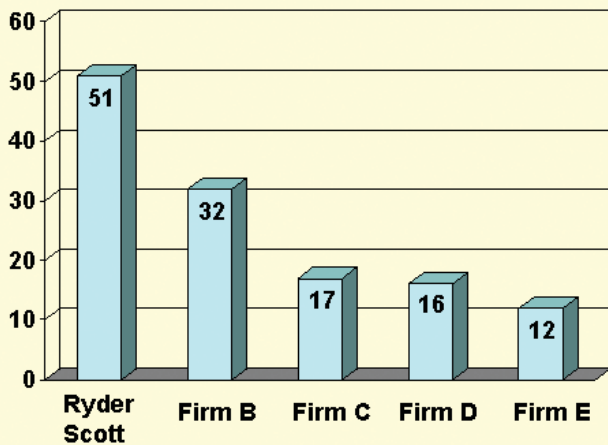
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#### Price history of benchmark oil and Henry Hub gas



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

Number of 10-K Listings for Top 5 Consultants



span, Ryder Scott's listings surged almost 60 percent. "This countertrend indicates significant growth of our client base in an industry of fewer and fewer companies," said Ron Harrell, CEO.

In the 2002 annual reports issued this year, 182 of the 198 companies indicated they used either independent or internal engineers. The remaining 16 or 8 percent of the total did not release that information. This is a much smaller percentage of non-disclosers than the 52 percent of two years ago, perhaps representing a trend toward transparency in reporting. Of those 182 reporting companies, 157 used engineering firms (86 percent) and 25 indicated internal preparation of year-end reports.

Overall, the Herold survey indicated that year-end reserves work in North America is spread among 42 small and large U.S. and Canadian shops. The most-often-listed consultants have carved a lion's share of the market. The five most-listed consultants garnered 128 citations.

Seven of the 10 largest U.S.-registered oil and gas companies used internal engineering staffs for annual reporting. However, 40 out of the 50 largest corporations, 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.) This is a big jump. Only 20 of the top 50 listed consultants two years ago. Fourteen of the top 50 listed consultants three years ago.

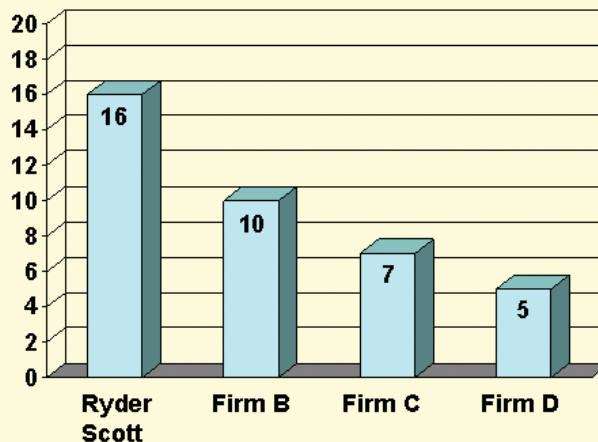
**"Once again this year, Ryder Scott retained its top position as the most listed independent consultant of record for preparing these SEC-case year-end reserves reports."**

"The survey shows that commissioning third-party consultants to independently certify year-end reserves has rapidly gained momentum among the largest U.S.-registered upstream companies," said Harrell. "Increased scrutiny from regulators following financial collapses of two years ago and heightened corporate responsibility were the most likely factors driving this trend."

Ryder Scott was listed by 16 companies of the 50 largest. Three other consultants were listed 10, 7 and 5 times, respectively.

Ryder Scott was listed by Devon Energy Corp. (No. 7), Apache Corp. (No. 12), Williams Cos. (No. 15), Questar Corp. (No. 20), Chesapeake Energy Corp. (No. 21), Pogo Producing Co. (No. 24), Westport Resources Corp. (No. 26), Forest Oil Corp. (No. 27), Stone Energy Corp. (No. 29), Nuevo Energy Co. (No. 38), Tom Brown Inc. (No. 39), Spinnaker Exploration Co. (No. 40), Patina Oil & Gas Corp. (No. 42), Cimarex Energy Co. (No. 44), Unit Corp. (No. 48) and Plains Exploration & Production Co. (No. 50).

