



## TruVert freeware on RS Web site

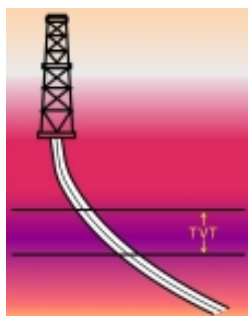
TruVert 2D, Ryder Scott's latest *Reservoir Solutions* freeware program, was posted on the Web site at [www.ryderscott.com](http://www.ryderscott.com) for downloading in September.

Eighth in a series, the Microsoft Excel-based program is an easy-to-use tool for calculating the true vertical thickness in directional or deviated wellbores.

Designed for use by geologists and other professionals, TruVert 2D considers wellbore drift angle, reservoir dip and various combinations of phase contacts commonly encountered in the subsurface environment. The menu-driven program uses commonly available measured-depth log data with directional-survey parameters and provides the user with a measurement appropriate for isopach mapping. Users have the flexibility to specify either measured depth or subsea phase contacts.

"TruVert efficiently solves a common, but complex, time-consuming problem in a suitable format," said developer **James Latham**, an engineer and vice president at Ryder Scott. As is the case with all posted freeware, TruVert produces presentation-quality on-screen views and hard-copy output. All eight software programs are available at the Ryder Scott Web site. (See Page 5 for the other seven freeware programs.)

*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.*



## Regulations, reserves reports focus of Ryder Scott articles



Harrell



Gardner

Reporting petroleum reserves under government regulations will be analyzed in two upcoming Ryder Scott-written articles — a feature article in the *Oil and Gas Journal* scheduled for Sept. 24 and a technical paper to be published by the Society of Petroleum Engineers in early October.



The *OGJ* article by **Tom Gardner**, engineer at Ryder Scott, and CEO **Ron Harrell** focuses on minimizing problems associated with reporting reserves under U.S. Securities and Exchange Commission guidelines. The article was based on feedback from a staff engineer at the SEC.

The engineer clarified agency interpretations at a Society of Petroleum Evaluation Engineers forum last year. The *OGJ* article cites case studies that were presented at the forum by the attendees.

The cases present issues that are common yet troublesome. For instance, a conclusive formation test in a new reservoir is usually required before reserves can be booked as proved, according to the SEC. But this poses problems in deepwater areas.

"This is a particularly hot topic in deepwater exploration and development in the Gulf of Mexico and other areas where physical flow tests typically are not conducted," said Gardner. "Those operators typically gather sufficient data on rock quality, fluid properties, and pressures to obviate the need for a flow test."

Despite the debates, the SEC appears committed to maintaining a dialog with industry to clarify the regulations and keep up with emerging technologies, added Gardner.

*"The SEC appears committed to maintaining a dialog."*

### Inside Reservoir Solutions newsletter

- SPE revises reserves standards..... Pg. 3
- Leadership key in virtual oil company..... Pg. 3
- RS experts speak at CIM, OIPA.....Pg. 4
- Engineers, geologist join RS.....Pg. 5
- Don May is home again after 50 years..Pg. 6
- RS reconnects with past in Bradford.....Pg. 7

*Please see SPE Presentation on Page 2.*

SPE Presentation—Cont. from Page 1



Palke



Rietz

**Miles Palke**, engineer at Ryder Scott, will present an SPE paper this fall on incorporating reservoir simulation results into petroleum reserves estimates used in public reporting. “The Adaptation of Reservoir Simulation Models for Use in Reserves Certification under Regulatory Guidelines or Reserves Definitions” (SPE 71430) was written by Palke and **Dean Rietz**, vice president and manager of reservoir simulation at Ryder Scott. Palke will present the paper Oct. 3 at the SPE annual technical confer-

ence in New Orleans.

