Dhahran Geoscience Society celebrates its 20th anniversary

On 3 November 2007, as part of the celebration of the 20th anniversary of its founding, Abdullah Al-Naim, the first president of the Dhahran Geoscience Society and now Saudi Aramco vice president of Exploration, made a dinner meeting presentation that summarized its success in advancing the technical and professional development of its members and their role in the exploration and development of the nation's hydrocarbon resources.

Since 1987, DGS (initially the Dhahran Geological Society) has fostered technical and professional networking and cooperation between its members via dinner meetings, technical symposiums, conferences, workshops, distinguished lecturers, affiliations with major professional societies, and many other activities (Figure 1).

The main driver behind the founding of the Dhahran GGS was the need for a forum at which geologists could share technical ideas and promote professional development. In 1998, DGS became the Dhahran Geoscience Society. This transformation to a multidisciplinary organization that encompasses both geology and geophysics and related sciences occurred at the same time as its affiliation with SEG.

The Society's monthly dinner meetings, popular since its inception, have featured well-known scientists and technical experts. DGS also publishes the Oil Drop (a bimonthly newsletter providing technical information on geology and geophysics, upcoming events and field trips), *GeoFrontier*, and cosponsors *GeoArabia.*

DGS now has more than 500 active members and, as part of assisting their technical development, has been proactive in the international arena through affiliations with major professional societies, such as SEG, AAPG, and EAGE.

Since 1991, DGS has jointly organized many one- and two-day courses and hosted several distinguished lecturers in various technical specialties. DGS is currently organizing the Geo-2008 Conference in Bahrain and arranging the tour for SEG's Middle East Regional Distinguished Lecturer.

DGS has, throughout its history, supported local universities and schools and partnered with these institutions to attract students to the geosciences. DGS encourages and promotes interests in geosciences at universities within the Kingdom through educational days, information sessions for students, and presentations on the latest technologies. DGS also sponsors attendance of geoscience students at regional conferences, provides DGS activities available to students at no charge, organizes conferences for students, sponsored (with SEG) the regional Geoscience Challenge Bowl in 2007, and participates in Science Week at schools to engage precollege students.

—Ahmad Otaibi, President,DGS
—Ralph Bridle, President-Elect of DGS

Figure 1. *Twenty years ago, the DGS began as the Dhahran Geological Society, with founders (left to right) Hussain Otaibi, Abdulla A. Al-Naim, Ibrahim Jallal and Rami Kamal.*

Mongolia: The final geophysical frontier

In early November 2007, I went on a consulting project in Mongolia under contract with a local mining company to evaluate its coal deposits. Given the country's rich, diverse mineral resources and its strategic location next to China (its major potential market), Mongolia is poised to rapidly develop its natural resource base.

***Figure 1**. Double-humped camels native to Mongolia.*

The company's coal reserves are about 400+ km southeast of the capital city, Ulaanbaatar. While en route to the site, I saw several indigenous animals roaming freely (Figure 1).

The job of the joint exploratory was to evaluate the reserves in preparation for a major coal exploration project in 2008. Some interesting sites within the boundaries of the coal basin are the exposed petrified forests.

During my last few days in Mongolia, I visited a small geophysical company, Magic Signals, based in Ulaanbaatar, that is staffed by relatively young geophysicists and geologists (Figure 2). I brought up the idea of becoming SEG members and forming the country's first geophysical society, and the proposal was well received.

I consider Mongolia the last major frontier in onshore mineral and hydrocarbon exploration. The country is largely un- or underexplored and, as a result, the application and level of geophysical activities in this country are expected to soon increase as global demand for energy resources and commodities continues to rise annually (Figure 3).

***Figure 2.** Charter members of the future Mongolian Geophysical Society?*

***Figure 3.** Exploratory geoscience team posing in front of petrified wood stacked by Mongolian nomads.*

—*Lawrence M. Gochioco*
GeoNano Technology Company
Houston, USA

memorial

On 22 November 2007, Rodney William Calvert passed away at his home in Houston, USA, after an extended illness. He was 63.

