

### Sources of Additional Information

General information about nuclear engineers is available from:

► American Nuclear Society, 555 North Kensington Ave., LaGrange Park, IL 60525. Internet: <http://www.ans.org>

(See introduction to the section on engineers for information on working conditions, training requirements, and other sources of additional information.)

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## Petroleum Engineers

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### Nature of the Work

Petroleum engineers search the world for reservoirs containing oil or natural gas. Once these are discovered, petroleum engineers work with geologists and other specialists to understand the geologic formation and properties of the rock containing the reservoir, determine the drilling methods to be used, and monitor drilling and production operations. They design equipment and processes to achieve the maximum profitable recovery of oil and gas. Petroleum engineers rely heavily on computer models to simulate



*Favorable job opportunities are expected for petroleum engineers.*

reservoir performance using different recovery techniques. They also use computer models for simulations of the effects of various drilling options.

Because only a small proportion of oil and gas in a reservoir will flow out under natural forces, petroleum engineers develop and use various enhanced recovery methods. These include injecting water, chemicals, gases, or steam into an oil reservoir to force out more of the oil, and computer-controlled drilling or fracturing to connect a larger area of a reservoir to a single well. Because even the best techniques in use today recover only a portion of the oil and gas in a reservoir, petroleum engineers research and develop technology and methods to increase recovery and lower the cost of drilling and production operations.

### Employment

Petroleum engineers held about 9,000 jobs in 2000, mostly in oil and gas extraction, petroleum refining, and engineering and architectural services. Employers include major oil companies and hundreds of smaller, independent oil exploration, production, and service companies. Engineering consulting firms and government agencies also employ many petroleum engineers.

Most petroleum engineers work where oil and gas are found. Large numbers are employed in Texas, Louisiana, Oklahoma, and California, including offshore sites. Many American petroleum engineers also work overseas in oil-producing countries.

### Job Outlook

Employment of petroleum engineers is expected to decline through 2010 because most of the potential petroleum-producing areas in the United States already have been explored. Even so, favorable opportunities are expected for petroleum engineers because the number of job openings is likely to exceed the relatively small number of graduates. All job openings should result from the need to replace petroleum engineers who transfer to other occupations or leave the labor force.

Also, petroleum engineers work around the world, and many foreign employers seek U.S.-trained petroleum engineers. In fact, the best employment opportunities may be in other countries.

### Earnings

Median annual earnings of petroleum engineers were \$78,910 in 2000. The middle 50 percent earned between \$60,610 and \$100,210. The lowest 10 percent earned less than \$48,120, and the highest 10 percent earned more than \$118,630.

According to a 2001 salary survey by the National Association of Colleges and Employers, bachelor's degree candidates in petroleum engineering received starting offers averaging \$53,878 year and master's degree candidates, on average, were offered \$58,500.

### Sources of Additional Information

For further information about petroleum engineers, contact:

► Society of Petroleum Engineers, P.O. Box 833836, Richardson, TX 75083-3836. Internet: <http://www.spe.org>

(See introduction to the section on engineers for information on working conditions, training requirements, and other sources of additional information.)