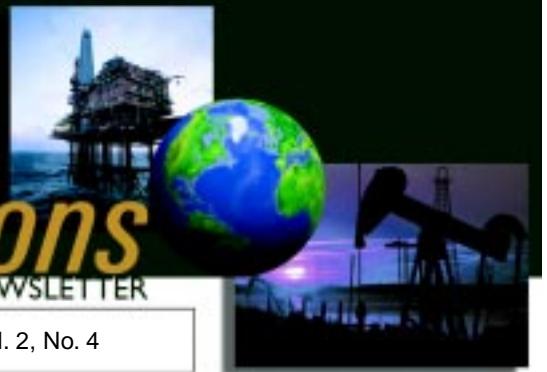


# *Reservoir Solutions*

NEWSLETTER

December—February 2000

Vol. 2, No. 4



## **Small logo change represents major evolution of our firm**



Don Roesle  
Exec. Vice President

You probably didn't notice our new logo on the newsletter nameplate at the top of this page, because the variation from our old logo is quite subtle. However, the change represents a major evolution that has taken place over decades.

We recently changed our 62-year-old name, Ryder Scott Company Petroleum Engineers, to Ryder Scott Company LP and our logo to Ryder Scott Company Petroleum

Consultants. The LP abbreviation is consistent with our recent restructuring from a Subchapter S corporation to a limited partnership.

Most of you only care about our restructuring insofar as it affects you. Please be assured that clients will not notice any personnel changes within our organization or any compromises affecting our high level of service.

Our new logo resulted from a gradual change at Ryder Scott—that is, the transformation of our company from an engineering concern to a multidisciplinary reservoir evaluation firm. So, to better represent our full capabilities, we replaced the word "engineers" in our logo with "consultants."

One can closely track the evolution of Ryder Scott to the growing transnationalism of the upstream oil and gas industry itself. With the shift by clients, both old and new, to international areas, petroleum consultants now must rely on newer evaluation tools and

*Please see Name Change on next page*

### **Inside Reservoir Solutions newsletter**

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## **Freeware upgrades posted**



Ryder Scott has updated all custom engineering functions in the latest version Excel 97 freeware and planned to post those downloadable updates in December to the web site at [www.ryderscott.com](http://www.ryderscott.com). No changes have been made to program computations, but rather each function is more precisely defined and described to make the freeware more user friendly. Descriptions also include general statements regarding required input.

"The changes were made to eliminate any misunderstandings regarding what each function calculates," said James Latham, petroleum engineer and developer of the programs. He also clarified the input units so that each input parameter's label now has an added descriptor indicating the required units. For example, where pseudocritical temperature is to be input, the label now reads  $T_c$  °R. Latham has also enhanced some of the templates.

Any one of the five enhanced programs is installed by downloading the executable file from the web site to a temporary directory and opening. Then the user follows written instructions for installing program files. For current users, the new programs will write over the old ones.

## **Freeware features summarized**

The following descriptions of the five downloads posted on the Ryder Scott web site summarize the capabilities of the free Excel applications.



**The material-balance application** automatically calculates original gas in place (OGIP), estimated ultimate recovery (EUR), BHP/Z vs. cumulative gas production and pseudocritical-temperature ( $T_c$ ) and pseudocritical-pressure ( $P_c$ ) properties from gas gravity while adjusting

*Please see Recap on Page 6*

### Name Change—Cont. from Page 1

methods in addition to the traditional decline-curve analysis. We use geoscientific analysis more often as we are asked to evaluate newly discovered areas with limited production histories.

International companies are also asking us to model reservoirs to more accurately predict production streams. Modeling is especially vital in analyzing how projects pay out under various, complex production-sharing (PSC), concession and service agreements.

We now conduct in-depth economic evaluations of international PSC and joint-venture (JV) projects using a proprietary analysis program developed over several years. We also perform deliverability studies in cases where infrastructure must be financed or costs shared.

In addition to reserves estimates, our work in international areas includes risk evaluations of properties and oil and gas marketability analyses, taking into account

supply-and-demand factors.

Over the past few years, we have carefully built up and diversified our professional staff by hiring more top geologists, geophysicists and reservoir modeling specialists. We have provided these professionals with the latest computer hardware and software so they can do their jobs more effectively.

