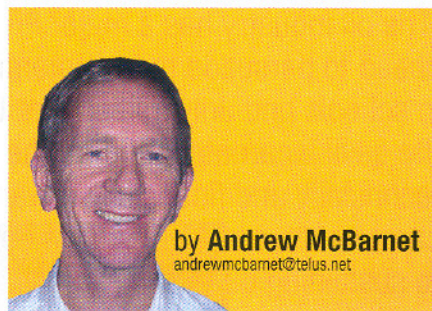


'Wandering into the realms of fantasy we may be, but the competitive pressures and the scarcity of personnel resources is such that thinking out of the box is required.'



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Why people matter

Whirling under the surface of today's broadly happy E&P geophysical services community is a persistent undercurrent of concern over staffing.

Andrew McBarnet muses on the problem and its solutions.

With very few exceptions just about every company operating in the geophysical services business is currently expressing exasperation at the 'silly' prices which oil companies are paying to persuade geoscientists to join their exploration departments. Of course they can't complain too publicly. These are the clients after all. But privately the poaching of personnel is becoming a significant source of aggravation, especially since oil companies have in the past been quick to downsize their geoscientific resources whenever the going gets tough.

Competition for good people in the oil business generally is of course a fact of life. The geophysical services companies recognise that the current E&P boom increases demand for limited expertise. There is, however, something much more fundamental going on. The over-worked phrase the 'Great Crew Change' has proved a useful rallying cry to draw attention to the issue of how to replace the ageing generation of geoscientists and engineers on which the upstream oil and gas business depends. Yet the expression doesn't do justice to some of the deeper trends at work, notably the declining role of the traditional international oil company (IOC) and, even more fundamentally in western

countries, the negative perception of Big Oil and what it represents among younger people considering their careers.

This may sound a little too apocalyptic for some, so let's start with the known. Numerous reports and presentations in the last two or three years have sought to alert the industry about its dependency on a seemingly untenable demographic. Most people are probably familiar with the SPE graph on the age profile of its membership, which more or less tells the story. The petroleum engineering and geoscience communities are getting on in years and are not being adequately replaced. Booz Allen Hamilton (BAH) in a recent report cites the popular finding that 55% of E&P staff are in the 40-50 age bracket (probably on the higher side if the truth be known) and that half the current workforce is likely to retire in the next 10 years (the exercise of early retirement/lifestyle change options may make this prediction conservative).

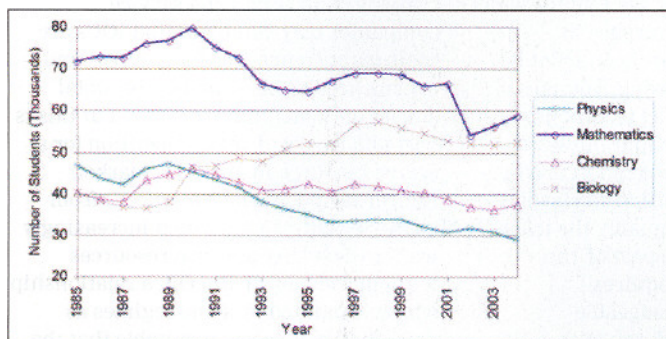
At the other end of the spectrum BAH reports that barely 15% of the workforce are recruits in their early 20s to mid 30s. At the same time graduate recruitment into the industry from established western universities and business schools has been in steep decline. BAH concludes that if the issue is not tackled, 'the potential knock-on effects include a slow

down in reserves replacement, capacity shut-in, and a major increase in operating costs within the next five to 10 years. You could add that a fall-off in the E&P industry's enviable record for research and innovation would also be at risk.

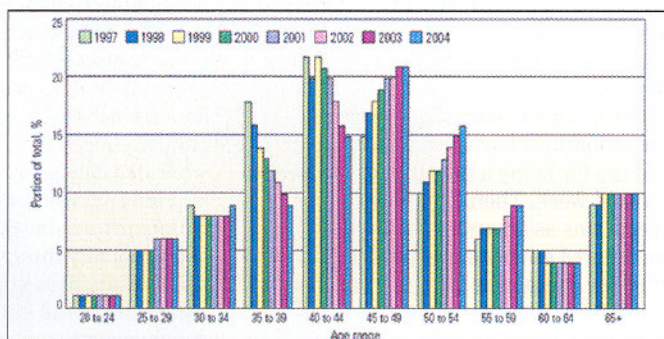
Course reduction

In the overall scheme of things the most intransigent issue must surely be the trend in high schools and universities over the last decade or so in western countries. A huge drop in the number of courses relevant to the oil industry being taught and supported is reflected by the shortage of suitable young graduates. The situation in the US has been highlighted by the SPE. Last year the erosion in the UK of geophysics education in schools and universities was detailed in an authoritative review by the British Geophysical Association, a joint association of the Royal Astronomical Society and the Geological Society, two of Britain's most venerable scientific bodies. The *Review of Geophysics Education in the UK* was carried out by Aftab Khan, emeritus professor of geophysics at the University of Leicester. The expansion of higher education in the UK in the 1960s and 1970s generated a dozen broadly based BSc degrees in geophysics but these have withered on the vine, according to the report, so much so that only seven university departments offer geophysics undergraduate degree programmes.