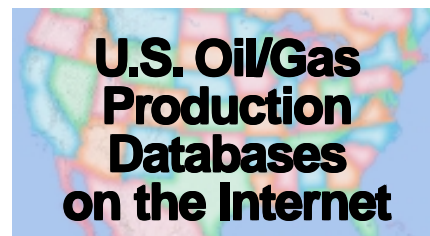
“Companies are increasingly incorporating reservoir models in forecasting and estimating reserves,” said Palke. “However, they must take certain precautions.”

For one, simulation models typically are designed to capture the “most likely” reservoir description. “Because ‘most likely’ is a confidence level associated with proved plus probable reserves, models generally are not designed to estimate proved reserves,” said Palke.

Models not complying with proved reserves definitions can be altered to conform, but this process may be difficult, he added. It may require substantial alteration of simulation grids and descriptions and require attention to development plans applied to the models.

The authors wrote the paper to begin a dialog on the topic, which has not been thoroughly discussed and documented in previous petroleum engineering literature.

“As simulation becomes more common, its use in the determination of reserves is inevitable,” said Rietz. “Our broad knowledge of reservoir modeling and extensive experience in evaluations uniquely positions us to initiate and emphasize dialogue on the subject.”



- Alabama**—[www.ogb.state.al.us/HTMLS/inforprod.htm](http://www.ogb.state.al.us/HTMLS/inforprod.htm)
- Alaska**—[www.dog.dnr.state.ak.us/oil/products/data/data.htm](http://www.dog.dnr.state.ak.us/oil/products/data/data.htm)
- California**—<http://opi.consrv.ca.gov/opi/opi.dll>
- Colorado**—<http://oil-gas.state.co.us/statistics.html>
- Kansas**—[www.kgs.ukans.edu/PRS/petroDB.html](http://www.kgs.ukans.edu/PRS/petroDB.html)
- Louisiana**—[http://sonris-www.dnr.state.la.us/www\\_root/sonris\\_portal\\_1.htm](http://sonris-www.dnr.state.la.us/www_root/sonris_portal_1.htm)
- Michigan**—[www.deq.state.mi.us/gsd/4miprod.html](http://www.deq.state.mi.us/gsd/4miprod.html)
- Mississippi**—[www.ogb.state.ms.us/cfmReport/cfm/login.cfm](http://www.ogb.state.ms.us/cfmReport/cfm/login.cfm)
- New Mexico**—[octane.nmt.edu/data/info/](http://octane.nmt.edu/data/info/)
- Oklahoma**—[www.geo.ou.edu/cgi-bin/nris98.cgi?ft=db&template=nrisData.htm](http://www.geo.ou.edu/cgi-bin/nris98.cgi?ft=db&template=nrisData.htm)
- Ohio**—[ftp://ftp.dnr.state.oh.us/Geological\\_Survey/well\\_db/](http://ftp.dnr.state.oh.us/Geological_Survey/well_db/)
- Texas**—<http://driller.rrc.state.tx.us/Apps/WebObjects/acti>
- Utah**—<http://dogm.nr.state.ut.us/oilgas/STATISTICS/statindx.htm>
- West Virginia**—[http://data.wvgs.wvnet.edu/datastat/og\\_coyr/ogcntyyr.html](http://data.wvgs.wvnet.edu/datastat/og_coyr/ogcntyyr.html)
- Other states petroleum data**—<http://octane.nmt.edu/data/otherstate/>