Our client composition has also changed because of geopolitical and world-economy developments. We are now evaluating properties for national petroleum companies seeking to privatize and acquire working capital from the equity markets. We are also evaluating properties of independents partnering with others to share the exploration and development costs of international JV projects.

We hope the industry won't forget that Ryder Scott earned its stripes as one of the best Gulf Coast reserves evaluation firms in the business. But we also are excited that much of our new business gains have come from overseas companies needing multidisciplinary studies integrating geology, geophysics, petrophysics, reservoir simulation and economics as well as classical petroleum engineering.

### Geologist, modeler added

**Ken Whaley**, geologist, and **Grant Robertson**, engineer, have recently joined Ryder Scott in Houston as full-time employees.

Previously, Whaley was senior engineering geologist at King Ranch Energy Inc. He was also an exploration manager at Pennzoil Co. and worked there 16 years. He has B.S. and M.S. degrees in geology from the U. of Texas and U. of Houston, respectively.

Robertson was previously a team leader in reservoir simulation at BP Exploration Inc. He also worked for Chevron Corp. for 15 years in management. He has PhD and M.S. degrees in chemical engineering from the California Inst. of Technology and U. of Toronto, respectively as well as a B.S. degree from the latter in engineering science.

#### 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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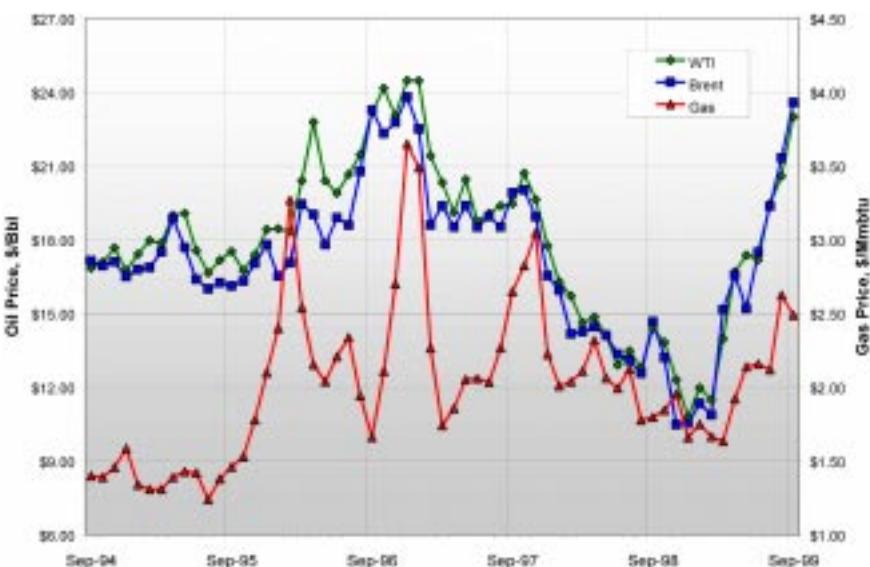
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**Reservoir Solutions**  
Editor: Mike Wysatta  
Business Development Manager

Ryder Scott Company LP  
1100 Louisiana, Suite 3800  
Houston, Texas 77002-5218  
Phone: 713-651-9191; Fax: 713-651-0849  
Denver, Colorado; Phone: 303-623-9147  
Calgary, AB, Canada; Phone: 403-262-2799  
E-mail: info@ryderscott.com  
Web site: www.ryderscott.com

### Benchmark oil and U.S. composite gas price history



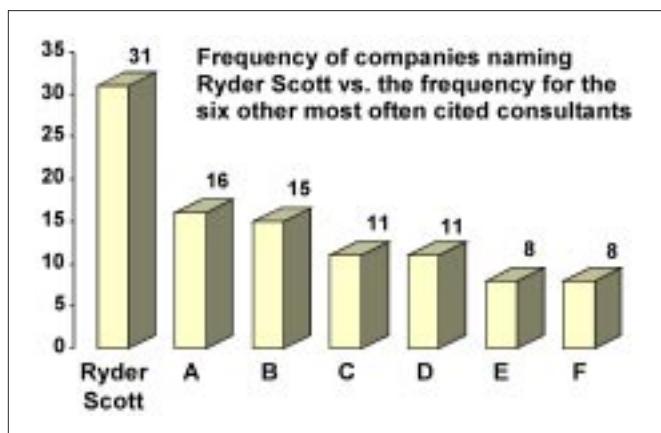
The West Texas Intermediate Crude (WTI) prices are the posted prices of Exxon Co. USA published in the *Crude Oil Price Bulletin Summary*. Composite spot gas prices are the wellhead prices published in the *Natural Gas Week* newsletter. Brent oil prices are the published, posted prices available to the general public from commodity quotation services over the Internet.

