



THE PETROLEUM

PROS

THE INTERSTATE OIL AND GAS COMPACT COMMISSION

10¢



THE COUNTRY IS COUNTING ON US

I HAVE A PLAN!



**WE HAVE
A PLAN!**

Contents

FOREWORD

INTRODUCTION

*THE TASK FORCE
APPROACH*

THE SOLUTION

FEDERAL TEMPLATE

STATE TEMPLATE

INDUSTRY TEMPLATE

IOGCC COMMENT

RECOMMENDATIONS FROM THE 2002
REPORT HAVE...

**BEGUN
TO IMPACT
THE
FUTURE**

BLAAM

Foreword

PETROLEUM PROFESSIONALS BLUE RIBBON TASK FORCE

Final Report and Recommendations

Two years ago, industry, professional organization and government questioned whether there were adequate numbers of petroleum professionals (geologists, engineers and geophysicists) for the U.S. domestic industry. In December 2001, I assembled a Petroleum Professionals Blue Ribbon Task Force to address the issue, charging them with developing proposals both proactive and practical.

In June 2002, I issued their preliminary recommendations at the Interstate Oil and Gas Compact Commission (IOGCC) Midyear Meeting, and reported on our successful action addressing those recommendations in December 2002 at the IOGCC Annual Meeting. In addressing those recommendations, I held meetings with industry leaders and the IOGCC surveyed industry actions. I wrote many letters of support for federal research spending, which in turn supports graduate students in these key petroleum professional degree programs. Those earlier recommendations have begun to have an impact. An informal survey and

anecdotal evidence from industry indicate the number of students enrolling in these areas of study have begun to climb. To continue this momentum, this report contains final recommendations to that can be taken on by state and federal government as well as industry, to ensure our domestic energy industry continues to be strong.

Governor John Hoeven, 2003 Chairman,
Interstate Oil and Gas
Compact Commission

THIS IS OUR
CHANCE



Introduction

Before addressing the issue of how to assure the future supply of petroleum professions, it is important to put the dilemma into context.

The oil shocks of the 1970's and 1980's and the subsequent collapse in world energy prices from 1984 to 1986 resulted in a major retrenchment of the energy industry. The domestic industry alone lost more than a half million jobs in the mid-1980's. Subsequent to the price collapse that culminated in 1986, the industry has experienced substantial volatility in energy prices that has posed special challenges to maintaining a stable workforce. The price volatility continues today.

Investment in new infrastructure, refineries and other critical facilities for delivery of energy to the global economy has dropped significantly since the 1980's. This dramatic slowdown in investment has caused a large reduction in the excess delivery capacity that the industry traditionally had maintained. This loss of excess capacity is to blame, in part, for the recent spikes in prices that have occurred as the industry struggles to meet market demand in the growing global economy.

In addition, proprietary research and development (R&D) by the major operating companies were reduced dramatically as part of the austerity mindset that major operators were forced to adopt. Operators shifted from programs of highly competitive, proprietary R&D to a reliance on outside technology developed by service companies and universities. However, the funding cuts imposed by the industry during this period also affected the programs at universities and service companies and caused many of these programs to fall into ill health as well. In the same period, government-funded energy R&D also came under pressure, and dramatic reductions in federal spending made an already serious problem even worse. Federal spending continues to decline from a low level to ever lower levels. Dramatic changes in employment demographics of the energy industry then emerged. The industry hired aggressively from 1974 to 1983, and built up large staffs. Many of these people lost their jobs in the mid-1980's. In following years, those who stayed in the industry have witnessed a seemingly unending process of layoffs, reorganizations, mergers and consolidation. The "survivors," who are a large part of the current employment base of the industry, are now