Rodney Calvert
1944-2007

Calvert was born on 7 September 1944 in Rugby, U.K. He studied physics at Oxford and geophysics at Imperial College, London. As he liked to put it, he started his first time-lapse work measuring continental drift in Iceland in 1966 as part of his PhD. After obtaining his doctorate in 1969, he joined Shell in the Hague to work at the processing center, then housed at van Alkemadelaan 700. In those early years, when punch cards were used to program computers, he was already building a reputation as a knowledgeable geophysicist who inspired and mentored others. During this period, he developed techniques for making band-limited seismic impedance sections, an approach to interpretation that later developed into a new field in geophysics—seismic inversion. In 1971, he worked jointly with Texas Instruments to develop software for the first seismic supercomputer.

When the management of Shell's exploration operations in Borneo moved from Brunei to Miri in Sarawak in 1975, Calvert was one of many staff transferred there. He became the manager of the new Phoenix processing center, and developed prestack Kirchhoff migration for imaging steep dips in the complex geological structures offshore Sabah, North Borneo. He helped seismic interpreters understand more about geophysics, and they much appreciated his explanations of some of the more esoteric aspects of the discipline. Social life amongst all these new expatriates was quite intense and Calvert was a most enthusiastic participant. Many Shell staff were involved in amateur dramatics and, although he didn't like treading the boards, he could be relied on backstage, even spear-carrying or as vocal support from the audience—especially where the bar was located!

After this assignment in Malaysia, Calvert was transferred to Shell London in 1979 as seismic processing center manager. He continued to support local research, acting as a catalyst for the development of Shell's multiple elimination program MAGIC, prestack redatuming of shots and receivers, and development of noise reduction techniques on stacklamps (now Shell's TIGER). He pioneered the production of 3D seismic data sets after he became head of Geophysics in Shell Expro. Here also his coaching skills were paramount. Calvert had an extraordinary ability to explain complex topics, like prestack wave equation migration, not in equations but with pictures. His lack of pompousness and his mischievous sense of humor would not let him use the fancy names or acronyms, so his techniques were simply called *Good*, *Better*, and *Best*. *Better* was the precursor of what is now known in the Shell SIPMAP world as FLATER. Together with a few colleagues, Calvert started

the first 3D processing on a Shell operating company minicomputer. He always had one foot in the operational and one foot in the research camp. His support for staff doing more off-the-wall experimental stuff rather than just turnaround drudgery was certainly instrumental in building and maintaining the reputation of Shell as the leading-edge seismic processor of the time. He led Shell's early 3D acquisition and processing efforts in the North Sea in the 1980s with innovative flair.

In 1984, Calvert became the head of what was then called LRE/5, the geophysical research department at KSEPL, the Koninklijke/Shell Exploratie en Productie Laboratorium in Rijswijk, the Netherlands. This was years before Shell globalized its research and development, and KSEPL and BRC (Shell Oil's Bellaire Research Center in Houston) each had its own management team. Efficiency and avoidance of duplication in research and development were then achieved by meetings in Rijswijk or Houston. Managers and research staff spent a few days together in technical presentations and learning from each other. Many of the research geophysicists at KSEPL in the mid-1980s remember these meetings and the late nights out in Houston with Rodney, who showed those from the Netherlands what they needed to know about oil town #1. These were seminal years for geophysics. He brought Shell's first Landmark 3D interpretation workstation to KSEPL, and for a couple of years this miracle of technology, with stunning 3D images and interpretations of subsurface data from Nigeria was showcased to many Shell and other VIPs. Since it was built on a 286 processor, turnaround time was often tens of minutes, a far cry from what is possible today, so it gave 3D interpreters ample time to think about other things whilst waiting. During these years, Calvert's department also laid the foundations of 3D ray-based velocity model building, and the introduction of 3D Kirchhoff migration in the operating units. Software developed at that time is still used in Shell.