# Study: 78% of “disclosing” producers use consultants

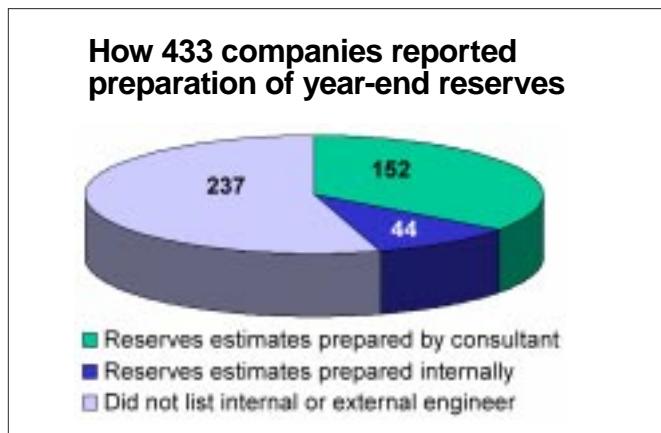
*Ryder Scott again most listed consultant in the John S. Herold survey of the latest annual reports*

In a recently published John S. Herold survey, three out of every four producers that identified reserves engineers in their 1998 annual reports cited independent engineering consultants vs. internal engineers. This year, the annual survey compiled year-end petroleum-reserves information from 433 publicly owned oil and gas companies listed on U.S. stock exchanges. The survey group was much larger than the 213 tracked the previous year by Arthur Andersen.

This is the first year the data was collected by John S. Herold. In previous years, Arthur Andersen did the survey. The companies from the United States and various other countries reported their reserves in accordance with U.S. Securities and Exchange Commission guidelines.



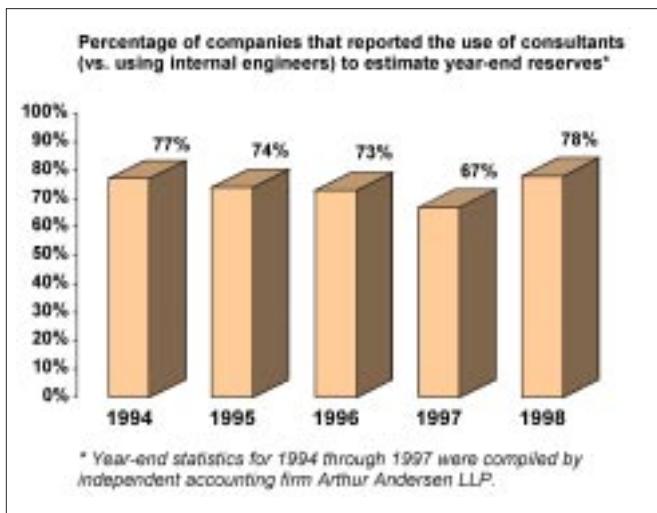
Once again this year, Ryder Scott retained its top position as the most listed independent consultant of record for preparing year-end reports. Increasing its lead over the competition, Ryder Scott was listed in 31 annual reports, followed by 16 listings for the No. 2 consultant. This 2-to-1 edge over the closest competitor surpasses the previous year's more than 3-to-2 advantage.



## How “disclosing” companies reported preparation of year-end reserves



This year, 196 of the 433 producers indicated they used either independent or internal engineers while 237, more than half, did not disclose that information. Of those 196 companies, 152 used engineering firms (78 percent). Last year, 140 of 209 companies used independent engineers (67 percent).