**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.

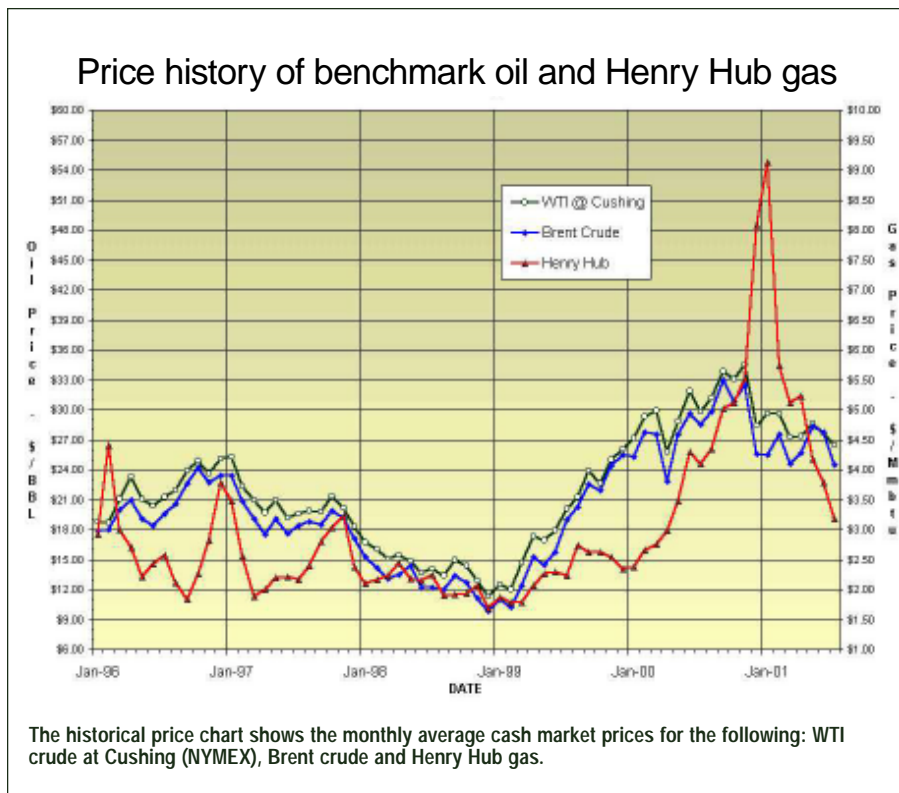
**Board of Directors**

- |                                      |                                       |
|--------------------------------------|---------------------------------------|
| Ronald Harrell<br>Chairman and CEO   | John R. Warner<br>Exec. V.P.—Intl.    |
| Don P. Roesle<br>President and COO   | Fred P. Richoux<br>Sr. Vice President |
| John E. Hodgin<br>Exec. V. President | Larry T. Nelms<br>Sr. Vice President  |

**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](mailto:info@ryderscott.com)  
Web site: [www.ryderscott.com](http://www.ryderscott.com)



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



To invite spontaneous input from the SPE-PLOC participants, these drawings were created on the spot by an artist with Hands On Graphics. The flow of the illustrations was designed to express the visual architecture of communication at the event last May.

## Virtual oil company prototype presented by Harrell at PLOC

*No substitute for leadership, says Harrell*

Ryder Scott CEO **Ron Harrell** said that even in the age of the virtual company and increased outsourcing, successful oil and gas companies are keeping company leadership and the management of hydrocarbon assets in house. "There is no substitute for leadership," he told attendees of the Society of Petroleum Engineers Gulf Coast Section Petroleum Leadership & Outlook Conference in May.

Harrell contrasted the oil companies of the 1950s to the trimmer ones today. "Back then, if we needed to move rigs, we built roads," he said. "Some companies of the '50s had 600 employees and pumped 5,000 barrels per day. Compare that to an oil company of today that has five employees and efficiently manages and operates 400 wells across eight states."

Harrell recommended that companies outsource reserves acquisition and asset management on a project basis only while totally or partially outsourcing some processes, such as accounting, legal and marketing.

"I suppose that ultimately we could see a virtual oil company of one person armed with a cell phone and a laptop," he said. "However, I do think a public company has to show investors it has a good staff with lots of in-house capabilities."

## SPE revises standards for estimating, auditing reserves

The Society of Petroleum Engineers endorsed recommendations in June to revise the SPE standards for estimating and auditing reserves. The changes are compatible with the 1997 joint SPE/World Petroleum Congress definitions for petroleum reserves.