During these years, he demonstrated and explained to his staff how important it is to work with other disciplines. He had a good overview of all the projects in research and development and the head office in the Hague, and frequently drew large diagrams to show how (in his mind) all this should be combined into practical software solutions and "workflows." He encouraged, and actively supported, those staff who integrated geophysics with geology and reservoir engineering. As an important technologist, Calvert featured prominently on the back page of Shell's house magazine for geophysicists, the *Geophysical Newsletter*. The back page ("Random Noise") was a tongue-in-cheek column where certain geophysicists were treated to pseudonyms (the editor being professor Tracey Dent) and Calvert, or Dr. Cal Green ("Vert" after the French word for green), was the frequent inventor of gamechanging geophysical techniques such as balloon seismic, submarines for sea-bed acquisition, and the Circumseis. Some of these don't seem so far-fetched today, and the name Circumseis (for circular shear vibrator) might have stuck if it weren't for connotations better avoided in the business world.

His grasp of science was demonstrated nicely in the late 1980s when the "fifth force" was postulated. Soon after, Calvert proposed an experiment in the port of Rotterdam involving a crude carrier from the Shell fleet; to sail it under a gravity meter attached to a crane, first full and then empty, but this experiment never happened. Of note in this context were the questions he asked candidates when they were interviewing for research and development. Calvert would base his hiring decision on whether prospective Shell scientists could answer such simple questions as "What we would see if the refractive index of the Earth's atmosphere increased?" and "Why does the air temperature decrease with height?" ("After all, hot air is lighter than cold air," he said when introducing the question). Assessment centers came much later, and to date the debate continues whether this is the right approach for attracting scientists.

His next assignment was chief geophysicist in Shell Canada. This is when his addiction to back-country skiing developed. Combining work and play as usual, he pushed to get 3D seismic going in the Foothills. Later, back in Houston, the closest he got to skiing was by roller-blading, at which he became proficient, but at the cost of frightening himself and the local community!

In 1993, he moved back to research and development and worked in Houston, and Rijswijk, until his death. First, he revitalized seismic software development and research as integrated (multidisciplinary) subsurface modeling and interpretation. In the late 1990s, he started what would become his final and most challenging push: time-lapse seismic. His influence was very important in opening up this new field, and he made many contributions, always bouncing ideas around on acquisition, processing, interpretation, and integration with other disciplines. As he put it, he was "learning seismology over and over again via 4D." During these years, he also worked on the Virtual Source, one of his pet projects. In both areas, he leaves behind many ideas that still need to be developed further.

His career culminated as Shell's chief scientist for geophysics, a tribute to one of our industry's most influential geophysicists and man of stature in the global geophysical community. Whenever his name came up in discussions with manufacturers, contractors, academics, consultants, or other oil company staff (which it did very often), one never heard a bad word. He enjoyed huge respect in the industry as well as with the professional societies, to which he contributed in roles such as associate editor for GEOPHYSICS. A few months before his illness was diagnosed, he had completed a yearlong tour around the world as the SEG/EAGE Distinguished Instructor. His course, "Insights and Methods for 4D Reservoir Monitoring and Characterization," was presented in 25 locations worldwide and drew excellent reviews, strengthening ties between academia, governments, companies and, indeed, subsurface disciplines.

Calvert was always true to his science and was a true gentleman. He was unselfish and a great mentor and collaborator, rather than intent on creating a name for himself. He always combined his love for science with his love for nature. He never stopped learning, always sharing what he knew or discovered with his colleagues and friends. His passion for hiking, windsurfing, sailing, skiing, rollerblading, and scuba diving were well known, as were the connections he made between these hobbies and the physics that made them possible. A truly caring and unselfish teacher throughout his life, he educated a generation of scientists who will never forget his creativity and intuition, unorthodox approaches and solutions to any problem at hand, including improving cancer diagnostics in what would be his final battle.

Calvert will be remembered as someone who never quit, not even during the final weeks of his life. He always gave and never expected anything back. In keeping with his final wish, he was buried after a private memorial service at Wolfe City, Texas, USA. He is survived by his wife Kaaren and two sons.

In more than one way, he has left us with much to think about.

—HANS POTTERS
with input from many colleague geophysicists