The 11 percent year-to-date increase in the use of consultants is not necessarily statistically valid, because of the differences in the two surveys conducted by different firms. Also, sweeping generalizations cannot be made because of the large “unknown” factor for this year’s survey, as more than 50 percent of the companies were “non-disclosers.” Furthermore, the survey is limited mostly to companies in North America and a few overseas corporations issuing American Depository Receipts.

Overall, the most-often-listed consultants have not cornered the market by any means. The top 20 percent (seven most-listed consulting firms from a total of 35) were cited by 59 percent of the disclosing companies (90 of 152 companies). It’s evident from the data that the year-end evaluation business is

Please see Survey on Page 6

## Small, low-cost models boost confidence in estimates

To help Ryder Scott engineers estimate reserves and clients resolve technical and economic questions, the Ryder Scott simulation group is increasingly building small, low-cost reservoir-simulation models. The use of these cursory models to evaluate less developed fields greatly enhances conventional engineering and geological methods. This has often led to more accurate original-in-place and reserves estimates and production forecasts.

These models are in contrast to the complex, conventional models that are carefully history matched by Ryder Scott from extensive production data. "While we are very proud of the high-quality, full-field models, we also see a great value in the role and utility of smaller models," said Dean Rietz, manager of the simulation group.

Typically single-well with radial or Cartesian grids, these models are easily constructed and run very quickly. Determining and entering reasonable parameters for phase behavior and relative permeability behavior is more challenging.

The most time-intensive activities are history matching in the calibration phase and running the multitude of sensitivity cases that the model was built to address. Another challenge is quickly compiling the results into a meaningful format, such as importing into a cash-flow program, or building a quick-look summary chart clarifying performance in terms of variables the client can control, such as the number of wells or the rate of withdrawal.

In spite of the challenges, Ryder Scott generally constructs and conveys such a model to the client in two or three days vs. the much longer turnaround required for a full-field, history-matched model. In some cases during reservoir studies, the simulation group is asked by Ryder Scott engineers, not clients, to construct and run small models to increase confidence levels in reserves estimates. While fast-turnaround models are not appropriate for every circumstance, they add value in many cases. Here is a recent example of a smaller model constructed by Ryder Scott.

### Mississippi Gas Well

Several factors were responsible for the considerable technical challenges in estimating the reserves of this onshore gas field. The depletion-drive reservoir with a single dry-gas producer had poorly understood boundaries, a short production history and increasing gas rates predominantly caused by choke adjustments. Consequently, the client company realized its estimates for original gas in place (OGIP) and reserves from both volumetric and classic performance analyses were highly speculative and varied over a wide range.

Taking into account these uncertainties, the Ryder Scott simulation group constructed a small, single-well simulation model to test OGIP estimates and forecast reserves. Since the main unknown was reservoir size, the group performed a sensitivity study in which the reservoir size was continuously adjusted until, for a specified gas-rate history, the model-calculated flowing tubing head pressures matched the observed pres-

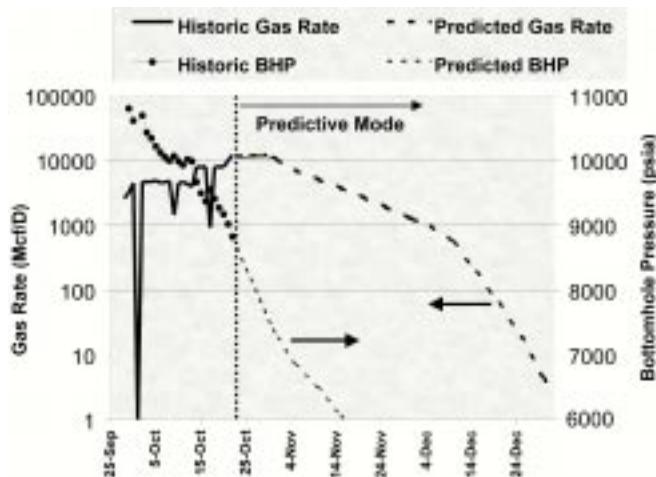
sures. The final OGIP estimate was close to the client's latest estimate, however, the model presented a more rigorous solution than the client's approach of assigning an empirical drainage area. Before the simulation study, the client's estimate was subject to a wide range of possible outcomes.