"These new standards effectively update ones that were written almost 25 years ago," said Ryder Scott CEO **Ron Harrell**, who was involved in drafting the new changes.

*"These new standards effectively update ones that were written 25 years ago."*

In issuing these standards, SPE has specified guidelines for probabilistic estimations and reserves audits and has expanded classifications to include possible and probable categories. The SPE standards state, "... to make intelligent business decisions in activities such as prioritization of capital spending and property acquisitions, it is also important to recognize and quantify the amount of probable and possible reserves."

In the section on probabilistic assessments, SPE acknowledges that the statistical aggregation of individual reserves entities will result in a different volume of proved reserves than the arithmetic sum of those reserves.

## Warner inducted into UMR academy



Warner

**John R. Warner**, executive vice president – international at Ryder Scott, became an inductee into the Academy of Mines and Metallurgy at the University of Missouri – Rolla earlier this year. "The top leaders around the country are in the academy," said **Don Brackhahn**, alumni director.

Warner is one of only 69 inducted over the past 10 years from the 7,000 alumni of the School of Mines and Metallurgy.

He received bachelor of science and master of science degrees in geological engineering in 1970 and 1971, respectively.



Academy members are called upon by the dean of the school and six department chairs to act in advisory roles. "It's important to get outside views on the direction of our school and its departments. So we invite academy members, such as Mr. Warner, to strategic planning meetings," said **Lee Saperstein**, dean of the School of Mines and Metallurgy.

Warner received an honorary professional degree in geological engineering from the university in 1986.

## OIPA gets tips on CBM evaluation



**Larry Connor**, vice president at Ryder Scott, presented “Coalbed Methane, Methods and Guidelines” to the Oklahoma

Independent Producers Association in Tulsa in August. The topics included basics on coal-gas reservoirs, volumetric calculations, well performance and classification of reserves.

“Coalbed methane (CBM) reserves are sometimes understated because the gas content and pay counts used for volumetric calculations are too low,” said Connor, one of the Ryder Scott experts in evaluating CBM projects. “Empirically, we have found that gas desorption analysis alone understates the actual gas content even after correcting for lost gas. Additionally, in some cases, those corrections are too low.”

Among his points to remember.

- Gas recovery is non-linear and not proportional to pressure.
- In certain basins, expect the decline phase to be exponential and not hyperbolic based on empirical data.
- Remember when evaluating performance that CBM wells are very sensitive and highly affected by operations.



Connor

*“Empirically, we have found that gas desorption analysis alone understates the actual gas content even after correcting for lost gas.”*

— Larry Connor

Ryder Scott has evaluated more than 50 CBM and coal-mine methane fields over the past 10 years, including extensive studies of fields and reservoirs in the Black Warrior, Powder River, San Juan, Uinta, Raton and Appalachian basins in the United States. The firm has also evaluated CBM reservoirs in Australia, France, Poland, Colombia and China.

To account for the complex production behavior of CBM fields, Ryder Scott uses volumetric and performance analyses, field analogy and reservoir simulation, if appropriate, to account for all production mechanisms.

For further information, contact Connor at 713-651-9191, ext. 295, or at [larry\\_connor@ryderscott.com](mailto:larry_connor@ryderscott.com). **Joe Blankenship** is the coordinator of CBM reserves evaluation at Ryder Scott. Contact Blankenship at 713-651-9191, ext. 282, or at [joe\\_blankenship@ryderscott.com](mailto:joe_blankenship@ryderscott.com).

## Kumar presents study on gas permeability in heavy-oil reservoirs



Kumar

**Rajneesh Kumar**, engineer at Ryder Scott Canada, presented “Solution-gas drive in heavy oil: Viscosity effect on gas relative permeability” at the Canadian International Petroleum Conference in Calgary last June. The event was sponsored by the Canadian Institute of Mining, Metallurgy and Petroleum.

