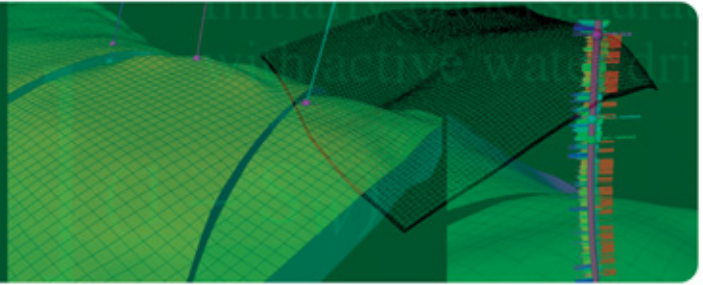


RESERVOIR SOLUTIONS



A quarterly publication of Ryder Scott Petroleum Consultants

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Industry cases to be presented at SPEE forum with SEC

Downdip limits to be a hot topic

Petroleum evaluators and the U.S. Securities and Exchange Commission staff will discuss reserves booking issues that some E&P companies say are inconsistent, unclear or confusing at the fourth annual Society of Petroleum Evaluation Engineers Forum, Oct. 28, in Houston. "Anticipation of increased surveillance and enforcement is expected to draw a record number of engineers, geologists and financial specialists to this year's forum," said **Ron Harrell**, CEO at Ryder Scott and steering committee chairman.

Both SEC engineers, **Jim Murphy** and **Ron Winfrey**, are scheduled to return this year. As in past forums, case presenters will disguise industry facts and circumstances to ensure confidentiality. This year, organizers expect to present eight cases without disclosing the companies or fields involved.

One SEC interpretation expected to draw much attention is the agency's recent hard-line stance on downdip limits below lowest logged depths. At the June SPEE annual meeting during a teleconference, an SEC representative said that the agency would only allow calculation of a contact to the lowest logged depths with no exceptions.

At the past three SPEE forums, SEC representatives said that they would consider arguments for calculating contacts based on "compelling" cases

"Anticipation of increased surveillance and enforcement is expected to draw a record number ...to this year's forum."



Ron Winfrey (right), an SEC engineer, cups the microphone at the previous SPEE forum to confer in private with fellow SEC engineer Jim Murphy before responding to a question from the audience. Both Winfrey and Murphy are scheduled to return to the upcoming forum and are expected to handle a variety of reserves booking questions.

involving MDT (modular dynamic formation tester) pressure-gradient data and seismic information. However, at the SPEE annual meeting, the SEC recanted on its "advice" and reverted to the stricter interpretation, citing abuse of the "technology case" by some public issuers.

The scheduled luncheon speaker is **Randol Justice**, a partner at PriceWaterhouseCoopers. He will address some of the current accounting issues related to the reporting of proved reserves to the SEC.

The forum will be held Tuesday Oct. 28 from 7:30 a.m. to 5 p.m. at the Hyatt Regency Imperial East Ballroom, 1200 Louisiana, Houston, TX. The registration fee is \$250 for SPEE members and \$300 for non-members. Deadline for early registration is Oct. 7. Mailed applications postmarked after that will be assessed a \$100 late fee.

Attendance is limited. Application does not guarantee an invitation to attend. Early registration increases the chances of an invitation. SPEE reserves the right to limit the number of attendees from a single company.

To get a registration form, e-mail SPEE at bkspee@aol.com, phone at (713) 651-1639 or fax at (713) 951-9659.

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Specialized material balance freeware on ryderscott.com

Producers with abnormally pressured, unconventional gas fields now have an easy-to-use, Excel-based tool for material balance calculations to help predict future performance. Ryder Scott has just released its latest *Reservoir Solutions* software, the Abnormal Pressure Gas Material Balance freeware program, which is posted on the Web site at www.ryderscott.com/downloads.htm. This is the ninth *Reservoir Solutions* program to be offered online and overall, the fourteenth downloadable program on the Web site.

This program uses modified methodology first presented by Billy P. Ramagost and Fred F. Farshad (SPE Paper No. 10125, 1981). Their algorithm compensates for reservoir rock and water compressibility in determining both original gas in place (OGIP) and recoverable reserves.