Number of Listings for Top 4 Consultants in 10-Ks of 50 Largest E&amp;P Companies



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

- The number of public companies publishing reserves estimates attributed to independent consultants
- The size of the reporting companies using independent consultants

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

*Editor's Note: Ryder Scott thanks John S. Herold Co. for providing its report as a basis for this article. For more information on Herold's various research services, please contact Bill Jones at [bjones@herold.com](mailto:bjones@herold.com).*



SEC—Cont. from Page 1

Murphy cited analysis in the John S. Herold 2003 Global Upstream Performance Review documenting a “performance shortfall” among U.S.-registered large oil and gas companies that do not clear the “upstream high bar.” He questioned why these writedowns took place during a period of high oil and gas prices. “Investors do not believe the reserves numbers anyway,” he said.

Murphy referred to Herold’s findings that in the mid 1990s, the “large oils” promised output gains exceeding 5 percent. However performance relative to growth targets fell short as reserves for super majors and large independents increased only 2.6 percent per annum since 1998, Herold notes.

“As a result, many of the giant oil companies now refrain from issuing production targets,” Murphy said, quoting from the performance review. Sixteen percent of the survey respondents at the forum indicated that their companies had been required to debook reserves by the SEC.

Murphy urged companies to win back the confidence of investors by affirming and following SEC regulatory interpretations on lowest known hydrocarbon (LKH) limits, on undeveloped locations offsetting producing wells and on other definitional rules.

He also said that internal and external petroleum engineers have additional liability under the Sarbanes-Oxley (Sox) Act, but that this provision has not been tested in court yet. Murphy referred to a Sox provision that he said states that “any person responsible for input into the financial statement accepts liability for those numbers.”

Referring to external engineers, he said, “The check received by an independent engineer comes from company investors, not management. Independent engineers have an obligation to provide a fair, honest (reserves) report to shareholders. They are paying for a neutral, unbiased report.”

He added that rather than maximize reserves, companies must present a balanced view. “If performance data shows that production will exceed the volumet-



Jim Murphy (left), a U.S. SEC engineer, and fellow SEC engineer Ron Winfrey both commented on the SEC definition on lowest known hydrocarbons, with Winfrey stating that the agency had changed its opinion of what is meant by “known.” The term “known” is limited to information from drilling.

ric estimate limited by the LKH, then you can revise your reserves estimate upwards. If you can demonstrate it by performance, then that is what reasonable certainty is all about,” said Murphy. “How well have forecasts year by year, property by property, come true? That is the real measure of good reserves estimates.”

Murphy also said that a 10-percent difference between originally reported reserves estimates and subsequent revised ones may be considered “material” and significant enough to trigger further investigation by the SEC. “If there is a 10 percent difference, something is wrong,” he said.

Murphy also said that the SEC intends to review the financial reporting of all Fortune 1000 companies.

The following statements were also made by Murphy and fellow SEC engineer Winfrey:

■ Winfrey said that the SEC accepts probabilistic reserves assessments, but only in reservoirs defined by well penetrations. He said the SEC position is similar to that of the Society of Petroleum Engineers.

■ Murphy said that there has not been a big push from industry in asking the SEC to allow the reporting of probable reserves. The push will have to come from industry, including professional and trade organizations and individual companies, for changes to take

place, said Winfrey.

■ They both commented on the SEC definition on LKH, with Winfrey stating that the SEC had changed its opinion of what is meant by “known.” The term “known” is limited to information from drilling, he said.

■ Reviews of 10-Ks and other filings and press reports have triggered SEC investigations, they said.

■ The SEC has reviewed respondent information from its survey on deepwater booking practices, but has not issued an opinion, said Winfrey. Operators in the Gulf of Mexico completed and returned those questionnaires more than a year ago.

“We would like to have a ruling on flow testing soon, but we are a bureaucracy,” Winfrey remarked.

*Editor’s Note: The SEC representatives were not speaking on behalf of the agency or in an official capacity for the agency. The opinions expressed were their own. Ryder Scott and SPEE sincerely thank the SEC participants for their willingness to attend the forum and to honestly and candidly discuss these important issues.*

*The intent of this article is not to offer advice on SEC regulations but rather to bring to the forefront important issues affecting reserves reporting.*

# Booking PSC reserves before approved development plan requires compelling case, say SEC engineers

As E&P companies in U.S. equity markets increasingly report petroleum reserves from international discoveries, they are asking, at what point during the pre-development process are quantities bookable?

