

Always finding a "better way of doing things"

GeoDrilling International's inaugural Hall of Fame honours Richard Braithwaite for his contribution to the drilling industry. He was nominated by GeoMEM Ltd director James Tweedie, who has authored the following biography detailing Richard's achievements

MOST readers of *GDI* will know of Richard Braithwaite through his 'Driller's Tale' articles that he has written over the past two years. His humorous stories give a small

insight into his years in the drilling industry.

This author nominated Richard for the *GDI* 'Hall of Fame' because of his contribution to, and work in, a number of areas in small-diameter hole drilling and surveying from the 1970s to 2005, when he retired. This period covered rapid technological changes in both the design and engineering of drill rigs, and in the power of computers for processing and control. Richard was involved in many aspects of these changes.

Richard studied mechanical engineering at Dundee University (with sponsorship from BP), before working for BP and then for Atlas Copco Craelius (as part of Derek Oakes' sales team) where he developed a strong interest in the potential of "thin-wall core barrels and Diamac core-drill technology" (*GDI*, January/February 2007).

In 1970, he took the ideas and experience he had gained and started up his own drilling company, Encore Drilling Ltd.

Richard always sought to find the "better way of doing things", both for his company and for his clients, and this led to several innovations in Encore's drilling techniques throughout the 1970s and 80s.

To allow better accessibility and use of resources when drilling in Scotland (and elsewhere), he came up with the idea of creating a mobile drill by putting a drill rig on a Muskeg and powering it with the Muskeg's engine. This allowed quick and easy mobilisation, and access to many drill locations throughout the country.

This rig proved its worth in 1981 when Richard was working on the Consolidated Goldfields copper-zinc-gold prospect near Gairloch and he was asked to get a rig on to the top of a 384m-high ridge (called Sithean Mór or the Big Fairy Hill – singularly inappropriate for Richard and his drill crew!) to investigate a massive sulphide band. The slopes were steep and protected by rock ramparts and the geologists believed that the only way to get the rig to the summit was by helicopter.

Quotations were obtained and then Richard appeared with a quotation that was substantially lower than the others. Not willing to admit defeat

on a ground-based solution, he had scouted out a zig-zag route via grass gullies to the top. They were steep, but he could do it with manpower, Tirofors and a day. His quote was accepted and the rig was duly moved to the summit within the assigned time.

He also designed and built offshore platforms for shallow-water drilling. To the author's knowledge, these were used for drilling off Shetland and near the Great Barrier Reef in Australia.

Richard was aware of, and applied, the latest technology when appropriate. The Consolidated Goldfields Gairloch project was facing major problems with interpretation of the subsurface structure because the holes were being surveyed using a single-shot Pajari system, which was time-consuming, expensive and liable to damage.

Richard advised the client about the innovative, non-magnetic Reflex Fotobor system and a demonstration was arranged. This convinced the field geologists and it was bought by Goldfields to survey all deeper holes in the project. The information it provided allowed a re-evaluation of the structure and further drilling to be planned. This was the first time that a Fotobor had been used in exploration in the UK.



Richard and Claes Ericsson, on a boat in Sweden 2004

When Goldfields finished the project at Gairloch, Richard saw an opportunity to provide a value-added, borehole-surveying service to Encore's clients and he bought the Fotobor from Goldfields. At this time the data processing was



Richard running a Fotobor survey, Gairloch 1981

carried out somewhat laboriously on a calculator, so Richard asked the author to provide a better computer software-based system. A few months later, Richard arrived on his borehole-surveying clients' sites equipped with a large, purpose-built, field-proof, white plywood box containing a BBC Micro, Epson printer and all the sundries to do the survey. This field computer was somewhat large in comparison to today's systems, but was, arguably, the first portable, field-surveying unit for small-diameter holes in the UK.

At the same time, Richard and his staff (among them Encore's technical wizard, Graham Smith), developed a number of devices for wedging and orientation in slimline holes. This Encore Borehole Deviation System consisted of: Mole – a fixed wedge; Mule – a retrievable wedge; Ratty – a reaming spear; and Dolphin – a directional monitor. These were intended to be used in directional drilling in holes of diameters in the 46-96mm range.