The results from the simulation significantly narrowed the range of possible values and the earlier somewhat speculative estimates were more or less confirmed. In addition, the model was also used to calculate ultimate recovery based on continued operations. Ryder Scott also extracted a synthetic P/Z plot from the model that allowed for the estimation of reserves as a function of abandonment pressure.

Ryder Scott completed the simulation study in a day and a half. "Depending on the complexity, we can perform a similar analysis in about one to three days," said Rietz. "We are also building an archive to provide even faster access to small-scale simulation models that address frequently encountered problems."

While the use of these small-scale models greatly enhances clients' knowledge of their reservoirs, including recovery factors and anticipated performance, these models need to be continuously verified and modified as the reservoir produces. The model's outcome is a valuable tool in predicting the most likely scenario, although actual reserve bookings under regulatory guidelines may trail the model results until more history is available.

"These quick simulation evaluations can be an invaluable tool for internal planning, field development and reserves 'what-if' scenarios, but the time spent and available data must be taken into consideration when using the results," said Rietz. As additional data becomes available, these models may need to be refined, particularly if the ultimate use is for financial reporting. For further information, please contact Dean Rietz, manger of the reservoir simulation group, at 713-651-9191, ext. 216, or at his e-mail, dean\_rietz@ryderscott.com.



A model similar to the Mississippi gas well model allowed history matching limited data. Future production was then predicted using realistic estimates of operating conditions.

## Resources definitions drafted by SPE reserves committee

### *Harrell takes over as committee chairman*

Petroleum resources definitions drafted by the Society of Petroleum Engineers (SPE) were to be posted on the SPE web site in December for member review and comment. The address is [www.spe.org](http://www.spe.org). Petroleum resources are both undiscovered hydrocarbon quantities and discovered noncommercial quantities.

Ron Harrell, president of Ryder Scott, is chairman of the 1999-2000 SPE Reserves Committee that drafted the definitions. He was appointed by the SPE president to begin a one-year term last October. "My charge is to provide direction to the committee, pursue established goals and publicize our work," he said.

Another major undertaking of the committee will be to prepare a supplement to accompany the published reserves definitions. This will be the first attempt by SPE to provide guidelines for the consistent interpretation and application of the definitions. Harrell anticipates publication in late 2000.

In 1997, the committee, with Harrell as a member, developed a set of petroleum reserves definitions that was endorsed by SPE and World Petroleum Congress (WPC). "These definitions have achieved widespread acceptance by countries, oil and gas producers as well as by numerous consulting companies," said Harrell. "Regulatory agencies in many countries have and are giving consideration to the SPE/WPC definitions in reassessing their reserves reporting requirements."

The committee has nine members, each serving a



Ron Harrell (right), president of Ryder Scott, meets with Dean Rietz, vice president. Harrell is chairman of the SPE reserves committee.

three-year term. Countries represented include United Arab Emirates, Canada, U.K., Sweden, Venezuela and the United States. Meetings are usually attended by designated observers from the WPC, U.S. Dept. of Energy, Society of Petroleum Evaluation Engineers and American Association of Petroleum Geologists.

The committee sponsored two sold-out Applied Technology workshops (ATWs) in 1999 to discuss the applications of probabilistic reserves calculation methodologies. "Additional ATWs are scheduled in 2000 to enable more SPE members to continue the industry dialogue on this approach," said Harrell.

He will present a program on reserves definitions to the Reservoir Studies Group of the SPE Gulf Coast section, Jan. 27, 11:30 a.m. at the Courtyard at St. James Place. For information on the luncheon, please contact the section at 713-779-9595.

## CIM definitions to guide industry, provide feedback, says Brown

Keith Brown, manager of Ryder Scott—Canada Petroleum Consultants, urged attendees of a recent symposium in Calgary to voice their opinions of the latest reserves definitions proposed by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM).

"There is now an opportunity available for you to have input to the decision on what definitions will be guiding the industry. Get a copy of the new definitions and provide feedback," he said in the keynote presentation, "Reserve Definitions - What They Might Mean," at the SEPAC (Small Explorers and Producers Association of Canada) Investment Symposium in October. A streaming video of the speech is posted on the SEPAC web site at <http://db.nucleus.com/sepac/>.

