

GUEST EDITORIAL

What Will the Oil and Gas Industry Do This Time?

Stephen A. Holditch, SPE, Department Head, Harold Vance Department of Petroleum Engineering, Texas A&M University



From 1972 to 1982, the enrollment in petroleum engineering departments in the United States increased substantially. We are currently seeing a similar increase in enrollment in petroleum engineering schools. **Fig. 1** shows the total US petroleum engineering enrollment from 1972 to 2009. The enrollment peaked at just over 12,000 total students. In 1972, there were 1,362 undergraduate students in US universities. By 1983, the number had increased to 11,014. By comparison, in 2003, there were 1,673 undergraduates, and by the start of the fall semester 2008, the number of undergraduates had increased to 4,199. As can be seen in **Fig. 2**, the growth trend in undergraduate student enrollment from 2003 to 2009 is similar to the growth trend from 1972 to 1978.

The Department of Petroleum Engineering at Texas A&M University in 2003 only graduated 35 students with BS degrees and 46 students with MS or PhD degrees. In 2004, the oil and gas industry asked all the departments of petroleum engineering in the US to increase enrollment and graduates, and the universities have responded to that request. This year, the Department of Petroleum Engineering at Texas A&M will graduate more than 100 students with BS degrees and more than 50 with graduate degrees.

Now the oil and gas industry must do its part and hire these graduate engineers. Such a request seems almost silly if one has been reading all the articles during the past few years about the shortage of engineers in the oil and gas industry, and attending all the panel sessions at all the meetings to discuss what the industry needs to do to fill the age gap that exists in most companies, especially US domestic companies that do not hire an international work force. However, with the current economic downturn and the unexplainable increase and decrease in oil prices from a high of USD 147/bbl to the current price of around USD 40/bbl, some students are starting to ask questions about their job prospects and their career choice in general.

Stephen A. Holditch, SPE, is Department Head and holds the Samuel Roberts Noble Foundation Endowed Chair in Petroleum at Texas A&M University's Harold Vance Department of Petroleum Engineering. He previously worked for Schlumberger. He worked on projects for Holditch Reservoir Technologies and on special projects to assist the management of Schlumberger. He served as President of S.A. Holditch & Associates, a full service petroleum engineering consulting firm from 1977 to 2000. Holditch also has been a production engineer at Shell Oil Company. He joined the petroleum engineering faculty at Texas A&M in 1976 and was named to the R.L. Adams Endowed Professorship in 1995.

Holditch served as SPE President during 2002 and is an Honorary Member and Distinguished Member of SPE. He has earned numerous SPE awards, including the Anthony B. Lucas Award, Lester C. Uren Award, and Distinguished Service Award for Petroleum Engineering Faculty. He earned BS, MS, and PhD degrees in petroleum engineering from Texas A&M.

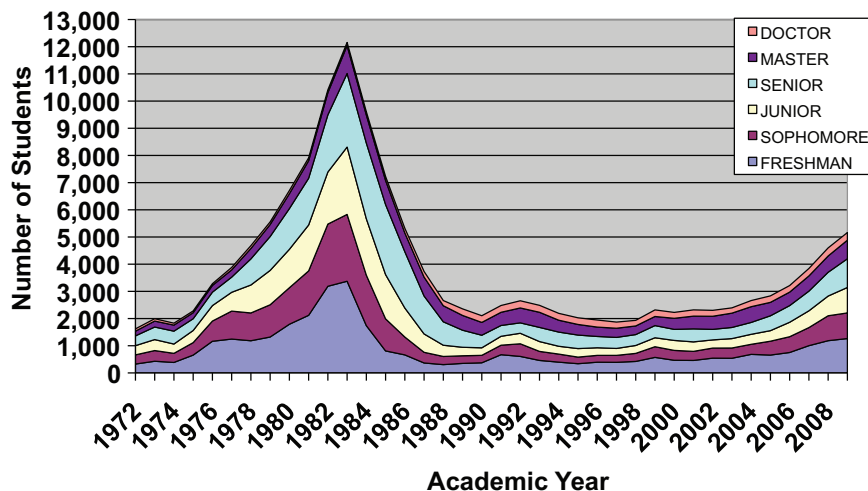


Fig. 1—Total US petroleum engineering enrollment from 1972–2009.

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developments among PetroVietnam and the other companies operating in the country.

Ben Gedge, one of the cochairs of the ATW and Vietnam Country Manager for Weatherford Vietnam, gave the opening presentation entitled “Where Have We Come From—The Shift to MPD.” He took the attendees through the last 10–15 years of UBD and, more recently, the shift to MPD—particularly in the Asia Pacific region—where MPD technology is proving to be a valuable drilling enabler.

ATW Cochair Dave Elliott, the Global Tight Gas Well Technology Focal Point for Shell E&P International, followed with a presentation entitled “Workshop Objectives and Our Focus for the Future.” His talk concentrated on which UBD/MPD technologies will be important over the next five years. Elliott projected that MPD as

a drilling enabler will increase in use, especially in high-pressure/high-temperature and depleted wells. UBD is expected to increase in use with more tight gas projects, where it has value in drilling enabling, damage reduction, and reservoir characterization. Increased application of UBD in tight gas exploration and appraisal wells is also expected.

The first two technical sessions reviewed how MPD and UBD projects should be addressed to achieve a successful business case through to the planning and implementation phase. Several business cases were presented from around the world, including StatoilHydro’s business case for the Gullfaks and Kvitebjorn fields, several UBD and MPD projects and prospects in Vietnam, implementation of UBD and MPD in Shell Libya, and the staged implementation of automated

MPD in depleted deepwater Gulf of Mexico reservoirs.

