

AMERICAN ENGINEERTM

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AEA Trade Suit

AEA has lost the suit against the federal government over the provisions of the U.S./Canadian Free Trade Agreement. The judge in the Federal District Court in Washington, DC has ruled they did not have jurisdiction in the case. The suit, brought by AEA and the National Council for Industrial Defense (NCID), was ruled on in June of this year. The suit alleged a breach of an individual's constitutional rights exists by virtue of the Binational Dispute Settlement Provisions of the Agreement.

The suit alleged "The unlawful feature of the Free Trade Agreements is that it unconstitutionally surrenders the sovereignty of the United States by giving panels comprised of foreign lawyers engaged in private practice the power to reverse decisions of an American court that rules in favor of an American union or company in an international trade case."

The Binational Dispute Settlement Panels in the U.S./Canadian Agreement consisted of an odd number of members. The balance would shift from one country to the other in succeeding cases. The U.S. panel members are drawn from a list maintained by the United States Trade Representative (USTR) and are appointed by the Department of Commerce for each dispute. A review of the list reveals "a large number of those currently on file are either not

U.S. citizens or are citizens who represent foreign corporate or trade interests."

Congress included a provision providing for the possibility that a court might determine the binational review system was unconstitutional. The provision reads as follows "...in such event, the President is authorized on behalf of the United States to accept, as a whole the decision of a binational panel or extraordinary challenges committee remanding the determination to the administering authority or the Commission within the period specified by the panel or committee....and no court of the United States shall have the power or jurisdiction to review such action."

President Reagan signed Executive Order 12662 which states that should any court rule the process unconstitutional, he accepts, as a whole, all decisions of the binational panel. An appeal is unlikely as it would have to be filed in the Court of Appeals for the District of Columbia which would subject the appeal to Executive Order 12662.

The North American Free Trade Agreement (NAFTA) contains similar provisions except with NAFTA there will be three nations involved.

Bill E. Reed, AEA President

Editorial:

Resolution Time

This is the time to wish each of you a Happy Holiday Season and a Happy New Year. It is also a time to think about the New Year of 1994 and issues of utmost concern—it's Resolution time. A few of the professional issues that I intend to address for 1994 are: Unpaid Overtime, Consequences of a U.S. Manpower Surplus, A 300,000 Member AEA.

My first New Year's Resolution is to begin our action against Unpaid Overtime. Management in some companies are overly abusive with 60 hours of work required for 40 hours of pay. I shall, through AEA, provide the visibility and initial effort to combat unpaid OT and I hope you will join me in this effort.

We can begin by keeping a daily log of ALL of our working hours. Record all work hours (st & ot) and days of the week, whether mandatory, suggested or inferred and by whom, paid, unpaid and project identification. List all stress related issues, doctors visits, medication, heart burn etc. Keep this record for all days both good and bad. Develop a form to facilitate your effort. Perhaps we can develop or locate some software for the rest of our AEA members to utilize. Don't keep this a secret. Share this with your associates and the entire engineering community. Let the engineering community know that 1994 is a New Year and AEA will be the focal point for this activity.

My second Resolution deals with the "Ramifications or Consequences of a Manpower Surplus." I have thought of this often as part

of the whole picture or system in the U.S. economy. Does the U.S. government strive for a manpower surplus, is it contrived or is it just a normal occurrence? In any case, I believe, the consequences are detrimental to the general public, our members and every individual seeking an opportunity to be productive. I have a list of problems that are spawned by this condition. At the top of the list is—a manpower surplus produces and protects poor managers who, in turn, produce more problems. I resolve to address this issue in 1994 and I invite you to write and share your thoughts with me and our readers. What do you believe are some of the consequences of a Manpower Surplus?

My third Resolution, to be carried out concurrently with the first two, is to build the American Engineering Association into a 300,000 member professional association with the political clout to influence Washington. It will take a lot of work, contacts, networking, visibility, advertising, funding and help. This is a perfect time to begin a concerted effort by all members of the engineering community to participate in every possible way to bring members of all engineering disciplines together in AEA. Your comments and participation are invited.

Millions of Americans can benefit from our efforts. It is perfectly conceivable that the AEA can grow to 300,000 members. We will make this happen only when we try to make this happen.