TIMES ARE CHANGING IN THE EMPLOYEE AGE BRACKETS

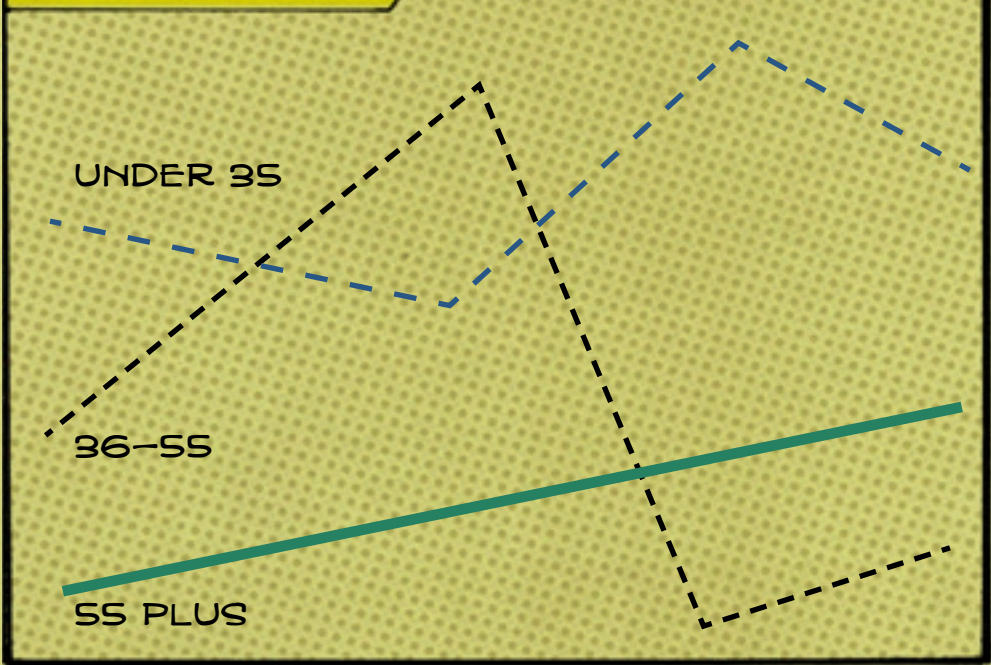


Fig. 1

	1977	1987	1997	2002
35 and Under	28.0%	45.5%	15.3%	19.4%
36-55	49.8%	31.2%	56.9%	52.8%
over 55	22.1%	23.3%	27.8%	27.7%

approaching retirement, as evidenced by current industry demographics (Figure 1).

At present, the average age of employees with the major operators and service companies is in the range of 46 to 49 years old. With the average retirement age for the industry being 55 years, it is obvious that the industry faces a crisis in the next 7 to 10 years as more than half of the employee base leaves the work force.

At the same time, a reduction in global spending by the industry, coupled with many mergers, resulted in significant reductions in hiring of geoscientists, engineers, field personnel and other technical and skilled workers.

The impact of this change in hiring practices is two-fold. First, the decline in hiring prevented the industry from addressing the demographic problem by filling in the tail of the age curve in Figure 1. Second, the operators and service companies diminished their recruiting efforts at universities and reduced funding for R&D activities, which resulted in dramatic declines in the number of domestic students preparing to enter the oil and gas industry.

These declines in undergraduate and graduate enrollments, as evidenced by data from the geosciences and petroleum engineering disciplines (Figure 2), have created a progressive weakening in the

health and viability of major educational programs that are critical to the future of the industry, and, therefore, to the energy stability and security of the United States and global economies.

The decline in enrollment levels also has been exacerbated by the fact that experts working in the industry frequently advise their children not to follow in their footsteps because they perceive that the downward spiral will continue.

Coinciding with these difficult times in the energy industry were sweeping changes in the global economy. The information age and the internet revolution, which began in the mid to late 1980's, were fueled, ironically, by the same low energy prices that created the crisis in the petroleum industry. Fortunately, the energy industry benefited from the effects of the information age. Major improvements in computer hardware, software, and operating environments, coupled with technological advances including high-quality 3D seismic data and horizontal drilling, allowed the industry to consolidate its manpower requirements while significantly increasing efficiency.