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 more than 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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In a "traditional" gas material balance for normally pressured reservoirs, petroleum engineers and geologists typically assume rock and water compressibility effects are negligible. Such assumptions can lead to considerable error when applied to either abnormally-pressured or high-pressure reservoirs. This results in a dramatic overstatement of estimated OGIP by as much of a factor as two to one. Also, even in normally pressured reservoirs, the expansion of "free-water" can lead to similar, though far more subtle errors in the analysis.

Ryder Scott's Abnormal-Pressure Gas Material Balance program considers rock and water compressibilities and accounts for finite downdip free water expansion. The program offers a simple-to-use interface, requiring only the commonly available reservoir pressures, temperature data and gas properties. The program includes "calculators" and tips to help the experienced petroleum professional assess the appropriate compressibility coefficients as well as the conversion of separator gas components to reservoir (wet gas)

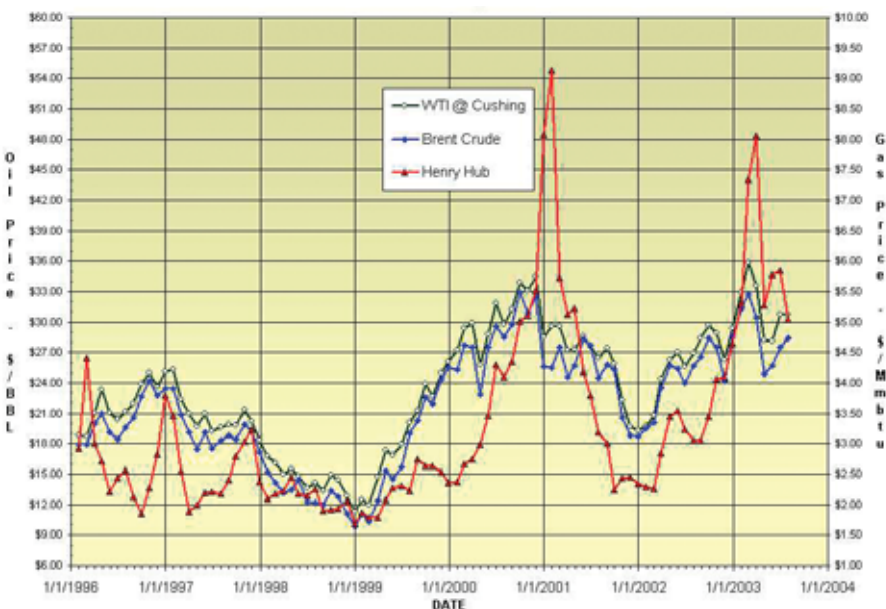
conditions.

"As with any 'exotic' or special use application, the program is intended for use only by experienced petroleum professionals familiar with the Ramagost and Farshad methodology," said program developer **James Latham**, petroleum engineer and vice president. "We encourage all users to carefully review the user's manual before attempting to use this application."

A user's manual is included in an Excel file accessible from the engineering menu. Users of *Reservoir Solutions* downloads typically download the executable files from Web site to a temporary directory. Then the user opens the self-extracting .exe file that automatically installs the program files to Excel start and other directories. As is the case with all posted freeware, the new material balance application produces presentation-quality on-screen views and printer-friendly, hard-copy output.

Editor's Note: Ryder Scott does not guarantee or warrant the accuracy or reliability of this software and disclaims its fitness for any particular purpose.

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.

People



Cruce

Cruce's death marks an end to era

Raymond V. Cruce, 84, who retired from Ryder Scott in 2000 as CEO after nearly three decades in that position, died June 25. "Everyone at Ryder Scott feels a great sense of loss. Through the years, Ray came to personify what made our company what it is today. Our heartfelt thoughts and prayers go out to his family and friends," said **Ron Harrell**, CEO.

Cruce, a petroleum engineer, guided the evolution of Ryder Scott beginning in the late 1960s as it intensified its business focus on independent petroleum reserves estimations. He joined Ryder Scott in 1967 as a senior vice president and director after the firm acquired Robert W. Harrison & Co., where he had been a partner for 11 years.

Cruce sensed growth opportunities for independently certifying reserves for financial transactions, so he began contacting banking institutions after he became chairman of the board and president in 1972. New York investment bankers and other commercial lenders, keen on reducing the risks associated with reserves-based lending, listened to Cruce, whose

personality and credibility helped open doors. The bankers were convinced that third-party certifications were the best method of establishing reasonable values for petroleum properties used as collateral.