Best Wishes and Happy New Year

Richard F. Tax, Vice-President, AEA

Editor's Column

ILLUSORY JOB ADS

The March '93 issue of AE carried an example of what I called an "illusory job ad." It was an ad that purported to offer a job to the most qualified applicant. However, it was so detailed that it was really a biography of the applicant that the firm intended to hire in the first place. Also, it offered such a low salary that no one other than the intended applicant (and an unemployed engineer) would even bother to apply. This smacks of immigrant recruiting. Besides that, the employer remained unidentified; the ad listed only a state employment service. Here's another such ad from the same reputable trade paper. In addition to the above characteristics, it is printed (in the original) in type that is about 1/32 inch high, so that aging eyes would have great difficulty in reading it at all. If you have patience, count the words, and tell me how many there are.

JUNIOR DESIGN ENGINEER to develop microcontroller based prototype electronic control systems. Minimum education requirements: 8 years of grade school and 4 years of high school. B.S. degree in Electrical/Electronics Engineering. M.S. degree in Electrical Engineering with thesis in the area of Control System design. Other specific requirements: The following requirements can be concurrent with a Master's Degree. Proven research skills in the area of control system design for engineering & scientific applications. Candidate must prove that he has developed or is capable of developing control systems on his own. Design of analog/digital circuits under INTEL 8051 series microcontroller. Strong software design (in real-time), skills using Assembly (for the INTEL 8051 series), C, C++ & FORTRAN languages. Capacity to develop hardware/software for systems incorporation. Sensors, Stepper motors, volatile/non-volatile memory, dot matrix displays and keypads; Familiarity with real-time software development tools such as Cross compilers (Archimedes C), Emulators (Nohau/Metalink) & Simulators; Knowledge/course work in Math model analysis, Stabilizer design, Control system design and digital simulation of linear/non-linear systems; Some familiarity with hardware assembly of prototypes required; Familiarity with schematic preparation (using SCHEMA), printed circuit board design (using AUTOTRAX), and mechanical design (using AUTOCAD); Excellent technical writing skills a must; familiarity with desk top publishing software a plus; excellent computing skills on MSDOS & UNIX based computer systems a must. Work schedule is from 8:00 a.m. to 5:00 p.m. Monday through Friday. The rate of pay is \$19.50/hour and the total hours per week 40 (minimum). Must have proof of legal authority to work permanently in the U.S. Please send 2 copies of resume (indicating reference number) to Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, IL 60605, Attention S. Lindsey, Reference # V-IL 10746-L. No Phone calls. An employer paid ad.

The ad allegedly calls for a "Junior Design Engineer," but the qualifications are so extensive that they describe a control systems expert with a vast background in many disciplines. The salary of \$19.50/hour amounts to about \$41K/year, which is generous for a "junior design engineer," but is inadequate to hire the person described in the ad. I mailed a letter to the Illinois Department of Employment Security, pointing all this out to them, and recommending that they halt all recruiting until they've had an opportunity to have this ad reviewed by a reputable engineering society, which can judge if the ad is a bona fide job offer or a piece of duplicity. By the time you read this, it will be too late to comment on this ad. However, you might wish to write the Illinois Employment Security Dept. and suggest that they refrain from placing all such ads in the future. If you find more of the same, mail me a copy.

YOUNG SCIENTISTS NETWORK

The July issue of AE contained a letter from a young physicist named Dr. Gene Nelson to his Representative in the House. It told how the stories of the shortage of scientists were myths. One such myth is the article by UCSD Chancellor Richard C. Atkinson, "Supply and Demand for Scientists and Engineers: A National Crisis in the Making" in *Science* magazine 4/27/90. We call such outcries Engineering Shortage Propaganda (ESP), whether they refer to scientists or engineers. Persons issuing such reports are those who benefit from the misled high school population that rushes to register in technology colleges.

Four years later (perhaps eight years for a PhD in physics) the college graduate learns the truth about the job market for technically educated persons like himself. The problem is that this technological dupe has lost several years of his life and the high tuition cost for his education. Another problem is that the ear of Congress is more easily accessed by the education industry than by the ranks of employees whom this industry has thrust into the job market.