Despite growing employer demand and increased overall numbers in the university population, falling enrolments for geophysics have meant courses being discontinued by universities constantly



Entries to British A-level (North American 11/12 Grade) examinations 1985-2004 (source: AQA).



SPE membership age profile 1987-2004: the story is similar in geoscience.

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under performance and economic pressures. The number of MSc courses in geophysics has been reduced from five to one, attributable to the fall in geophysics Masters graduates wanting to embark on exploration and environmental careers.

To reverse this kind of trend presents a huge challenge. Khan found that the root of the problem stems from what goes on in schools. Geophysics is unlikely to appear on the student's radar at all and this is part of a more deep-seated resistance to engage in maths and physics, which are regarded as difficult subjects. The result is that geophysics has effectively been structured out of the curriculum, and MSc courses no longer offer a safety net for those students who come across geophysics at university and change direction. Remedies suggested by Khan are sensible enough, but are based more on hope than reality. The strongest recommendation is to put geophysics back into the British 'A' level (11 and 12 grade) syllabus, along with various promotional measures by school, universities, professional associations, etc. However the issue is so acute and complex that only serious attention by the government is likely to bring about the change in attitudes and practice needed.

There is plenty of evidence to suggest that the same malaise over geophysics is affecting the health of programmes across the rest of Europe and the US. Even where the subject may be more popular, potential university candidates in BSc and Masters programmes are found not to look favourably on the oil and gas industry. Their qualifications offer them a wide range of careers in physics, IT and finance. Oil companies in particular have an acknowledged image problem as an employer for a number of reasons.

The mergers, downsizing, and consolidations have given the industry a bad rep for being a heartless and insecure place to work. Then, oil and gas operations as an activity are not considered environmentally friendly, and whether companies like it or not, the green issue has a growing following particularly amongst the younger generation brought up in the Al Gore era.

Bad publicity

You have to think, too, that the constant negative talk in daily life about excessive gas prices, company profits, etc must have some impact. Oil is also associated with conflict in the Middle East and elsewhere, and with instability and corporate corruption in some countries. In this context a career in oil and gas may well be less attractive to many students. Salary inducements are one thing, but the old selling point of being able to see the world can be interpreted as an invitation to visit some of the most troubled areas on the globe.

Fortunately, imagery and impressions can be altered, but the oil industry has a major PR exercise ahead to persuade many potential employees in schools and universities that they are not the devil incarnate, and that the job is technically and financially rewarding, has a career path, and is important not to say vital to sustaining our society. Recruiters these days say that graduates also place importance on working for a caring employer with less emphasis on long, disruptive stints in 'dangerous' foreign countries (felt to be especially problematic for US students).

In the E&P geophysical services community the shortage of qualified professionals is already being felt. This is rightly being put down to the current surge in exploration seismic worldwide and the emergence of new companies and crews with personnel demands. Increased investment in E&P also means that oil companies are being obliged to ramp up their geoscience departments in order to manage their asset exploration and development plans effectively. In the short term the area where shortages in personnel are being most keenly felt is probably in data processing. Volumes of data from modern survey techniques are challenging enough without the extra workload caused by the boom in marine and land survey acquisition worldwide.

Data processing is arguably the most geophysically intensive part of the seismic business and requires experienced and knowledgeable geophysicists compared, say, with acquisition survey operations, where personnel with different technical

backgrounds can be more easily assimilated to meet the demands of the task.

Longer term geophysical companies are increasingly aware that, to remedy the scarcity of suitably qualified and motivated students emerging from the traditional centres of science education in the west, they will have to cast the net more widely. In this context Schlumberger (admittedly with the resources not available to smaller companies) has been a step ahead of virtually any other company in the E&P services sector in its well established worldwide programme of selecting and grooming graduates for a career in its organisation. Indeed a couple of years ago a study by Schlumberger Business Consulting pointed out that there were enough potential technical graduates in the world to fulfil the needs of the E&P business; the problem was they were not located in the areas where they were needed the most, in North America and the Middle East (*OE* January 2006).

