EDUCATING THE 22ND CENTURY OIL PATCH

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ABSTRACT

Life long learning doesn't stop with the high school or college diploma. In the high tech fast paced petroleum industry training is a must. Traditionally research organizations within operating, service and supply companies have been the primary source of this continuing education process. There are numerous outstanding alternatives for updating ones skills. The petroleum service, supply and education sectors have committed training resources to fill the gap left by operators. Enhancements to this education process acknowledge that individuals learn best by incorporating all senses - hearing, sight, sound, touch, and smell when ever possible. The use of computer and web-based training allows users to go at their own pace. **As** the aging workforce (currently 49+ years) leaves, more training will be demanded to supplement the lost experience.[1] [2] This paper will survey currently available petroleum sources of learning and by three examples project future directions of this vital sector of the industry.

INTRODUCTION

Three sources for training and educating the oil patch are investigated: Universities, Organized Conferences and Meetings, and Equipment Manufactures, Software and Service Supply Companies. Several examples of each source follow. A more extensive list with links can be found at the SWPSC web site (http://www.pe.ttu.edu). While the following is a short list, the author has first hand experienced with of the organizations discussed and recommends their education and training.

UNIVERSITY

The number of US universities offering a Bachelor of Science in Petroleum Engineering has dropped from 28 to 18 (faculty from 223 to 102) in the last 12 years. During this time frame undergraduate enrollments have varied from 1843 to 1307. Fall 2002 enrollment was 1624 students (http://www.pe.ttu.edu/SPE_Schools_Book/default.html). During academic year 2001-2002 (September 2001 – August 2002) 298 BS degrees were granted by these 18 universities; at the same time, the number of non US universities offering petroleum engineering related degrees and their enrollments have increased.

Texas Tech University (http://www.pe.ttu.edu/), **Texas** University, **Texas A&M** University, and **Oklahoma** University, to name a few, have started Distance Education (http://aln.coe.ttu.edd) programs.[3] With advances in technology, the face of education is changing. The classroom can now extend beyond its physical boundaries, presenting a whole new world of education for students. The College of Engineering at Texas Tech University is taking the initiative in bringing these changes to our students with the highest possible quality, and is dedicated to being a leader in distance learning. Using the latest multi-media technologies, combined with the Internet, the College of Engineering Distance Learning Program brings the classroom to you. We provide quality educational opportunities to students with a variety of needs and backgrounds. Rather than relocating to a university or college campus, our students can now participate in their virtual classrooms from a more convenient location and still receive high quality, accredited education. These courses are primarily master degree courses. It is now possible to obtain a MS degree from the above mention campus almost entirely by distance. The four universities have agreed to accept course work from each other towards their respective MS degree plans. These programs, while extra expense is involve, tend to fill a continuing education need. The courses involve a combination of CD ROM and or VHS tape recorded lectures, remote classroom facilities, electronic mail, and snail mail. Cost for a three hour graduate course generally cost $1500-4500 distance education fee in addition to the university's normal in residence graduate course fees.

In spite of the "Distance Education" MS offerijngs, during academic year 2001-2002, 99+% of the 153 MS granted by 15 US universities were in resident and to non US citizens.

During academic year 2001-2002, 43 PhD were granted by 13 US universities. All Doctorial degrees were to in resident students, 99+% of which were non US citizens.

The University of Texas at Austin has offered a Continuing & Extended Education, **PETEX**, (www.utexas.edu/cee/petex) since 1944. This offer includes reference materials on drilling, offshore, pipelines, production, well service and

workover. Distance learning correspondence courses in Drilling and Petroleum Fundamentals aimed at field personnel are offered. There is an excellent collection of audiovisuals available on drilling, offshore and production operations. One week short courses with hands on skills training are offered at regularly scheduled basis and on request on site locations starting at $1000 per student. Computer module training courses are also available in Houston.

CONFERENCE. PRE-CONFERENCE SCHOOLS

There are many opportunities for continuing education as part of conferences. The **SWPSC** (Southwestern Petroleum Short Course, Sponsored by the Petroleum Engineering Department at Texas Tech and the Permian Basin Oil Industry), which meets on a Wednesday and Thursday in April, has progressed from one pre-conference school in the early 1990's to four schools in *2003*. Attendance at these schools has increase to 300 participants. While initial school offerings were two day (Monday & Tuesday) schools, it has become more popular for one day (Tuesday) schools. The cost for these schools, which are orientated to both field and engineering operating personnel, is *$250* (which includes the $140 conference and proceedings). The SWPSC offers its entire *50* years of proceeding papers on a searchable three CD-ROM data set. (http://pe.ttu.edu/swpsc/)

The **SPE** (Society of Petroleum Engineers) also offers schools in conjunction with its meetings. The Annual SPE meeting is three days (Monday, Tuesday, and Wednesday) in late September / early October gives school opportunities on Saturday and Sunday prior to the meeting. These offerings are either two day or one day schools. The bi-annual Production Operations Symposium (in March of odd number years, at Oklahoma City, Ok) and the bi-annual Permian Basin Reservoir (in March of even number years, in Midland, TX) also offer Saturday and Wednesday schools. The typical cost of a SPE school is *$350-$700.* The cliental for these classes are normally engineers and geoscientists. Additionally, SPE is a resource of books, software, periodicals, video courses and technical papers. (http://www.spe.org/)

The **AADE** (American Association of Drilling Engineers) holds a conference in early April of each year. This meeting features presentations and papers on emerging technologies, university research activities, environmental, real-time drilling, productivity optimization, drilling optimization, deepwater technologies, formation/wellbore stabilization, drilling fluids, case histories, and rigs. These meetings are attended by drilling engineers and managers.