It is estimated that this set of unique factors has allowed the energy industry to reduce technical manpower requirements at a rate that has more than offset the lack of recruiting and hiring over the last 15 years. However, the efficiency improvements in the energy sector created

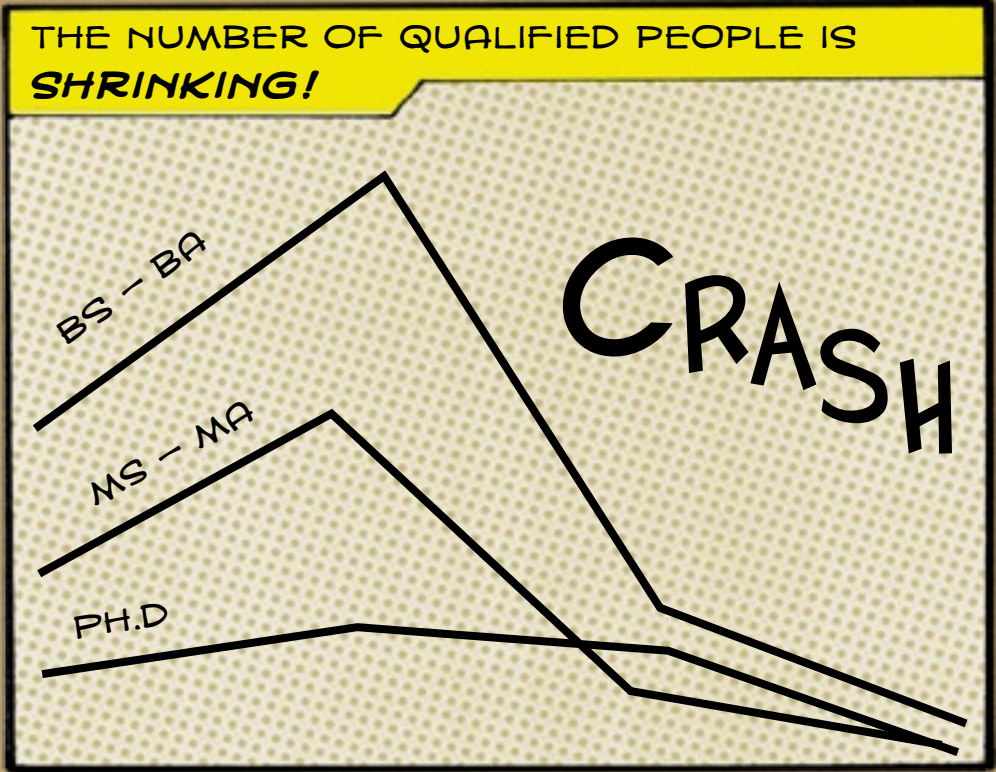


Fig. 2

	1977	1983	1997	2002
BS - BA	18,225	28,727	10,007	2,842
MS - MA	3,457	5,007	2,293	959
Ph.D	912	1,150	1,243	314

by the growth of the information age are not sustainable. Over time, the rate of change has begun to slow, and current data indicate that future improvements in efficiency from this technical revolution will not be sufficient to offset the impending loss of senior expertise that will occur over the next 7-10 years.

While time these major changes were occurring in the energy industry, dramatic shifts were taking place in domestic and global environmental policy and in the public perception of the energy industry. Major industry accidents such as the Amoco Cadiz and the Exxon Valdez, and the subsequent environmental and legal fallout, caused a severe deterioration in the public perception of the petroleum industry.

A coordinated industry effort involving industry, government agencies and educational institutions is needed to reach out and educate the public about the importance of oil and gas to the national and global economy. Unfortunately, the lack of such a cooperative effort in recent years has allowed negative perceptions of the U.S. oil and gas industry to dominate public opinion.

The shifts in domestic environmental policy coupled with the domestic access challenges faced by industry also have resulted in a major change in the investment profile for the domestic

industry. The major and super-major operating companies that once dominated the domestic industry have shifted their investment emphasis to other regions of the world that hold large reserves and present less environmental and legal risk.

Mid-size majors and independent operators have rapidly filled the void left by the majors and super-majors, and these smaller companies now represent the majority of the investment made in the domestic petroleum business. This should not be dismissed or taken lightly, because these smaller companies do not have the same level of recruiting, hiring and R&D resources that the major and super-major operators historically have provided.