"Reserves definitions provide little guidance on whether an international operator is entitled to book reserves, especially because ownership and control reside with the host government," **Tom Gardner**, vice president and petroleum engineer at Ryder Scott, told the SPEE forum audience.

U.S. SEC engineers **Jim Murphy** and **Ron Winfrey** said that of the four elements in FASB 19-11a that support recognition of proved reserves, the right to take volumes in kind and exposure to risk and reward are the two most important. The right to extract oil and gas and ownership of a clear mineral interest were third and fourth most important.

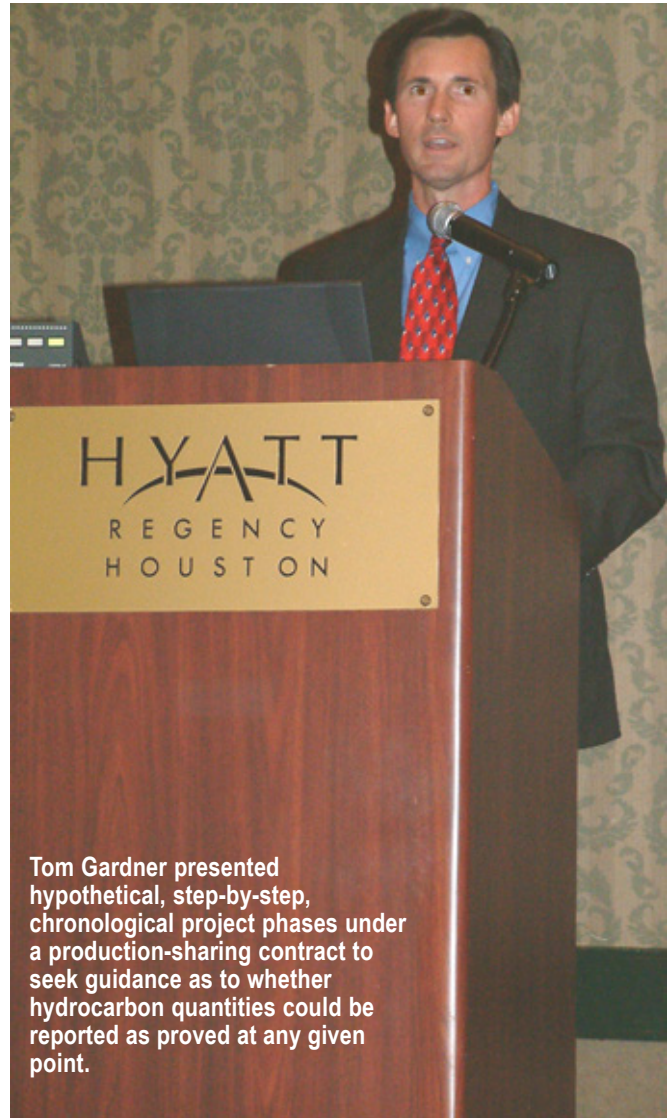
Gardner asked the SEC engineers if the following forms demonstrated sufficient commitment to develop facilities and infrastructure as a prerequisite to book reserves: signed sales contracts, requests for proposals to build facilities, signed acceptance of bids, memoranda of understanding (MOUs), firm plans and timetables, approved authority for expenditures, approved loan documents, initiation of construction and approved environmental permits. "MOUs are not binding. You have to have more," said Winfrey.

**"Winfrey said that the SEC would listen to a compelling argument to book reserves and would seek to determine whether the government-approval process was transparent."**

Gardner presented hypothetical, step-by-step, chronological project phases under a production-sharing contract (PSC) to seek guidance as to whether hydrocarbon quantities could be reported as proved at any given point. The SEC engineers did not give an unconditional OK to carry proved reserves until Gardner's hypothetical host government had given final approval of the contractor's development plan.

The SEC engineers rejected the notion of reporting reserves at the point that the contractor had completed the following.