Casting a wider net

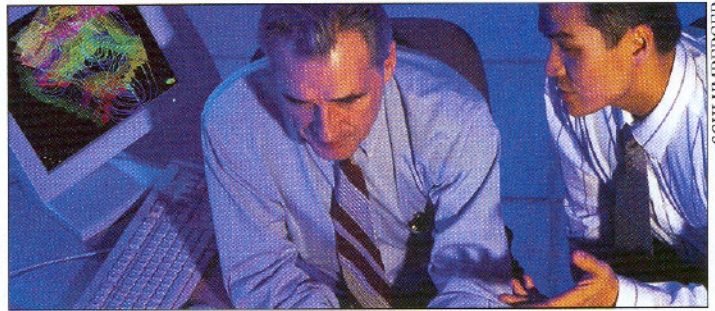
This helps to explain why any half savvy geophysical company which has the resources is courting universities in China, India and Africa where there is a huge pool of talent to be tapped and science and engineering subjects are not taboo amongst students, rather the reverse. It also makes strategic sense in terms of what may be the most significant development in the industry, namely the growing importance of NOCs and the likely impact on the global market for E&P equipment and services.

Today contractors and service companies may complain that IOCs are their main competitor for trainees and experienced professionals. Anecdotal stories of 'poaching' are legion but this is part and parcel of the competition for a scarce resource in an active market. Longer term IOCs face a squeeze from countries with NOCs which increasingly want to develop their own resources without the help of Big Oil, a relationship which is painted by some regimes as exploitative. It seems inevitable that the acreage and assets in play for IOCs worldwide is going to shrink with



CGG VERITAS

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SCHLUMBERGER

foreseeable consequences for the size of E&P divisions. The same dynamic may not affect traditional suppliers of equipment and services so severely because many already provide NOCs with technical support.

A further consequence of the process could be the acceleration of a widely predicted regionalisation of the marketplace for E&P services. Those companies in Houston, Calgary, Aberdeen, etc willing to work with locally based service operations around the world seem likely to be the winners. From a workforce point of view, buoyant markets for seismic services in India, China, and SE Asia provide the opportunity to recruit and train the talent available in these regions and to be less dependent on the home education system as the recruiting ground.

One question of course is how IOCs will react to the gradual reduction of their geographical marketplace and their traditional role as the supplier of finance, management expertise and markets for oil nations around the world. Over time IOCs have outsourced virtually every E&P technical activity (downstream refining and product distribution are a different matter). In the 1980s, for example, companies such as Shell and Mobil were still active in the marine seismic market carrying out their own surveys. Nowadays, outside the super majors, E&P technical expertise is limited mainly to a management supervisory function, to the extent that geophysical

contractors and service companies have far greater expertise at their disposal and often observe that their customers have a hard job understanding the technical services being offered for their benefit.

A nightmare scenario, probably too fanciful to happen, would be for IOCs to rebuild their technical services, effectively in competition with the service sectors. In theory this might provide a way to grow their businesses. Oil companies are currently awash with cash and challenged to spend it on E&P projects of their own, so it would be no problem to buy a major piece of the seismic services action and, who knows, other sectors too.

Even at today's inflated values, buying CGGVeritas, now the biggest pure play geophysical services company or Petroleum Geo-Services (PGS) would be a drop in the ocean for a super major. Only Schlumberger, which is of course more than a seismic company, would be hard to swallow. Indeed the company constantly has to remind the industry that it will not compete with oil companies in what they do.

Reverse revolution

Wandering into the realms of fantasy we may be, but the competitive pressures and the scarcity of personnel resources is such that thinking out of the box is required. Ask Alan Faichney, senior vice president of strategic resources with the seismic solutions company Input/Output (I/O), and he'll tell you that part of the

answer is to change the nature of the problem. As an example, he suggests 'removing people from the process', in other words, automate what you can. This is an industrial revolution in reverse, finding a way to resolve a lack of human resources rather than eliminating them! Faichney says that his original company Concept Systems, now part of I/O, has had a great deal of success with this approach to navigation and positioning software and operational data management for marine seismic surveys, something which is now being transitioned into I/O's emerging cableless full wave digital recording land acquisition system.

'People told us it wasn't possible,' Faichney says, 'but in the end clients have realized the benefits in cost and efficiency.'

Schlumberger Business Consulting has a less radical but nonetheless valid suggestion when it advises companies to accelerate the 'autonomy' of incoming recruits. By trusting them sooner, organizing them to better use technology and leveraging the value of senior personnel (encouraging them to stay longer in the workforce, possibly on a semi-retired basis), new staff can be more productive faster and so help to fill the resource shortage.

BAH has a similar message arguing that 'the role of HR, historically one of the corporate functions most influenced by national legislation and culture, now has to embrace a new agenda with a much wider remit. HR needs to address strategic development and deployment of staff, as well as competitive positioning in the recruiting marketplace and reinforcing ethical values among staff. The transition from parochial human resource decision-making to global strategic positioning within the company, in the context of these pressures, is one of the most elephantine challenges multinationals face if they wish to remain competitive'.

The same basic philosophy of making the most of what you have applies to the service sector. However it is only a quick fix. The real problem is that in future companies risk being too thin on the ground to operate effectively. **OE**