Brown compared definitions promulgated by the Society of Petroleum Engineers/World Petroleum Congress (SPE/WPC), U.S. Securities and Exchange Commission, Ontario Securities Commission (OSC) and the CIM. "These (CIM-drafted definitions) are a little more specific than (OSC) National Policy 2-B definitions. In fact, they are arguably more rigorous than the SPE/WPC definitions," he said.

To support that, Brown cited two strongly worded excerpts from the CIM-proposed definitions: *Proved*



Brown

*reserves are those remaining reserves that can be estimated with a high degree of certainty to be recoverable. There is a 90 percent probability that at least the estimated proved reserves will be recovered.*

Brown said, "There is room for differences in interpretation such that two evaluators, working with the same information, can come up with different values for a reserve base. Drawing different technical conclusions is one thing. Working from a different set of definitions can only compound the problem."

Although changes to reserves definitions have been discussed in Canada for years, a series of controversies this year sparked not only an acceleration of proposed revisions but more directly a frank reassessment of the credibility of consulting firms. In March, some investors went so far as to question the reliability of independent reserves estimates examined during due diligence reviews of acquisitions of some junior companies.

Securities regulators plan to hand down a decision on reporting standards in 2000. Press reports indicated that they might also recommend that companies form reserves audit committees. However, even if no action is taken, economic incentives already exist for the formation of such committees if risks can be mitigated and the cost of capital reduced.

*Editor's Note: Ryder Scott was not one of the firms questioned in connection with the acquisitions.*



**Recap—Cont. from Page 1**

for contaminants. Using the popular Cullender-Smith (1956) method as modified by Ryder Scott, the utility software also predicts shut-in bottomhole pressures from tubing pressures in gas wells.



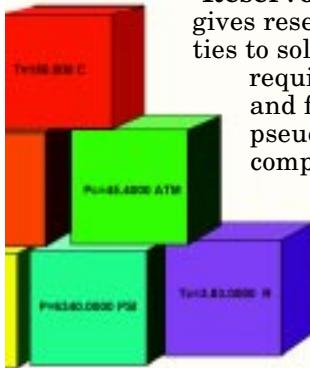
With the **flowing pressure analysis program**, a user can evaluate the performance of producing gas or gas-injection wells. The program enables the user to calculate flowing bottomhole pressures (FBHP) for gas wells. The application also automatically computes associated backpressure equation parameters and displays a traditional log-log backpressure curve at the user's option.

For producing wells, absolute open flow (AOF) potential is also calculated. Static bottomhole pressure (SIBHP) can be determined from shut-in tubing pressure (SITP). The application integrates techniques derived from Cullender-Smith (1956) and Turner, Hubbard and Dukler (1969). Ryder Scott modified those algorithms for today's high-speed computers.

The **QuickLook economics evaluation software** gives the user a simple, fast tool to compute screening economics for prospects, evaluate workovers and recompletions and run preliminary lending economics. The user can run complete reserves and cash-flow projections for individual wells or properties.

QuickLook computes up to four distinct product streams, two oil and two gas, and secondary product streams based on gas-oil ratios or condensate yields. The program provides options for exponential, hyperbolic, harmonic and manual product projections. A user can also subtract or add together streams. QuickLook also has multiple expense-, tax- and investment-parameter options as well as a provision for abandonment costs.

**Reservoir Solutions Modules 1.0** gives reservoir engineers the capabilities to solve common problems requiring the calculation of oil and fluid properties, such as pseudocritical properties, compressibilities and formation-volume factors. Included in the program are functions for calculating  $T_c$  (pseudocritical temperature),  $P_c$  (pseudocritical pressure), Z factor (real gas devia-



tion), shut-in bottomhole pressure,  $C_g$  (gas isothermal compressibility),  $C_w$  (water isothermal compressibility),  $C_o$  (oil isothermal compressibility),  $B_o$  (oil formation volume factor) and  $B_g$  (gas formation volume factor).

**Reservoir Gas Analysis Software (ResGAS)** computes the critical pressures and temperatures, specific gravities and heating values of a gas stream. The application works with the previously released Reservoir Solutions Modules program.