Another factor that affects the quality of energy solutions provided to the U.S. economy is the relationship between the key players in our energy future. The United States has so far lacked a cooperative, directed effort involving government, industry and academia to address key energy issues confronting the nation.

**THE
ENERGY
INDUSTRY
REQUIRES
MORE
PROFESSIONALS
THAN
ARE
AVAILABLE**

The Task Force Approach



While the Petroleum Professionals Blue Ribbon Task Force's charge is the manpower piece of the puzzle, the other pieces must be mentioned, because they are critical to the health of the domestic industry and to the stability of the domestic economy. Clearly, research can affect manpower because a proper long-term funding stream for natural gas and oil research will mitigate some of the cyclical nature of domestic energy employment by offering alternatives for employment of petroleum professionals.

This report will address the entire scope of natural gas and oil employment needs, and will not be confined to research and development specialists. The numbers of operational employees and trade people required in the future for the energy industry exceed the number currently available, although the early work of the Task Force is beginning to reverse this trend. The success of the domestic energy industry will depend on the ability of operating and service companies to attract significant numbers of well-educated and environmentally-responsible skilled laborers who can construct and maintain the energy infrastructure that is needed to deliver low-cost, safe energy to our society in the new millennium.



WE HAVE
THE
ANSWER


The Solution



The Task Force has concluded that the solution to the current challenges with petroleum professionals requires a national effort focused on three areas, including:

- ▶ State Government for education of the public and state stakeholders
- ▶ Federal Government for E&P research and national outreach
- ▶ Industry for “on the ground” focus and involvement

The Task Force developed individual “templates” outlining the actions recommended for each of these three areas. This national effort will require cooperation and collaboration on an unprecedented scale involving all key stakeholders in the nation’s energy future. They include the federal government, state governments, academia, the operating and service companies and non-governmental organizations (NGO’s) that have an interest in securing this future.




THIS SCHOOL
IS
EMPTY

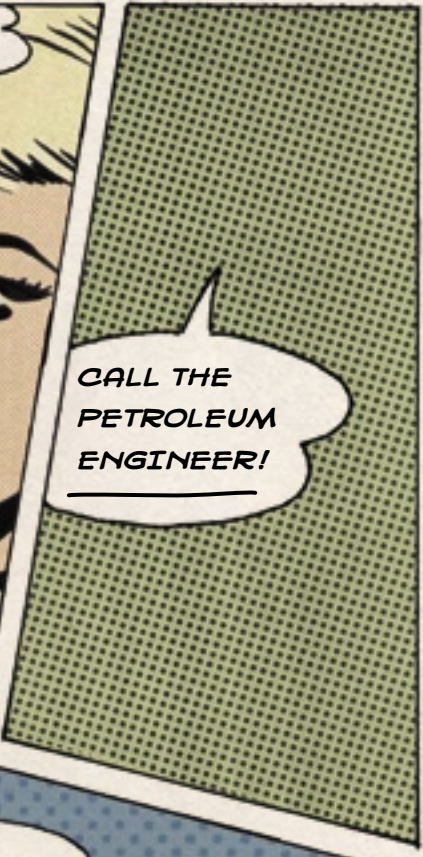
MEANWHILE BACK AT THE
IOGCC H.Q....




ALL WE
HAVE
TO DO
IS ALERT
THE
HEADS
OF EVERY
STATE
THEY
WILL
KNOW
WHAT
TO DO



WHAT HAPPEN TO ALL
OF THE GEOLOGISTS &
GEOPHYSICISTS...



CALL THE
PETROLEUM
ENGINEER!



FLASHBACK:
IN THE 80'S MANY PEOPLE
LOST THEIR JOBS.. AND
NEVER CAME BACK TO
THE INDUSTRY.

I'M GONNA
NEED
SOME
HELP...

A TASK FORCE HAS
BEEN DEVELOPED TO
LOOK AT THE DECREAS-
ING NUMBER OF PETRO-
LEUM
INDUSTRY GRADUATES.

IN THE NEXT 7 TO 10
YEARS MORE THAN
HALF OF THE CURRENT
EMPLOYEE BASE
WILL RETIRE...