The second day featured two technical sessions, both titled “How to Get UBD/MPD Project Approval and Project Team Buy-in.” Presenters discussed ways in which UBD and MPD projects could be elevated to a higher level within a company and how to manage project risks once approval has been given. There was also specific focus given to implementing MPD to improve fracture orientation in fractured granite basement reservoirs, a topic that is particularly important to operators in Vietnam. The country has unique reservoir conditions in the fractured granite basement.

The third day’s sessions asked the questions “How Do We Get Out of the Hole?” and “How Do We Get Back in for Completion Techniques?” Various techniques for pulling the UBD/MPD

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In response, I have told the petroleum engineering students at Texas A&M, “Do not worry. The industry learned its lesson in the 1980s when they did not hire many engineers for a decade and they are paying for it now. Surely, they will not repeat that mistake again.” So far, as I have shared my comments with industry recruiters, the ones who have responded to me have assured me that indeed they plan to continue hiring new engineering graduates from universities, even if they have to pull back spending in other areas. I take them at their word, but I have not done any sort of scientific poll to see if these sentiments are universal.

The oil and gas industry should also realize that the universities have very large freshmen, sophomore, and junior classes. Many of those students are looking for internships during the summer months. These summer jobs are important for a number of reasons. First, most of the students need the money. Second, a successful internship convinces the students that they have made the right career choice and they come back to school ready to work even harder to get their degrees. Finally, it gives industry a chance to evaluate our students and many interns receive

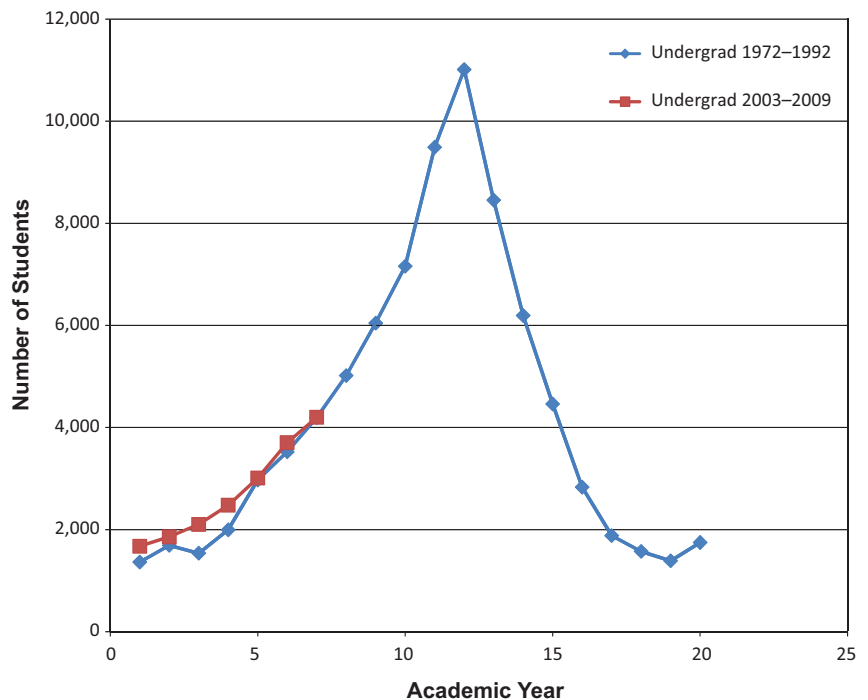


Fig. 2—Comparison of growth trend in undergraduate student enrollment.

tools out of the hole without damaging the wellbore were discussed, including the use of downhole valves, snubbing and stripping, employing hydraulic workover units, and incorporating chemical isolation. Several technologies were then highlighted for getting back into the wellbore to complete the well, including the use of swellable packers, drill-in liners, performing a completion under pressure with a downhole deployment valve, and drilling with casing in a UBD mode. Several of these technologies were also highlighted in a poster session held later that day.

A range of technologies in the MPD/UBD tool box were discussed in the next session, with particular attention on new projects and technologies which have been developed since the last Asia Pacific MPD/UBD ATW a year ago in Kunming, China. Some of the new technologies reviewed included Grant

Prideco's Intellipipe wired-drillpipe technology for high-speed, high-volume data transmission from downhole to the surface; the integration of a surface blowout preventer into MPD/UBD operations; rate of penetration gains from the use of clear drilling fluids; and improved methods of drilling-data acquisition during MPD/UBD.

Elliott closed the workshop with a summarizing address and a survey of when the next MPD/UBD ATW should be held. The consensus was to delay the workshop, which is traditionally held annually, and instead hold the next MPD/UBD ATW in 18 months time, again in Southeast Asia. **JPT**

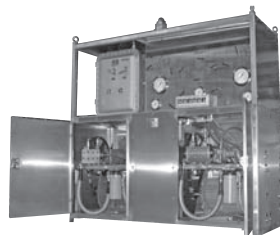
permanent job offers on the basis of their performance. In addition, if the internship is structured properly, the student can perform a project that can lead to substantial profits or increased efficiency for the company.

The heads of all the departments of petroleum engineering are working overtime to increase enrollment, find new faculty, improve curriculum, and turn out more of the graduate engineers that industry has been asking us to do for the past 5 years. Now it is time for the industry to do its part by continuing to support departments of petroleum engineering and continuing to hire both our graduates and our students looking for internships.

We have heard for most of this decade the cry of "The Great Crew Change" and the dire dilemma the oil and gas companies will be in during the next 5-10 years as many of their current engineers reach retirement age. The problem was caused by the lack of hiring in the 1980s and early 1990s. The question now is, "What will the oil and gas industry do this time?" Will the industry repeat the mistakes of the past or will it continue to hire our graduate engineers? We need to know soon. **JPT**

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