"I assured the lenders that Ryder Scott was a company of integrity and honesty and was well qualified to perform those studies," Cruce said. Reservoir evaluations became the mainstay of the firm and the Ryder Scott name became a standard on most bankers' lists of qualified evaluators.

Cruce supervised all activities of the company — from meeting with oil company chief executives to compiling revenue figures on a monthly basis. Up until his retirement, Cruce, in his eighties, made detailed presentations to the Ryder Scott board of directors and planning committee members as he reeled off facts and figures on accounting, budgeting, office expansions, work loads, purchasing and virtually every facet of company operations.

"Cruce, in his eighties, made detailed presentations to the Ryder Scott board of directors and planning committee as he reeled off facts and figures..."

An industry veteran of 54 years, Cruce began his career as a petroleum engineer and geologist at Gulf Oil Corp. in 1946. He worked there for nine years before joining Robert W. Harrison.

Cruce served on the boards of Fannin Bank, Interfirst Bank and First Republic Bank, all of which became part of Bank of America through mergers. Additionally, he served on the boards of Goodwill Industries of Houston, the Salvation Army and the Coronado Club.

He was a member of the Engineering Foundation Advisory Council for the College of Engineering at the University of Texas Austin. Cruce was an elder and trustee for Memorial Drive Presbyterian Church.

He was a member of Pi Epsilon and Sigma Gamma Epsilon Honorary fraternities. He was also a member of American Petroleum Institute, Society of Petroleum Engineers, Independent Petroleum Association of America, National Society of Professional Engineers, Texas Mid-Continent Oil & Gas Association, Texas Independent Producers and Royalty Owners Association and Houston Club. Cruce was also a Kentucky Colonel.

The family requests donations to be made in his name to the Memorial Drive Presbyterian Church, 11612 Memorial Drive, Houston, Texas 77024; The Endowed Scholarship Fund for Ray Cruce, Dept. of Petroleum and Geosystems Engineering, University of Texas at Austin, CPE Bldg., 2.502; Austin, Texas, 78712; Goodwill Industries or the Salvation Army.

Ryder Scott to present reserves topics at ATCE

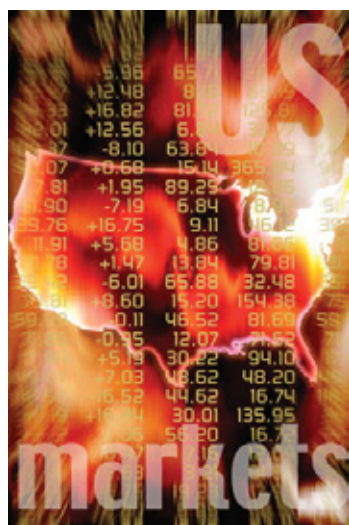
Ryder Scott professionals will present two technical papers that deal with the public reporting of petroleum reserves at the Society of Petroleum Engineers annual technical conference in Denver on Monday, Oct. 6. CEO **Ron Harrell** will present "Current Applications of the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information to Meet the Objectives of the Sarbanes-Oxley Act of 2002 (SPE #84143)."

Tom Gardner, vice president, will present "Significant Differences in Proved Reserves Volumes Estimated Using SPE/WPC Reserves Compared to United States Securities and Exchange Commission Definitions (SPE #84145)." The two papers are part of a six-paper SPE-ATCE technical session, "Reserves: Truth or Consequences," from 1:30 p.m. to 4:15 p.m. at the Colorado Convention Center.

The following summaries highlight some of the major issues that Harrell and Gardner will discuss in their respective papers.



Convention Center



Reserves under Sarbanes Oxley

This paper focuses on the use of SPE standards in the reporting of reserves information to the U.S. Securities and Exchange Commission (SEC) under the Sarbanes-Oxley Act of 2002 (the Act). E&P companies are assessing the potential impact of the Act on their shareholders, boards of directors and management. Public issuers can suffer potential penalties by improperly

reporting company financials. For an E&P company, reserves estimates, considered supplementary information to the financial statements, are the most significant measure of company value.

Even though the Act does not specifically address the reporting of reserves, many E&P companies are assuming that the Act will influence this reporting. The penalties under the Act are an ever-present reminder to management to know and understand the relevant reporting requirements and to ensure that information providers along the data chain are qualified and empowered to respond in an open,



Harrell addresses SPEE annual meeting in June.

honest manner.

