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Meeting technical, personnel challenges in the oil and gas industry

The year 2006 has been particularly good to the oil and gas industry, and there is no end in sight for the latest upswing. Hydrocarbon demand continues to outpace supply, and our industry will be hard pressed to meet the increasing need for oil and gas. The World Energy Organization (part of the International Energy Agency in Paris) estimates by the year 2030 the world will need almost 70% more oil and gas per day than it uses today.

The growing energy demand creates an exciting time in the industry. There is a pressing need to develop better technology to recover more oil and gas from existing fields and to allow economic discovery and production in more challenging areas like deepwater, deep gas, and the Arctic. The industry, however, is contending with another challenge at the same time – the availability of human resources to meet the needs of the future. This issue has been called the "graying" of our workforce, the "big crew change," and "paying the penalty" for our significant downsizing in the '80s and '90s. No matter what you call it, the phenomenon is real and presents a significant concern.

There are many reasons for the personnel shortage.

Retirement of the baby boomers – The baby boomer generation (born between 1946 and 1964) accounts for most of the personnel in the industry. The average age of employees in our industry is late 40s to early 50s; over half could retire in the next 10 to 15 years. We may be able to retain personnel longer because of their interest in the challenging work we are facing and the high salaries on offer. And while these people are in the workforce, we have to find ways to transfer their knowledge and experience to the younger generation.

The 30- to 40-year-old gap – We have a significant gap in the industry due to downsizing over the past 20 years. According to API's Workforce Challenges Survey results (May 2005), there were over 860,000 jobs in the oil and gas industry in 1982. Over 500,000 of these jobs were terminated between 1982 and 2000. The reduction resulted in a gap in middle management. It has also given the industry a black eye, from which we still are recovering. This situation exacerbates the problem of passing forward older employees' knowledge because there are not enough people at the next level of experience to receive this knowledge. The challenge is to take individuals with significantly less industry experience and to bring them up to speed much more quickly than in the past.

Lack of personnel coming into the industry – While those of us in the industry appreciate the amazing technical achievements we attain on an almost daily basis, the general public still has a poor perception of the industry. This poor perception of the industry makes it difficult to recruit, even though entry-level personnel garner high salaries and unheard of signing bonuses.

A study by Duke University in 2005 indicated that four-year bachelor degrees in engineering and related subjects in 2004 are being awarded annually to approximately 137,000 in the US, 350,000 in China, and 112,000 in India. A McKinsey study estimated that only 10% of graduates in China and 25% of Indian graduates could meet our industry's needs for multi-national capability with the appropriate university training.

Possible solutions – Many efforts are being made to recruit more individuals at the university level. Industry groups have begun to work together to make this effort a success. A group called NETP (New Entrant Training Program), which I chair, includes eight oil companies and eight consulting/contract engineering firms in Houston. NETP is investigating what is being done by groups in Houston to meet the shortages of engineers in the industry.

There is also recognition in the general education and political community that more needs to be done to support engineering and science. The report *Rising above the Gathering Storm* published in February 2006 by the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, documents concerns, provides data supporting these issues, and makes recommendations for ways the US can make improvements. Recommendations include encouraging younger students to pursue technical degrees, recruiting more science and math teachers, developing existing teacher capabilities, and sustaining and strengthening the US commitment to basic research.

Industry groups are actively encouraging more students at the middle and high school levels, particularly in the US, to choose science and engineering as a career path so students have enough basic education to be able to take engineering and science courses at the university level. There are similar efforts in the UK and elsewhere.

There is no doubt the industry will deal with these issues and will solve personnel recruitment and retention, much as we have solved the many technical obstacles we have overcome in the last 50 years. As we move forward and continue to supply oil and gas to the world, we will need all the help we can get!

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This page reflects viewpoints on the political, economic, cultural, technological, and environmental issues that shape the future of the petroleum industry. Offshore Magazine invites you to share your thoughts. Email your Beyond the Horizon manuscript to Eldon Ball at eldonb@pennwell.com.