This system is described in a 1984-85 patent application as a device to determine the orientation of a wedging assembly relative to the dip of the borehole or for sensing borehole inclination, which used four gravity-sensitive, mercury switches. Data was transmitted to the surface using frequency-modulated ultrasound. In the same application, a "retrievable or fixed wedging assembly" is also described.

It is a wonder that Richard found time to be the chairman of the British Drilling Association (1985-87), but he did.

In 1987, Richard, in partnership with a quarrying company based at Gairloch and others, formed the Highland

Slimfield company to introduce slimline, lower-cost drilling to onshore oil exploration. Based in Muir-of-Ord in Easter Ross, the company created its own semi-automatic, special drill rig – an important part of this was to be surveying while drilling using an adapted Reflex Fotobor system.

As stated previously in *GDI*, Highland Slimfield was "an attempt to persuade the onshore oil industry to save itself megabucks by drilling smaller-diameter exploration holes".

Highland Slimfield got its first contract to drill in Ireland. However, during mobilisation to the site the company was declared insolvent, so the idea of onshore, slimhole oil drilling was never realised. This was, perhaps, a case of a good idea ahead of its time. However, the company failure does not diminish the innovative concept behind it.

In the early 1990s Encore Drilling became Encore Borehole Surveys, and Richard concentrated on providing borehole-surveying equipment and services to clients throughout the UK, and beyond. This change in company direction allowed Richard and his family to move to Argyll in the west of Scotland, where they still live.

In October 1990, Richard and the author ran the surveys of the final 100m alignment hole between the English and French ends of the central service tunnel of the Channel Tunnel using the first production version of the Maxibor. The field system was housed in Richards 'patent' white field box and the survey, as history shows, was successful.

Reflex Instrument founder Claes Ericsson says of Richard: "After the job in the tunnel, Richard became more active in the sale of our [Reflex] instruments. He also played a big role when we developed all our new instruments. His knowledge about drilling and the need for user-friendly instruments played an important role for us. He was always very supporting and gave us all a lot of good advice."

Richard supplied and supported borehole-survey instruments from both the Reflex and FlexIT companies, becoming a knowledgeable and enthusiastic ambassador for the systems, both in the UK and around the world. He travelled far and wide to commission systems and introduce customers to the latest innovative technologies.

It was his wide knowledge and experience that helped him provide advice, and ideas, for the development of several of the survey systems from the Reflex and FlexIT companies over the years from 1989 to 2004.

Of his training classes, Claes says: "It was fantastic to be part of one of Richard's training sessions. His teaching skills, when it came to surveying drill holes with the use of the latest, technically-advanced instruments, together with the software, was excellent. His sessions have always been greatly appreciated by all the people around the world that he has been teaching."

His ingenuity was not limited to his work. When living near Coventry in the mid-1980s, he designed a windmill-powered lighting system for a stable in the middle of a field, long before it became de rigueur for anyone with pretensions of green credentials.

During a visit to Richard's Encore Borehole Surveys in Argyle, the author was shown a two-line hydraulic system that Richard had designed for his

twin-hull boat, which, he was advised, avoided the problems of several of the commercial systems available at that time. This was typical of Richard – give him a problem and he would solve it by the best route.

Claes probably sums up both professional and personal feeling towards Richard: "For me, Richard has always been the most knowledgeable person within our industry. He has always been extremely professional, honest and helpful, and a great support for me during all of my business life. Richard also became one of my best friends, and it has always felt very good and secure to have him around, both on exhibitions or out on drill sites. I have learned a lot from Richard over the years."

The author is also indebted to Richard for the knowledge imparted over the years for drilling and surveying methods, and for

friendship since the early days of working on the Gairloch project.

The author believes Richard is one of a relatively small group of individuals who have contributed to, and driven, our industry during a time of great change and laid the foundations for the next generations of drillers and drillhole surveyors.

Note: there is no connection between Richard Braithwaite's Encore Drilling and the Encore Drilling formed in 2006 in Northern Ireland
 Photographs courtesy of Claes Ericsson



Richard and Norman Giroux discussing SmartTool at PDAC 2004



Richard discusses a point during a FlexIT training session, 2004

“Richard is one of a relatively small group of individuals who have contributed to, and driven, our industry”