This paper proposes that industry adopt the SPE "Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserve Information" that were initially published in 1977 to provide guidance to both preparers and users of oil and gas reserves information. SPE revised the standards in 2001 to incorporate the joint 1997 SPE/World Petroleum Congresses (WPC) petroleum reserves definitions.

The paper explains steps to ensure that the reporting of proved petroleum reserves is consistent with SEC requirements. The standards focus on the following:

- Compliance with relevant reserves definitions (including SEC)
- Qualifications for persons estimating and auditing reserves information
- Standards of independence and objectivity for such persons
- Standards for estimating reserves and related reserves information
- Standards for auditing reserves and related reserves information

The standards recommend that a reserves estimator be an engineer or geologist that has had at least three years of "practical experience in petroleum engineering or petroleum production geology" with "at least one year of such experience being in the estimation and evaluation of reserve information." A qualified reserves estimator must possess a BS degree from a recognized university in petroleum engineering, geology or in another field of engineering or physical science or possess a current certification or registration as a professional engineer or a certified professional geologist.

"Most professional evaluators would agree that these credentials are probably only minimally acceptable and then only for those individuals immersed in reservoir engineering or reservoir geology with experience with a diversity of types of hydrocarbon reservoirs of differing geologic ages in numerous petroleum basins during the three-year period preceding the one year of reserves estimation," said Harrell.

He also said that qualified reserves estimators should be competent in data evaluation tools available to the industry more than 25 years after the issuance of the 1977 standards. "Those tools represent a quantum leap in technology," he remarked.

Other issues affecting the qualifications of reserves estimators are knowledge of probabilistic assessment techniques, reservoir simulation models, coalbed methane performance and contractual matters in international areas.

The intent of Sarbanes Oxley, among other aims, is to instill in corporate management the need to provide an environment conducive to the true independence of the reserves estimators and auditors. This "umbrella of protection" should extend to internal and external reserves personnel equally.

"One of the nagging and seemingly enduring problems that casts a shadow of uncertainty about the objectivity of company reserves engineers and geologists is the practice of some companies to base their key employees' compensation or bonus plans upon some measure of reserves added during a given year," said Harrell. "This is not an indictment of any company and does not suggest that any improper action has or is occurring but, arguably, a shareholder may feel more comfortable if such a potential for a conflict of interest was eliminated."

Any reserves estimator or auditor should insist on access to all pertinent information and be prepared to decline to classify reserves as proved if no direct access to adequate data to support this conclusion is provided.

Harrell also discusses reserves reviews and reserves audits. A reserves reviewer confirms that reserves estimators are adequately trained, have unlimited access to relevant data, have been afforded ample time to prepare their estimates, are thoroughly familiar with the relevant reserves definitions and have not been subjected to any influences that may introduce bias into their estimates. A reserves review may closely approximate the examination procedure typically and historically conducted by financial auditing firms. However, the conclusions contained in a review do not necessarily ensure the reasonableness or reliability of the entity's reserves information.

A reserves audit is an investigation of the work product, typically a reserves report, produced internally or by a third party. An audit tests the reasonableness, in the aggregate, of the reserves information estimated by the originator. The term "reasonableness" is often understood to be appropriate if the differences in the entities' reserves estimate and that expected by the auditor is within a 10-percent tolerance.

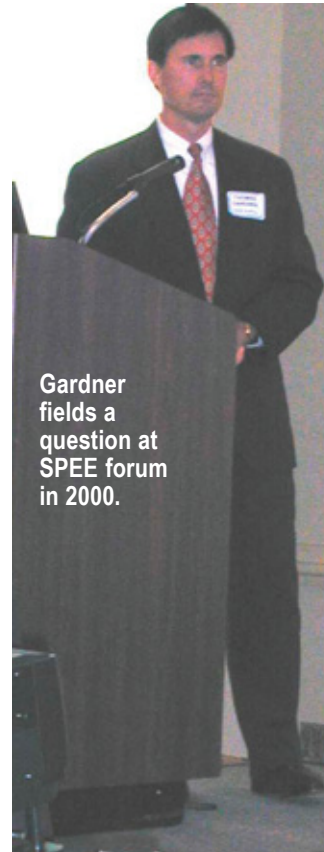
A reserves report is the recommended approach if a fully independent estimate of reserves, including proved, probable and possible reserves categories, is required. This may be accomplished by a "grass roots" approach where all interpretative maps, models, decline curves and other performance indicators or trends are prepared by the independent third party. Professional estimators make appropriate adjustments, positive or negative, to some of the geologic parameters, recovery efficiency calculations, decline

extrapolations and/or reserves classifications to develop their own independent estimates.