“Gas relative permeability data showed that gas mobility, under solution-gas drive, decreases with increased depletion rates. This should be kept in mind when relative permeability functions determined experimentally in the lab are used in numerical simulators,” said Kumar. “Experiments at high depletion rates lead to reduced gas relative permeability, which, in turn, results in optimistic recovery performance when used in simulators.”

Kumar recommends the careful evaluation of depletion rates in the management of heavy-oil reservoirs under solution-gas drive in western Canada.



The Ryder Scott booth at the Producing Property Exchange (above) provided opportunities in August for attendees (right) to learn more about the company's acquisition and divestiture services.



## Two engineers, geologist join RS



Coughlin

Cole

Alexander

Two engineers and a geologist have recently joined Ryder Scott. **Matt Coughlin**, petroleum engineer, previously worked for two years as a consultant and at Albrecht & Assocs. before joining Ryder Scott.

He also worked at Union Pacific Resources Group Inc., where he evaluated acquisition and development opportunities, designed divestiture processes and provided training.

Previous to that, Coughlin worked at petroleum consulting firms and was a petroleum engineer at

Amoco Production Co. He has bachelor's and master's degrees in petroleum engineering from the University of Oklahoma.

Before joining Ryder Scott, **David Cole**, petroleum engineer, was a consultant for five years. He conducted evaluation engineering and analyzed the operations of U.S. and international companies.

Cole also worked at Colaine Energy from 1988 to 1992 and at Reunion Energy from 1992 to 1996. In those positions, he performed property evaluations, developed field plans and recommended operational enhancements.

He has a B.S. degree in petroleum engineering from Texas A&M University.

**Bruce Alexander**, geologist, has joined Ryder Scott Canada in Calgary. Previously, he was a geologist at Alexander Petroleum Consulting and at Gilbert Laustsen Jung Assocs. Ltd., where he conducted full geological evaluations from 1997 to 2000.

He also worked as a geologist at Rife Resources and Belloy Petroleum Consultants. Alexander has evaluated sandstone and carbonate reservoirs throughout the Western Canada sedimentary basin.

He has a bachelor of science degree with specialization in geology from the University of Alberta.

## Freeware programs on ryderscott.com offer utility to evaluators

### *RS Web site offers full array of tools*

Seven downloadable freeware programs posted on the Ryder Scott Web site at [www.ryderscott.com](http://www.ryderscott.com) are summarized as follows. (The eighth freeware program, TrueVert 2D, is described on Page 1.)

**RyVOL** facilitates the preparation of volumetric reserves estimates for oil and gas wells and reservoirs. The menu-driven program provides templates for either oil or gas reservoirs and allows the user to determine fluid and reservoir properties, such as gas deviation factors, pseudocritical temperatures and pressures, oil and gas formation volume factors and calculated solution gas-oil ratios. Volumetric in-place and recoverable reserves are based on user input for reservoir volumes and recovery factors. Secondary product recovery is calculated either as a percentage of product in-place or as a ratio relative to primary product. RyVOL works with the Reservoir Solutions Modules freeware program.

**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.

**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 deviation), 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).

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.

The **material-balance application** automatically calculates original gas in place (OGIP), estimated

*Please see Freeware on Page 8*

## Home again after 50 years, Ryder Scott's first employee Don May returns to Bradford, PA



Don May (left) tells Jim Bryner about the vintage microscope that he donated to the Penn-Brad oil museum.

The audience turned toward the back of the meeting hall where a gray-haired man with a cane ambled toward the podium. Earlier that day, they had seen photos of industry pioneers on a projector screen. Now, they were surprised to see a bit of living history at the oil symposium.

**Don May**, hired as the first employee of Ryder Scott in 1935, would say a few words to the 60 or so audience members. Minutes before, they had heard about May's development of chip-coring analysis, an important technology used in the Bradford field in Pennsylvania beginning in the mid 1930s. The technique literally launched Ryder Scott, formerly an oil producer, into the consulting business.