- Secured the PSC
- Made the oil discovery
- Completed the scoping study
- Completed the appraisal and commerciality report
- Approved project budget funds



Murphy termed the situation as "problematic," saying the operator did not have a full development plan. He questioned whether the national oil company would participate. Winfrey also cautioned against booking reserves without government approvals.

Gardner progressed further through the process to reflect that the contractor had completed the following.

- Received approval from the partnering national oil company for the appraisal and commerciality report
- Received notification by the national oil company that it would take a 50 percent interest and book those reserves

Winfrey said that in spite of this progress that the

*Please see PSCs on Page 8*



## Implement internal controls for reserves reporting process, Justice tells audience at SPEE forum

About half of attendees say Sarbanes-Oxley is not affecting reserves preparation so far

**Randol Justice**, an audit partner at PriceWaterhouseCoopers LLP, told a luncheon audience at the SPEE forum, that under the Sarbanes-Oxley Act (Sox), Section 404, public oil and gas companies will have to implement stronger internal controls and document assumptions inherent in the reserves process that guide inputs. As inputs, he cited geological and engineering data, economic and operating conditions, use of internal and external engineers, costs and pricing data and production history.

Section 404 requires management to take responsibility for establishing and maintaining an adequate internal control structure. The Public Company Accounting Oversight Board (PCAOB) is working with the SEC to clarify implementation of Section 404.

PWC surveyed large public companies in July and they estimated that employees will spend an average of almost 7,000 hours evaluating and enhancing internal corporate controls. Those companies also indicated that they will spend almost \$500,000 for evaluation software, outside consulting

and employee training to prepare for compliance with Section 404, said Justice.

He also said that PCAOB had mandated increased "walkthroughs" by auditors which will hike fees. "It will take more time," Justice remarked.

He cited the following SEC comments on the petroleum industry:

- For proved reserves secured through production-sharing contracts, report either the economic interest method or the working interest method, whichever is applicable.
- Reported reserves and production quantities should exclude amounts attributable to any net profits interest.
- Leasehold interests should be classified as intangibles.
- In accounting for the financing of proved undeveloped reserves, include the plugging and abandonment costs.

Almost 50 percent of SPEE forum attendees participating in a live survey indicated that Sox has had no effect on their reserves booking practices. "I am surprised with this survey on the effects of

Sarbanes-Oxley. Perhaps, the impact has not made its way down to the reserves estimation process level yet," said Justice.



Randol Justice, an audit partner at PriceWaterhouseCoopers LLP, told a luncheon audience at the SPEE forum, that public oil and gas companies will have to implement stronger internal controls.



Ace Alexander makes presentation on worldwide reserves at SPEE forum.

## Alexander presents worldwide reserves changes

At the SPEE forum, **Ace Alexander**, reserves coordinator at El Paso Production Co., presented industry-level and geographical-level report cards for petroleum reserves changes. Overall, the data from the last four years showed slight increases in proved reserves worldwide. The United States posted negative revisions in 1999 and 2001.

Alexander asked for comments from the SEC engineers and **Ron Winfrey** noted that negative revisions in the U.S. were caused by drops in oil and gas prices and were not technical revisions.

Alexander, chairman of the SPEE forum case committee, also presented the results of a survey

taken at the forum. He reported that about 68 percent of the respondents indicated that their company booking practices were "right."

About 28 percent indicated conservative practices and 8 percent characterized them as aggressive. However, those same respondents had a different view of their competitors' practices.

About 42 percent indicated that they believed that industry booking practices were aggressive. Most responded that executive management had some understanding of reserves definitions. Results of the 19-question survey completed by 119 of the attendees are available at the SPEE Web site to those who completed the surveys.

ASC—Cont. from Page 1

He said COGEH 2 will offer detailed guidelines for analog, volumetric, material balance, production decline, reservoir simulation, future drilling and planned EOR methods and their integration.

The new National Instrument 51-101, which applies to continuous disclosures by public issuers in Canada beginning at year end, refers to COGEH on technical matters. Even when finished, COGEH 2 will not be static. "We plan continued updates and revisions," said Elliott.