The SPE standards have survived the test of time for more than 25 years with only relatively minor revisions in 2001. These standards are applicable to virtually any reserves reporting requirements of any regulatory agency or authority. Familiarity with the standards will benefit financial accounting firms. Also, publicly owned oil and gas producers will benefit from improved relationships with shareholders and with the SEC as thoroughly documented, defensible reporting increases confidence levels.

SPE/WPC vs. SEC Reserves Definitions

The SPE/WPC definitions, established in 1997, have been central discussion points with other organizations and entities, including the SEC. Despite disparate viewpoints and conditions, hope remains that regulators and others can begin to either adopt new, more modern and technically appropriate definitions on a global basis or begin to adapt their interpretations in light of relevant, commonly used technologies upon which major investment decisions are made daily. Gardner plans to cover the following issues:



Gardner fields a question at SPEE forum in 2000.

- Pricing—Both SPE and SEC definitions call for the use of constant future prices for oil, gas and plant products based on current economic or

operating conditions. The SPE/WPC definitions suggest the use of an averaging period. The SEC position strictly mandates that the public issuer use prices in effect on the effective date of the evaluation, typically Dec. 31. The agency says this method is required for consistency among all producers in the calculation of a "standardized measure" of oil and gas values. However, the SEC rule is 25 years old and could not have possibly foreseen market-related changes, such as the maturing of a spot market for gas sales.

- Probabilistic estimates—SPE has issued the P90 level guideline as appropriate for probabilistically derived proved reserves. The SEC staff has stated publicly that it accepts proved reserves with probabilistic estimates if they are done "properly." The SEC definitions and staff accounting bulletins do not define the probability level associated with proved reserves.

- Enhanced oil recovery/Use of analogs—Both

Please see Differences on Page 6

Differences—Cont. from Page 5

definitions allow the use of appropriate analogs to assign proved reserves. The SPE/WPC provides little direct guidance. The SEC defines an analog as a similar reservoir (age, depth, lithology), preferably in the same geologic basin, that has successfully been developed as an EOR project or one that has been designated as a success through analysis of an installed pilot operation. The subject reservoir must have fluid and rock properties at least equal to or more favorable than those of the successful analog, commitment to a development plan and no significant regulatory or legal impediments.

■ **Reservoir simulation**—Both the SEC and SPE definitions allow proved reserves to be estimated through the use of simulation models. The SEC requires a “good history match” to rely upon simulation models for proved reserves estimation. “The question of what dictates a good history match is beyond the scope of this paper and is likely to be a topic for continued discussion,” said Gardner. SEC guidance differs from the SPE guideline of reasonable certainty. SEC definitional issues on LKH and flow testing to the surface affect modeling input parameters and results and ultimately simulation-generated reserves estimates.

■ **Proved undeveloped reserves**—Both the SPE/WPC and SEC definitions refer to drilling units offsetting productive units or wells (SEC) or undrilled wells offsetting wells that have indications of commercial production (SPE/WPC) as examples of PUDs. The SPE/WPC definitions permit the assignment of PUDs to one “direct offset” or optimum spacing unit from a commercial well and even beyond with ample geological and engineering data. The SEC allows the reporting of proved reserves to only direct offsets to a current or former commercial well. Locations beyond that may be deemed proved only if they can be assured to the level of “certainty that there is continuity of production from the existing productive formation.”

■ **Production sharing contracts/Master service contracts**—The methods to estimate proved reserves under PSCs and MSCs using the SEC and SPE definitions are similar but significant variations may result from the commodity prices used in the evaluations. The economic interest method is the most widely used approach in determining net proved reserves volumes to a specific party’s interests. That method entails dividing the product price into the contractor’s net revenue. The contractor’s net revenue is calculated by modeling the terms of the PSC or MSC. Assuming that the annual average pricing is used for reporting reserves under the SPE guidelines, the differences in evaluation pricing between the SEC and SPE definitions may be as much as 34 percent in some years for oil and as much as 118 percent for gas.