The computation of gas properties includes corrections for contaminants and adjustments for condensate content. ResGAS also calculates wet gas in place and recoverable wet-, dry- and sales-gas volumes as well as recoverable condensate volumes.

ResGAS computes the estimated recovery of propane, butane and sulfur and approximates the BTU content of separator and gas sales. A user must enter separator-gas component percentages derived from laboratory analysis and other data input, including well and reservoir parameters and recovery factors.

*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.*

**Survey—Cont. from Page 3**

spread out among large and small shops, but the heavier distribution in terms of number of accounts is skewed toward the larger firms that have carved a lion's share of the market.

Generally, the major oil and gas companies used internal engineering staffs for annual reporting. Furthermore, only 14 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.)

Despite that trend, Ryder Scott did year-end work for the two largest companies from the top 50 that cited consultants—No. 20 Apache with \$3.4 billion in total assets and No. 22 Pennzenergy at \$2.4 billion. Of the 14 largest companies citing consultants, Ryder Scott was listed by six—twice as many citations as the next closest consultant.

Since Ryder Scott has been following the survey for the past five years, the firm has consistently and decisively led the rest of the field as measured by the number of public companies publishing reserves estimates attributed to independent consultants. In summary, as the best available marketplace barometer, the John S. 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.

# Top 10 technologies in last 20 years of 20th century

This issue of *Reservoir Solutions* marks the end of a millennium. In that spirit, the publication has endeavored to list the 10 most significant technological advancements that have benefited Ryder Scott and presumably the petroleum evaluation industry during the last 20 years. There are some inherent drawbacks in organizing a list like this. All categories are not mutually exclusive.

Some technologies caused sweeping changes across all industries while other innovations had limited influence. Some technologies were born before the last two decades, but became widely used later. And there may be some omissions or unjustified inclusions. The list is not perfect, but without question every one of the following innovations made the industry workplace a more efficient, productive environment.

## Hewlett Packard 41C calculator



With its release in March 1980, this powerful personal calculator system set new standards. Engineers could customize the handheld 41C calculator by plugging in extra memory, a magnetic card reader and a printer. The breakthrough feature though was the use of a plug-in application module for calculating fluid properties, such as critical pressures and temperatures, Z factors, etc. This automation increased productivity by eliminating the need for hand calculations. The alphanumeric keys allowed a user to toggle between the normal calculator mode and a user-defined or built-in function mode. "It can even be called a personal computing system," Hewlett Packard said two decades ago, which was a fair assessment back then.



## Single-point sources for historical data



Today, companies looking at possible acquisitions routinely commission reservoir evaluators to study data files available through subscription database services. Using handy computerized compilations, evaluators quickly retrieve complete well history and production data through these services. Before that, evaluators had to rummage through public and proprietary, paper and electronic files housed with various companies and government agencies and tediously attempt to locate and extract selected information.

## Personal computer



In the early 1980s, the advent of the \$5000 personal computer (PC) was a critical event in the evolution of computing for the evaluator. Computing power and storage rivaling the mainframes of a decade or two earlier became available to small companies. The processing power of PCs cleared the way for the development

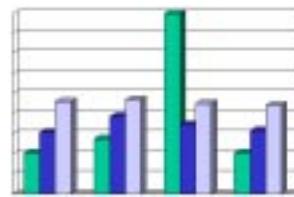


of an assortment of spreadsheet, word-processing and mapping applications that replaced columnar pads, graph paper and hand-drawn maps. In a flash, hand calculations and slide rules became obsolete. Running sophisticated programs on PCs eliminated piles of punch cards that cluttered evaluators' offices.

## Spreadsheet/database programs for the PC



With the advent of the PC, importing data into spreadsheets and parsing them became the most efficient, cost-effective method of information management. Reservoir engineers had been literally immersed in hard-copy data such as printouts of decline curves, historical production rates, reservoir pressures, historical costs, etc. Database and spreadsheet programs simplified the arduous tasks of organizing paper copies and manipulating data and enabled the sorting of raw data using multiple criteria. Seemingly overnight, these programs automated the processing of daily and cumulative production, revenue and expense data.