May talked about tertiary recovery and extracting more oil from Bradford, where a prolific well now pumps a barrel a day. "Fifty percent of the oil in the Bradford field has been left behind following

primary and secondary recovery operations," he said. "In oil-wet sands, oil clings to the pore spaces, so that water won't sweep it all away. One day, a company like Ryder Scott will come through and find a way to commercially recover this oil." For retired oilmen, the fields where they made their marks never die and the companies where they worked never stop trying.

A few months shy of 90 years old, May enjoyed his day in the sun. **Christina Reed**, an editor at *Geotimes* magazine, hurried him off to a makeshift interview room at the former Holiday Inn in Oil City, PA — site of the Drake Well Foundation's History of the Oil Industry Symposium last June.

Reed and a freelance writer as well as assorted friends and his son, **Tom May**, snapped photos of May donating his vintage microscope to **Jim Bryner**, curator of the Penn-Brad oil museum, which houses various artifacts from the glory days of the northwestern Pennsylvania oil boom.

The *Bradford Era* newspaper published a front-page, two-part article in its "round the square" column. "A special homecoming took place in Bradford in late June when ... Don May of Muleshoe, Texas, came back to relive memories and see old friends and relatives," the *Era* wrote.



Ryder Scott CEO Ron Harrell (left), spouse Ann Harrell and Don May.

May spent a night at Bryner's house, but that wasn't the first time he had been there. More than five decades ago, he and his late wife Millie Hipchen May were house guests of previous owners Don and Margaret Williams, close friends



The Hooker-Fulton building in Bradford, PA, the site of first Ryder Scott office in 1930s, was visited by Don May in June.

when the Mays lived in Bradford.

May walked down the second-floor hallway of the Hooker-Fulton building and paused at a door to a space that had been the first office of Ryder Scott more than 65 years ago. The art-deco-styled building now had acoustic ceiling tiles, fluorescent lights and carpet. However, May had no problem recalling his days at Ryder Scott or the day he first heard the voice of Millie in the lobby.

He talked to a maintenance man, who asked May whether he remembered the name of the maintenance person in 1935. Without hesitation, May said, "George Dalsing." The man said that Dalsing was the grandfather of his fiancée. "I went for long swims with George (Dalsing), Fuzzy Lyons and John Smith at the lake at five in the morning before work," said May. "John ran the cigar stand here in the building." Such is life in a small town now and then.

At the Howard Johnson's, Don and Tom May sat with longtime Bradford residents and octogenarians Bryner, a former client of Ryder Scott, and **Don Walter** and **Harold Engle**. Walter and Engle were the second and third employees, respectively, at Ryder Scott.

*Please see May on Page 8.*

### Harrell presents history of Ryder Scott



Harrell at symposium

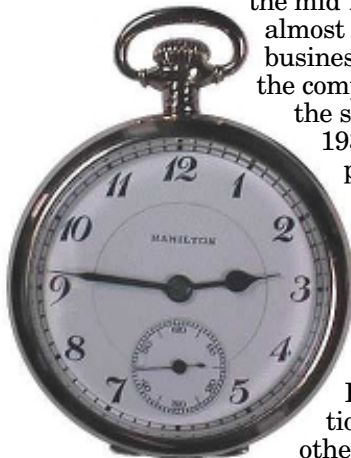
Ryder Scott CEO **Ron Harrell** presented the early history of Ryder Scott at the Drake Well Foundation's History of the Oil Industry symposium last June in Oil City, PA. "We were not the earliest pioneers by any means, but our firm did pioneer some techniques for dramatically improving oil recoveries from waterfloods," said Harrell.

Ryder Scott was formed in Bradford, Pennsylvania, in the mid 1930s — more than 70

years after the Drake well discovery and more than 60 years after the first commercial well was drilled in the Bradford field.