■ **Overhead charges in operating expenditures**—SPE does not provide guidance on whether overhead charges should be included in OPEX. The SEC staff recently stated that indirect overhead should be included. A “red flag” issue in SEC reviews is inconsistencies between total OPEX in the securities filing and OPEX used to forecast reserves. The SEC staff is likely to question any fairly inconsistent filings.

■ **Net profits interest**—The SEC recently affirmed its position that hydrocarbon quantities attributable to NPI are reserves and should be deducted from leasehold ownership interests of a producer owning a working and net revenue interest in a property subject to payment of NPI. This is contrary to traditional industry practice, said Gardner, and is not addressed in the SPE/WPC reserves definitions. Since no “standard language” is common to all NPI agreements, he recommends that public issuers carefully read the controlling terms of each NPI agreement and comply with the ownership terms.

■ **Separate reporting of mineral interests and PSC reserves**—The SEC recently said that reserves captured under PSCs and MSCs are distinctive and should be reported separately from direct mineral interest ownership. Gardner said that this requirement has only recently been discussed and may be contested by some producers. This distinction does not necessarily set up a quantifiable difference in proved reserves between the two sets of definitions but may invoke a perceived quality difference.

Gardner will also discuss lowest known hydrocarbons, conclusive formation tests, revenue from non-hydrocarbon products, coalbed methane reserves, contract expiration dates, assured markets, cost allocations, lease-use gas, use of data past report date and reserves from undrilled fault blocks.



Dean Rietz, managing senior vice president and manager of reservoir simulation at Ryder Scott, left, instructs 26 attendees earlier this year at the Society of Petroleum Engineers continuing education program in reservoir simulation. Rietz plans to conduct the course at the SPE annual meeting in Denver this October. Attendee Lanre Dipeolu, a reservoir engineer at Shell International E&P Inc., said, “The course helped me understand well modeling and heightened my professional level. I hope to put it into immediate use.”

SPE will offer “Reservoir Simulation for Practical Decision Making” over two days, Oct. 4-5, Saturday and Sunday, from 8 a.m. to 5 p.m. Rietz and co-presenter Miles Palke will discuss the reservoir modeling process, including data acquisition, fluid properties, rock-fluid interaction, grid construction, history matching and prediction cases. The aim is to impart to attendees a better understanding of how to plan and conduct a reservoir study and how to review an outside study. The last half of the second day is reserved for group discussion of case studies.

Dominion's VPN facilitates external reserves study

Ryder Scott petroleum engineer **Larry Connor** says that working on his personal computer plugged into a client's database miles away is like "sitting in their offices but with all available in-house resources." **Craig Pierce** at client Dominion E&P Inc. says when he reviews the Ryder Scott interpreted data on his company's Citrix server, he has "a real-time feeling" for the progress of the outside study, making it possible to compare externally and internally generated figures at an earlier time point.

Both say that the use of server-based computing over the Internet significantly reduced time and costs for the 2002 Ryder Scott year-end independent evaluation of Dominion reserves. Connor, a senior vice president, works on a "thin client" or PC that does not have to be loaded with the client's software. The PC can be a dumb terminal with a computer screen and keyboard, but practically no processing ability because the software, processing and storage are on the remote server.

Connor works through a one-way "tunnel" that leads to a VPN (Virtual Private Network) which is secure from hackers at the firewall level. Connor manipulates the data and views it on his computer screen as the actual changes are taking place at the client's central server.

"Using this system, we are in instantaneous, continuous communication with Dominion. This sharing of the database allows us to exchange ideas and analysis techniques," he said. Pierce, a senior corporate reservoir engineer, said that he can look at a well at the same time as Connor and discuss it over the phone with him.

"We have no more data transfer over CD or e-mail," said Pierce, citing two electronic methods that suddenly seem outdated in light of VPN technology. "Part of our savings is that there is no travel or travel expenses passed on to us from Ryder Scott."

Ryder Scott professionals work through a DBS "data pointer" in the client's Oracle database. This makes security easier to manage. "We only have certain read-write privileges and limited access beyond the database," said Connor.