HELP

GEOPHYSICISTS WERE DOOMED

BOOM

THE TASK FORCE DEVELOPED *TEMPLATES*



THE FEDERAL TEMPLATE...



Federal Template

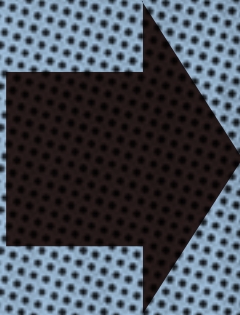


The federal government is the largest resource owner and chief regulator in the United States, and therefore must be actively involved in the solution to this problem. The government must commit its infrastructure and financial resources to this challenge to assure that a long-term focus is brought to bear on the problem.

This long-term focus is essential to success because the industry alone is not capable of providing this convergence because of the realities of the modern marketplace. Government must work closely with industry and state governments to provide a regulatory framework that allows access to major reserves and encourages development while protecting the environment.

The following represents a summary of recommended steps appropriate departments of the federal government (e.g. Energy, Labor or Education) may take to address the labor shortage problem facing the domestic oil and natural gas industry. These steps can be taken over the course of time to help the federal government assist the states in addressing this issue.

STEPS FOR FEDERAL GOVERNMENT



1 Work with the IOGCC and other federal departments in a coordinated effort to solve this problem

2 Make federal funding available for pilot programs to solve the manpower shortages being faced by the oil and natural gas industry

3

▶ Inventory and advise the IOGCC and the states of solicited grant funding for this type of project

4

▶ Head of the relevant Division within the federal government department should designate a specific staff member to act as liaison with the IOGCC on this issue.

5

▶ Division head should alert department field offices as to the need for solving this problem



6 Hold federal department staff accountable for making progress on this issue

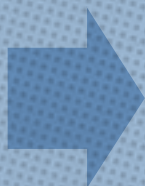
7 Promote awareness to Education Associations

8

▶ Work to amend the Tax Code to support these efforts through education tax credits for those involved in oil field training programs

9

▶ Create internships within federal departments for those in petroleum engineering and geosciences graduate and undergraduate programs



10 Alert the IOGCC and the states of similar projects, to avoid duplication of services

11 Participate in a public relations campaign on importance of the oil and natural gas industry

THE STATE TEMPLATE...



State Template



State governments and agencies have critical roles in managing regional energy resources, providing local and regional regulatory structures and in providing funding for major universities, secondary education and vocational programs that will train and induct the petroleum professionals of the future.

Academia must continue to provide the educational and R&D infrastructure and environment that is required to train the large number of geoscientists, engineers and other professionals that are critical to the success of the industry. This role also must include providing continuity between undergraduate and graduate programs, and providing outreach courses for students who will not work in the industry but must receive a basic, balanced understanding of how essential energy is to the health and prosperity of our society.

The following represents a summary of recommended steps a State may take to address the labor shortage problem soon facing the oil and natural gas industry. These steps can be taken over the course of time to help your state assist in addressing this issue in advance.

STEPS FOR STATE GOVERNMENT

1 Governor designate a specific staff or cabinet member to staff the issue

2

► Governor may take steps to:

Use bully-pulpit to alert public, trade organizations etc. of issue

► Organize state/industry public relations campaign on importance of the industry

3

4

► Educate educators and students of the opportunities in the industry



5

Educate the Executive on the need for companies to retain employees, and build human resource base

6

Promote linkages to other associations e.g. trucking, electric utilities etc

7

▶ Educate Governors and advance issue through member organizations e.g. WGA

8
Reach out to U.S. Government officials

AS THE CITY SLEEPS THE IOGCC...



MAKES THE CALL.

THE INDUSTRY TEMPLATE...



Industry Template



Industry must be willing to engage fully in this effort, commit the funds necessary to match government funding, and work with the other stakeholders to develop and deliver a long-range plan. In particular, industry must provide resources in the form of data, technology and training/ internship opportunities on a larger scale that will allow more students to be trained compared to the last 15 years.