**"A P55 at the entity level certainly doesn't satisfy the legislative requirement for a high degree of certainty."  
— David Elliott, ASC**

Elliott also said that under the NI 51-101 companion policy, a qualified reserves evaluator or auditor must meet certain qualification and experience requirements and, unless exempted, must also be a member in good standing of an acceptable professional organization of engineers, geologists, geoscientists or other professionals.

"Provincial and territorial securities regulators are currently carrying out the process of recognizing professional engineering organizations in Texas, Louisiana, Oklahoma, Colorado and California," he remarked. "Once this has been completed, members of these organizations will not need to make further application."

Members of organizations not currently being reviewed for recognition but who wish to be recognized should contact the ASC with their requests.

Elliott did not directly address the controversial aggregation issue and its "portfolio effect." (See *Reservoir Solutions* newsletter, June-August 2003.) COGEH 1 states, "Provided deterministic estimates of proved reserves fall within the > P50 range, their arithmetically aggregated sum will approach or



**At the SPEE forum, David Elliott, a regulator with the Alberta Securities Commission, did not directly address the controversial aggregation issue and its "portfolio effect." However, he stressed that National Instrument 51-101 definitions called for a "high degree of certainty" at the entity level in estimating proved reserves. For more information on the portfolio effect and NI 51-101, see *Reservoir Solutions* newsletter, June-August 2003.**

exceed a P90 level as long as there are enough entities in the aggregate."

Elliott said, "This has caused considerable debate." He stressed that NI51-101 definitions called for a "high degree of certainty" at the entity level in estimating recoverable reserves.

"A P55 at the entity level certainly doesn't satisfy the legislative requirement for a high degree of certainty," Elliott remarked.

He also said that the phrase "high degree of certainty" for proved reserves at the entity level is subject to debate but does allow certain latitude for evaluators. On the other hand, Elliott stressed that companies should not ignore the Canadian regulatory language and its intent.

"It is likely that the actual remaining quantities recovered will exceed the estimated proved reserves," he said.

Elliott cited a compilation of 20 surveys by statisticians that concluded that the term "certain" is generally understood to be 97 percent probability with very little variance.

## Address Change

The Ryder Scott Calgary office has changed its address to the following:

**Suite 1200  
530 - 8th Avenue S.W.  
Calgary, Alberta,  
Canada  
T2P 3S8**





## Ryder Scott to exhibit at NAPE Expo in February

Ryder Scott invites you to join us at NAPE Expo 2004 at the George R. Brown Convention Center in Houston, Feb. 5-6. Professional staff will be on hand to demonstrate some of our property evaluation capabilities at booth 1009/1108 on the main aisle close to the entrance. TRC Consultants LC, developers of PHDWin economics software, will co-exhibit.

At NAPE Expo, oil and gas companies will introduce their domestic and international petroleum properties to an estimated 8,000 attendees. Marketed

properties include prospects, producing properties, U.S. onshore and offshore plays and international opportunities. Capital providers and consultants also exhibit. For further information, go to [www.napeonline.com](http://www.napeonline.com).

### PSCs—Cont. from Page 5

development plan had not been approved, so, in general, no reserves could be booked. However, he said that the SEC would listen to a compelling argument to book reserves and would seek to determine whether the government-approval process was transparent.

Gardner progressed further in the process, stating that the contractor had completed the following.

- Received final approvals from its management and the national oil company for the final development plan
- Received payments from the national oil company

Again, Winfrey said generally that his answer would be not to allow the booking of reserves because of the absence of host government approvals of the development plan. "My answer might be different if I was more familiar with the country," he said. Gardner set up the hypothetical situation by saying that the contractor had a history of 30 previous project approvals from the host government.

The SEC Web site release, "SEC Definitions and Interpretive Guidance," published in 2000, stated, "The history of issuance and continued recognition of permits, concessions and commerciality agreements by regulatory bodies and governments should be considered when determining whether hydrocarbon accumulations can be classified as proved reserves. Automatic renewal of such agreements cannot be expected if the regulatory body has the authority to end the agreement unless there is a long and clear track record which supports the conclusion that such approvals and renewal are a matter of course."



Ryder Scott petroleum engineers Dan Olds (left) and Larry Connor, also a senior vice president, talk with booth visitor at 2003 SPE HEES. Ryder Scott personnel will be on hand at the NAPE booth this February.

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