Scott Bunn, a Dominion programmer analyst specialist, set up the system and manages security as part of a team. Bunn set up templates on which Ryder



Scott performs its cashflow work. The tables reside on the Oracle database, which manages permissions at the table level, giving the server-based computing environment multilayered security.

Dominion is the first Ryder Scott client to use a server-based VPN for independent reserves evaluations. "It had been 'cutting edge' for the last two or three years, but now we are seeing more and more of it," said Connor.

Another Ryder Scott client is preparing to use a "pipe" — a dedicated, fiber-optic data line, for instance, a T-1 line — instead of a broadband Internet connection to allow Ryder Scott access to the corporate reserves and cashflow databases. "The client wants to go that way so it doesn't have to deal with some security issues," said Connor.

Security protocols help ensure data integrity. Pierce said that Bunn's "unique" handling of internal

security measures, including creation of the DBS pointer, has made the VPN system extremely tamper resistant. "The use of Oracle with the VPN offers stringent security to protect our data," he said.

Only authorized Ryder Scott personnel have read-write privileges. They back up their works in progress with hard-copy documentation, including work notes, and save their work on the database at various stages to local storage drives at Ryder Scott offices. These procedures assure that Ryder Scott has control over the interpreted data.

Pierce said that Dominion chose the VPN over the dedicated line because VPN connectivity speed is faster with virtually no performance degradation. The Citrix server is physically located next to the Oracle database server, which helps reduce processing time.

Pierce also said that server-based computing allows Dominion to use a corporate-wide flex license for software rather than requiring individuals to upgrade. "It's easier to manage," he said.

Connor added that a direct line is more expensive and requires more set-up time. He also has experienced a high level of performance using the VPN. "We have no significant workflow degradation or lag time," Connor said. He attributed high performance levels in part to the high quality of the Dominion system. "On

Please see VPN on Page 8

Engineer joins Ryder Scott



Gouge

Brad Gouge, petroleum engineer, joined Ryder Scott in September from ExxonMobil Corp. where he was a reservoir engineer, including project manager and lead engineer, for three years. Before that, Gouge was a production engineer at Mobil Corp. for three years.

Over his career, he has conducted reservoir studies of oil and gas fields, including evaluations of dry-gas and low-pressure reservoirs, steamflood

expansion and compression projects, gas well recompletions and workovers. Gouge also performed risk analysis and economic evaluations and modeling.

He received a BS degree in petroleum engineering from Texas A&M University.

VPN—Cont. from Page 7

the other hand, if you have a 'dog' system, then you get dog performance," said Connor.

The VPN is not for every oil and gas company because it requires proficiencies with thin-client platforms. Dominion put Landmark Aries economics software on the Citrix server for companywide use three years ago and Bunn began working on the system shortly after that. Business units in New Orleans, Oklahoma City, Houston and Calgary as well as field offices in West Virginia, Michigan, Pennsylvania and Alabama make updates through a WAN (wide area network) to a central database.

Dick Easterwood, a chief engineer at Dominion, said that his company keeps histories of internal work in Aries as well as outside reserves audits on the Citrix-Oracle database system. "We can compare projections on wells at different points in time from different reports," he said.

Setting up the VPN system for external access

took several weeks and close coordination between the Dominion and Ryder Scott IT groups. However, the actual set-up time for Ryder Scott was only one day.

Ronald Watt, Ryder Scott IT manager, said, "On our end, we had to do very little." He cited the advantages of the system to Ryder Scott. "No additional licensing is needed and we don't have to wait for data to be shipped," Watt remarked.

Printing from the thin client can be challenging, but the use of universal print drivers has eased that situation. Bunn said that Dominion is compiling a list of Citrix-certified printers for future reference.

For more information on how Ryder Scott works with clients to set up server-based computing, please contact Connor at larry_connor@ryderscott.com.

Editor's Note: Ryder Scott does not explicitly endorse the use of Citrix MetaFrame over other thin-client platforms. Microsoft Corp. offers Microsoft Windows Terminal Server. Other web-enabled programs allow remote access to server-based applications, including Tarantella. Ryder Scott does not explicitly endorse the use of Landmark Aries software over other economic analysis software, including TRC PHDWin, Schlumberger Merak Peep, Ogre or others.



Hayden Scott (left) and Greg Mull, LAN administrators at Dominion's computer center in New Orleans.

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