The following represents a summary of steps that oil and natural gas executives may consider in response to the looming labor shortage facing the industry in the coming decade. The following are examples of steps being taken by industry members and organizations. These steps are designed to reach the public, prospective employees, and current employees to expand industry labor pool.

STEPS FOR INDUSTRY

1 Executives should alert human resource professionals of the need for sustained effort to address the problem

2 Seek support and attention of state and federal officials.

3 Dedicate financial resources to:

- ▶ Support state/industry public relations program
- ▶ Support state industry public education program (of teachers and students)
- ▶ Support specific scolorship, intern and programs for employees

4 →

Executives should assign specific responsibility for this issue to senior management

5 →

Organize within the state, an industry team to assist in formulating long-term solutions

6 →

Dedicate scholarship program to degrees specifically sought by the company

7 Create an annual industry science fair and field trips for the public and students

8 Provide summer jobs

9 Job Fairs at high schools and colleges

10 "Adopt" a student and provide support (monetary and mentoring)

▼
Create internship program and seek internship relationship with the state university system, in states in which you do business

11



▼
Adopt a school program, providing on-going training and intern opportunities for high school students

12

13
Scholarships and grant programs for employees who wish to extend their education

14
Partner with specific organizations

IOGCC

IOGCC Statement



The IOGCC has established and will maintain an electronic career resource center at the IOGCC Web site include postings of mentoring opportunities, internship programs, academic scholarships, fellowships and other support available for those interested in a career as a petroleum professional. The IOGCC solicits additional information for this site in order to make it continuously more useful to prospective students and to student counselors. The IOGCC will link the career resource center electronically to professional and industry associations (including state associations), university systems with related resources and programs, and appropriate industry references. The IOGCC will also make the page known to high school counselors; undergraduate advisors at the top tier petroleum education universities, and others that would find the career resources to be useful.

The Governors of the IOGCC will continue to lead this effort, with the cooperation of a broad range of interested parties. The Governors of the IOGCC will work to keep these issue ifront and center during national energy policy discussions, as the nation's manpower needs are vital to providing secure domestic energy.



The Interstate Oil and Gas Compact Commission (IOGCC) is the only organization of its kind. It represents the governors of states that produce more than 99 percent of the domestic onshore oil and natural gas. The organization also has long-standing relationships with state regulatory personnel, creating a natural pathway for the transfer of information, technology and improvement in regulatory streamlining and other matters that apply to the widely varying conditions and circumstances in the states.

The history of the organization, which is headquartered in Oklahoma City, also includes a 70-year tradition of serving as a forum where state, federal and industry officials can meet to develop sensible solutions to common problems. The organization's ability to find common ground is unmatched by any other entity dealing with petroleum issues.

The capabilities of the organization, with its national and international ties, are quite broad. Special skills, however, include the IOGCC's ability to develop regulatory guidance documents and model legislation, to conduct studies related to resources, production, research, development and emerging environmental concerns and to provide training and education for industry, the regulatory community, key leaders and the general public.

The IOGCC also enjoys an excellent reputation in Congress, thanks again to the long history of its involvement in providing information and advice to the country's top decision makers. The organization also has forged successful relationships with a number of federal agencies.

Member States

Alabama (1945)
Alaska (1957)
Arizona (1955)
Arkansas (1941)
California (1974)
Colorado (1935)
Florida (1945)
Illinois (1935)
Indiana (1947)
Kansas (1935)
Kentucky (1942)
Louisiana (1941)
Maryland (1959)
Michigan (1939)
Mississippi (1948)
Montana (1945)
Nebraska (1953)
Nevada (1955)
New Mexico (1935)
New York (1941)
North Dakota (1953)
Ohio (1943)
Oklahoma (1935)
Pennsylvania (1941)
South Dakota (1955)
Texas (1935)
Utah (1957)
Virginia (1982)
West Virginia (1945)
Wyoming (1955)

Associate States

Georgia (1946)
Idaho (1960)
Missouri (1995)
North Carolina (1971)
Oregon (1954)
South Carolina (1972)
Washington (1967)

International Affiliates

Alberta (1996)
Egypt (1999)
Newfoundland and
Labrador (1997)
Nova Scotia (1997)
Venezuela (1997)