IADC (International Association of Drilling Contractors) has fourteen meetings each year. Half of the one, two or three day meetings are in Texas. Conference topics include health/safety/environment, labor law, drilling, under balanced technology, offshore technology, drilling onshore, international tax, drilling engineering, world drilling, North Sea, Middle East drilling, deepwater drilling, and Gulf of Mexico drilling. Attendees are typically drilling engineers, geoscientists, environmental scientists, and managers.[4]

EQUIPMENT MANUFACTURES, SOFTWARE AND SERVICE SUPPLY COMPANIES

NATCOgroup, (http://www.natco-us.com/) in addition to selling surface treating and storage equipment, National Tank Company, has established training centers in TX (Midland and Houston) and LA (Harvey and New Iberia). These education centers are full service hands-on facilities, designed and built to provide the right equipment and learning environment so the student gets the most from the time spent. Most of the equipment is mobile and can be presented at your site. The API (American Petroleum Institute) has validated the NATCOgroup web-based as a solution for global learning. These training programs in fundamentals, process operations, stationary equipment, rotating & reciprocating equipment, safety skills, environmental, instrumentation, production operations, federally mandated training are for operating personnel. Costs for the two to five days schools are *$275* - $400.

Lufkin (http://luf!sin.com) oil field pumping units are adaptable to various production demands. An oilfield automation group provides pump-off controllers, fluid level products & analysis, consulting services and training programs. Continuing education courses are offered on rod pumping systems, submersible electric pumping systems, subsurface hydraulic pumping systems, computer analysis of rod pumped wells, pump-off control technology, principles of well weighing and pumping unit operation & maintenance. Costs for these three to five day schools are *$750* - $1100.

Theta Enterprises, Inc., artificial lift diagnostic software, offers three and five day courses $900-$1400. Engineers, production superintendents, foremen, field technicians, and service personnel involved with rod pumping systems are the target clients. Regularly scheduled and in-house schools are offered. (http://www.gotheta.com)

Echometer Company is a supplier of equipment, software, and training to analyze and optimize the performance of oil, gas and water wells. Its instruments and sensors are designed to be easily portable and used at the surface. Two & five day seminars on regularly scheduled basis are offered free of charge. (http://www.echometer.com/)

TRAINING ORGANIZATIONS

PetroSkills, LLC (www.petroskills.com) is a professional training organization formed by British Petroleum, Shell, Halliburton, Saudi Aramco, UNOCAL, OXY and Oil & Gas Consultants International, Inc. It offers 370 public sessions in 24 cities annually. The 79 instructors offer over 60 different courses in Geology, Geophysics, Petrophysics, Well Construction/Drilling, Reservoir Engineering, Production Operations, Production Facilities Design/Operation/Maintenance, Health/Safety/Environment, and Economics/Management. Most of the offerings are for 40 hour one week costing $1700-$2600 per attendee. A few courses are as short as one day and some are two weeks long.

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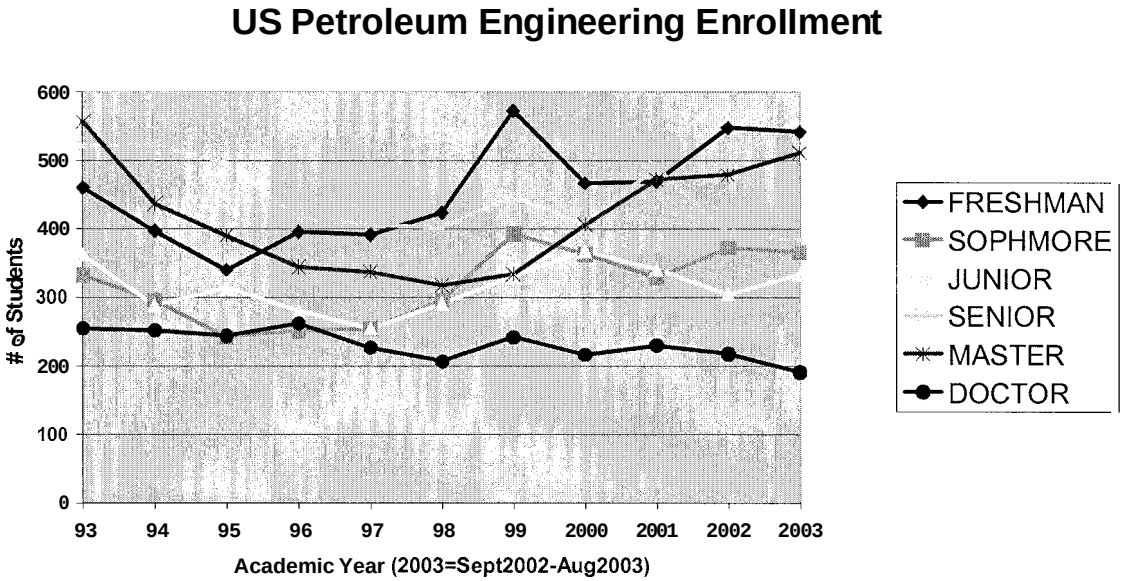

US PE Degrees Granted