### Ryder Scott almost pursued lubricants business

Before Ryder Scott became a consulting firm circa the mid 1930s, the company almost went into the lubricants business, according to **Don May**, the company's first employee. As the story goes, from 1930 to 1935, Ryder Scott was a



producing company in the Bradford field in Pennsylvania. At one point during this period, founders **Harry M. Ryder** and **David Scott Jr.** became disappointed with their oil production.

Perhaps, this dissatisfaction spurred interest in other endeavors.

At the same time, Ryder was influenced by a friend who worked at Hamilton Watch Co. This friend, name unknown, claimed that good money was to be made from developing oil that would retain constant viscosity through wide temperature changes. He predicted that the oil would be in great demand as a lubricant of delicate instruments, such as timepieces.

Ryder and Scott embarked on this project but after a short time, the work of May in developing chip-coring analysis diverted their attention back to the upstream oil industry. In hindsight, losing interest in the lubricant-viscosity project was wise, because jewel bearings for watches became commonplace, reducing the need for lubricants. May had worked on the lubricant project for several months but eventually turned over his work to Hamilton Watch so he could concentrate on core analysis.

### Ryder Scott contributes to Penn-Brad museum

Ryder Scott contributed \$1,000 to the Penn-Brad oil museum in Custer City, PA, to assist the nonprofit organization in continuing its efforts to preserve the history of the oil industry.

"We were pleased to learn about the work of the museum and its longstanding dedication," said Ryder Scott CEO **Ron Harrell**, who toured the museum while researching the early history of Ryder Scott last June. Custer City adjoins the town of Bradford.



This 72-foot wooden rig is the principal attraction at the Penn-Brad oil museum. This is the last survivor of about 1,000 wooden rigs that were drilled in the Bradford area in the 1880s when Pennsylvania produced almost three-quarters of all the oil and gas used in the United States.

### Founder Ryder helped develop radio tubes



Ryder

**Harry M. Ryder** did primary work in the development of the first radio vacuum tubes while working at Westinghouse Electric Corp. in east Pittsburgh from 1911 to 1922. Ryder Scott recently learned this from the Penn-Brad oil museum in Bradford, PA, through a *Bradford Era* newspaper clipping.

Ryder reportedly worked at Westinghouse as an electrical engineer in engineering and physics research. However, his entrepreneurial spirit prevailed and he left that secure line of work for the excitement and riches of the oil patch.

**Freeware—Cont. from Page 5**

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 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.

With **LogWizard**, a user analyzes density-neutron or sonic logs using either of two templates and calculates the following petrophysical values based on user-selected methods:

- Shale content – applicable to consolidated and unconsolidated formations
- Total porosity – uses arithmetic-average or sum-of-squares method
- Effective porosity – uses arithmetic-average or sum-of-squares method
- Formation water saturation – solves using Archie or modified Simandoux algorithms

For sonic logs, the program template uses interval transit time to calculate uncorrected sonic and effective porosities. For water-saturation and shale-content computations, LogWizard includes visual basic functions that can be exported or linked to other Excel

applications.

Based on user-selected criteria, LogWizard calculates gross reservoir sand thickness and net pay thickness as well as average porosities and water saturations for pay sections. The program also incorporates an  $R_w$  calculator to assist users in computing formation water resistivity from log data. The template also contains areas for entering core data or notes.



This oldest producing well in the Bradford field operates in the lot of a McDonald's restaurant. During the oil boom there, it was said that roads were built around the wells.

**May—Cont. from Page 6**

There must be something in the water in Bradford.

They shared stories about their years in the oil business. Engle and May hadn't done anything like this since long ago when they relaxed after work at the nearby Holly hotel bar around a few beers and a bowl of brown-skin peanuts. The article in the *Bradford Era* told May, "Come back anytime and don't wait another 50 years."



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

PRSR STD  
US POSTAGE  
PAID  
HOUSTON TX  
PERMIT NO 11296