



AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

An International Geological Organization

Workforce Challenges Facing the Petroleum Industry

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Written testimony presented to the
U.S. Senate Committee on Energy and Natural Resources
November 6, 2007

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To the Chair and Members of the Committee:

I would like to thank the Chairman and this Committee for holding a hearing on the workforce challenges facing the domestic energy sector. It is a challenge. As President of the American Association of Petroleum Geologists (AAPG) I want to assure you that we are taking active steps to address it. **But U.S. national and economic security also demands federal action to ensure the availability of a future petroleum industry workforce.**

AAPG, an international geoscience organization, is the world's largest professional geological society representing over 30,000 members. The purpose of AAPG is to advance the science of geology, foster scientific research, promote technology and advance the well-being of its members. With members in 116 countries, more than two-thirds of whom work and reside in the United States, AAPG serves as a voice for the shared interests of petroleum geologists and geophysicists in our profession worldwide. Included among its members are numerous CEOs, managers, directors, independent/consulting geoscientists, federal and State regulators, educators, researchers and students.

AAPG strives to increase public awareness of the crucial role that geosciences, and particularly petroleum geology play in energy security and our society. As the National Petroleum Council (NPC) notes in its 2007 study, *Hard Truths: Facing the Hard Truths about Energy*, oil and gas demand will not abate anytime soon. Aggregating data from multiple oil and gas demand predictions, they report:

- Global oil demand in 2030 will be 103 to 138 million barrels per day, up from 76 million in 2000;
- Global natural gas demand in 2030 will be 152 to 225 trillion cubic feet per year (TCF), up from 94 TCF in 2000;
- U.S. oil demand in 2030 will be 22 to 30 million barrels per day, up from 19 million in 2000; and
- U.S. natural gas demand in 2030 will be 25 to 30 TCF, up from 21 TCF.

Where is the workforce that will ensure there is adequate supply to meet this demand in 2030? According to U.S. Department of Labor estimates, over one-half of the U.S. technical workforce will retire in the next fifteen years. The NPC 2007 study concurs, stating that **“Nearly half of the personnel in the U.S. energy industries will be eligible for retirement within the next ten years, and fewer people have entered the workforce over the past generation.”** The demographics of AAPG’s 30,000 members demonstrate the challenge: The median age of our members in 1991 was 41, in 2001 it was 48, and in 2006 it was 53.

And it isn’t just industry that is facing the challenge. AAPG’s membership includes many faculty members whose hair color is as gray as that of their industry colleagues, and there are fewer faculty prepared to teach the next generation of geoscientists and engineers. According to the American Geological Institute, the number of geosciences bachelor degrees has decreased from 7,180 in 1982 to 2,436 in 2005, a 66% decline. The number of geosciences master degrees decreased from 2,047 in 1987 to 1,074 in 2005, a 48% decline. And the number of geosciences doctoral degrees reached a peak of 1,058 in 1989 decreasing to 457 in 2005, a 57% decline.

The good news in these bleak statistics is that we have seen an uptick in petroleum geosciences and engineering enrollments in the past year. This suggests that students have become aware of the career prospects in the petroleum industry, and are interested in pursuing related geosciences and engineering studies. We’re getting the students’ attention. **The question is whether we, as a nation, can provide the opportunities and infrastructure needed to turn this uptick into a sustained reversal.**

The federal government needs to play an active role in reversing the current petroleum workforce trends. Programs that encourage science and math education in elementary and secondary schools provide a solid foundation for students entering university. At the university level much of the federal support for science comes in the form of competitive research funding. This funding provides direct benefit to society by enhancing our understanding of the natural world and developing new technologies. The second, no less direct, benefit is that these funds provide research support for faculty, graduate research opportunities, and the means to develop and maintain laboratories and instruments to conduct this research.

The elimination of the Department of Energy’s oil and gas research program has significantly impaired the nation’s ability to train a future petroleum workforce. These funds had historically

provided this support to geoscience and petroleum engineering programs at U.S. universities. **The funds are now gone, weakening the departments at the same time as we're asking them to attract and train talent for the next generation.**

The America COMPETES Act of 2007 is a very good start. But it does not go far enough to ensure that we can successfully reverse current workforce trends.

AAPG recognizes that the solution to the nation's petroleum workforce challenge requires both government and private involvement. To that end, I would like to share with you what AAPG is doing to promote interest in geosciences, and particularly petroleum geology, and its positive impact on the United States.

Through our local affiliated societies we strongly encourage elementary and secondary school students to take classes in science and math. In October 2007 many of our societies participated in the Earth Science Week program of the American Geological Institute. The West Texas Geological Society, my local society, sent volunteers into 50 local schools to talk to fourth to sixth grade students about the geosciences. In addition, AAPG's regional sections train middle school teachers in geology, with applications to petroleum geology, through our "Rocks in your Head" seminar.

The AAPG Foundation's Grants-in-Aid program supports graduate students in earth sciences whose research has application to the search for and development of petroleum and energy mineral resources and to related environmental geology issues. These awards are competitive, and in 2006 AAPG celebrated the 50th anniversary of this program.

We also support the Visiting Geoscientists Program where professional geoscientists visit campuses, give lectures or seminars, and meet with students. These one-on-one interactions give students an opportunity to discuss career options and learn from someone who is professionally active in the field.

AAPG encourages the development of student chapters at schools around the world. There are currently 160 student chapters worldwide, 80 in the United States and 80 internationally. We regularly conduct student expos for students to meet with the oil industry to receive career information. And just this year AAPG launched a contest for the student chapters that provides

a real-world experience of working as a team to predict the petroleum exploration potential of a particular geologic basin. The contest was well received, and we're expanding it this year.

In addition to our educational activities in schools, colleges, and universities, AAPG has a long history of providing its members with continuing education programs. These programs range from day-long workshops to week-long short courses and field trips.

We have recently moved to significantly increase this activity through the Petroleum Technology Transfer Council (PTTC). The program was developed by oil and gas producers with the support of the Department of Energy and designed to provide continuing education workshops and technology transfer to oil and gas producers on engineering, geology, geophysics, and oil and gas operations and technologies. PTTC links universities, State geological surveys and bureaus, local oil and gas producers and others involved in the industry. On September 27, 2007 the PTTC board approved a proposal by AAPG to assume leadership of PTTC. We will continue to work closely with the organizations that have been involved in the past, including the Department of Energy, and are inviting other associations to join us.

Our current workforce challenge did not emerge overnight, and neither will the solution. **But it is essential to find a solution if the United States is to develop its oil and gas resources in a beneficial and environmentally responsible way.** Mr. Chairman, I want to thank you for holding this hearing and encourage you to hold additional hearings to further highlight the national workforce challenge we face in the petroleum and other industries. The federal government must play an active role to solve the problem. But by working cooperatively, I believe we can. AAPG stands ready to assist.

Thank you for the opportunity to submit this testimony to the Committee.

If you would like additional information for the record, please contact me at AAPG's Geoscience and Energy Office at 703-575-8293, fax 703-379-7563, or 4214 King Street, Alexandria, VA 22302.