## Microsoft Windows



In late 1983, Microsoft unveiled Windows, an extension of the MS-DOS operating system that provided a graphical operating environment. The window-management capability allowed a user to view unrelated programs simultaneously and to transfer data among programs. Dynamic-link libraries enabled the reservoir evaluator to connect to multiple databases and make universal changes thus eliminating the need to continually rework algorithms and core applications and recompile to each program. Evaluators quickly mastered point-and-click commands and could dedicate their time to analysis rather than learning and carrying out cryptic DOS and Unix commands.

## Increases in computational efficiency



The IBM RISC systems were initially designed for CPU- and memory-intensive applications such as reservoir modeling. Other systems, such as SGI and Sun, were suited for graphics-intensive applications, such as geologic modeling and 3D visualization. Now these and other evolving systems can handle multiple applications and facilitate work flow between geologists

*Please see Top Ten on next page*

### **Top Ten—Cont. from Page 7**

and engineers. On the geological side, the emergence of supercomputers and parallel processors enabled 3D imaging of the subsurface. Using enhanced algorithms, supercomputers processed vast collections of data needed to form complex 3D images. Geologists used interactive desk-sized workstations to interpret and image the data.

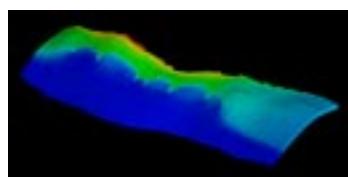
### **Reservoir economic analysis software**

**7** Several software development companies now offer PC-based economics programs that are used by evaluators to analyze public-domain and proprietary production and test data. The programs generate rate-time, rate-cum, P/Z-cum and WOR-cum plots and then automatically load decline-curve projections to develop future cash flows. The programs are also capable of running multiple sensitivity scenarios for production, prices, working interests, operating costs and capital.



### **Visualization**

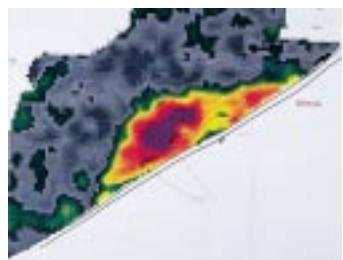
**8** In the middle 1980s, computer visualization became one of the newest technologies to support the integrated evaluation team. Geoscientists were able to visualize subsurface structures and faulting patterns as never before. Early software enabled viewing of animated horizontal and vertical slices of 3D volumes. Later applications developed for seismic, well bore and reservoir simulation analyses featured greater animation and rotation and shading of volumes. The multidisciplinary evaluation team now views 3D earth models constructed from geology, geophysics, petrophysics and reservoir engineering data.



**RS** Ryder Scott Co. LP  
1100 Louisiana, Suite 3800  
Houston, Texas 77002-5218  
Phone: 713-651-9191; Fax: 713-651-0849  
Denver, Colorado; Phone: 303-623-9147  
Calgary, AB, Canada; Phone: 403-262-2799  
E-mail: info@ryderscott.com  
Web site: www.ryderscott.com

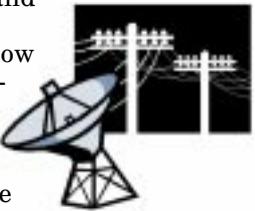
### **Geophysical advances**

**9** Seismic imaging of subsurface structure, stratigraphy and reservoir properties has revolutionized exploration and field development. The well-planning and reserves-estimation work of evaluators almost universally relies on maps generated from seismic attributes. Three-dimensional data acquisition, processing and interpretation have typically replaced 2D methods. Early use of seismic reflection techniques was limited to predicting the location and depth of prospective reservoirs. Now, geophysicists are expected to help define lithology, porosity and fracture trends; predict pore-fluid type and saturation; visualize trap shape and continuity; detect drilling hazards and monitor reservoir drainage over time.



### **Communications technology**

**10** The Internet, e-mail and fax have irrevocably made their mark on how the evaluations industry does business. Digital data can now be electronically transported thousands of miles in seconds. Electronic file transmissions save time, increase efficiency and reduce some costs, including travel expenses. Graphical and tabular output can often be studied by clients within minutes of completion by the evaluator. FTP (File Transfer Protocol) sites are now available to clients to speed up the transmission (upload) and receipt (download) of reservoir and economic data over the Internet. Research over the "net" is just a click away.



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