Dr. Nelson has made an admirable effort to reverse this trend by being a charter member of the Young Scientists Network (YSN). This network shares job leads and conducts a letter-writing campaign to disabuse Congress of the lies perpetrated by the education industry and its offshoots (like National Science Foundation). The article, "Young Scientists Network Provides Forum for Electronic Activism" in the May '93 issue of *Physics Today* describes other activities of YSN, including circulating an electronic newsletter. If any reader can give me an address for YSN, I'll publish it in a future issue of AE. I think AEA and YSN have much in common; we both might benefit from a collaboration.

EVEN DR. DAVID SAYS SO

Dr. Edward David (former White House science adviser, Bell Labs researcher and president of EXXON, who is now an independent consultant) wrote an article in the June '93 issue of *ASEE PRISM*, entitled "A Wake-Up Call for U.S. R&D." It contained some interesting statements, including one that there will be an increasing oversupply of scientists and engineers in the U.S., resulting in the downsizing of academic departments. This is despite projections some years ago of imminent shortages. He mentioned that the number of unemployed engineers and scientists is increasing, and downsizing and layoffs are likely to continue. Even production of computer software will move overseas. Low-cost software factories are blossoming in India. However Dr. David notes that an education in technology "will be increasingly valued" in a variety of professional fields outside of science and engineering. Do you agree? Or do you think this is the last gasp of the science and engineering education industry to bolster sagging enrollments? Are the PR or advertising industries rushing to recruit unemployed engineers, or even fresh out college graduates? How about import-export, brokerages, insurance, health-care? Tell me about it.

AMERICA'S NEWEST IMMIGRANTS

The Oct. 11 issue of *Business Week* has a short article on the Economic Trends page: "America's Newest Immigrants Are Poorer—But Smarter." It tells about a new Census Bureau report drawn from the 1990 Census data. This report states that new immigrants are far poorer than previous newcomers. The poverty rate for pre-1980 immigrants was 11%, while the rate for 1990 immigrants was 23%. The article draws the following conclusion: "This suggests that reducing immigration, while it might ease the burden of poverty on the economy, might cut off the U.S. from a key source of human capital and future growth." I don't see how it suggests anything of the sort. It simply suggests that reducing immigration might reduce poverty in the U.S. I believe it would also reduce the incidence of violent crimes, since most murders are committed by the poor and not the wealthy. It would undoubtedly reduce the welfare rolls. INS—take it from there.

GOODBYE TO 1993

Another year is about to end, and it's appropriate to include a short recap of the year's activities and some holiday greetings.

(Continued)

Membership Renewal

Time to renew—The date on your mailing label is the date to renew your subscription, membership and support for the American Engineering Association. Get your renewal in early and save us the time and expense of sending you a reminder. Thank you.

("Editor's Column" continued)

Engineering unemployment in the last quarter of 1993 was 65,000, according to Robert Rivers' analyses. In the third quarter of 1993 it was around 66,000 or 3.8%. It was as high as 81,000 in the second quarter of 1993, so the reduction may be something to celebrate.

AEA continued to work for the betterment of the profession during 1993. We campaigned to have Labor Market Information eliminated from the 1990 Immigration Reform Bill. We also campaigned against NAFTA, because we truly believed it was detrimental to the interests of U.S. engineers (not to mention any other working stiffs). I wrote my Representative and asked him to vote against NAFTA. He did. But at the time of this writing, the House has approved NAFTA, and it appears likely that the Senate will do the same. Take heart. Those who were for NAFTA can rejoice. Those who were anti-NAFTA but favored Bill Clinton's presidency are consoled by the fact that his health care program now stands some chance of coming into existence. If NAFTA had been defeated, very little else that Bill Clinton proposed would have a snowball's chance in Hell. Whom did I leave out? Write and tell me.

We submitted a proposal to obtain funding for CAD training for laid-off defense engineers. We worked to publicize illusory job ads, of which one is above. We hoped this publicity would begin the process of eliminating them. We wrote Congress about several issues, including pension improvement legislation, and we urged our members to do the same. We described the engineering profession 'like it is,' and in so doing, received favorable mention from editors of electronics magazines. In short, we strove to obtain 'critical mass' for AEA, so that our future activity would produce more benefits for the profession. We will continue to work for enhancement of the profession and U.S. engineering capabilities. We hope that our membership grows and that our members will follow our lead by interacting with branches of government for betterment of the profession. We wish our members a happy holiday and a productive and prosperous 1994.

Robert Bruce, AE Editor

Editorial

Capt. Blighs

DID YOU SEE THE "60 Minutes" story last week on foreign programmers? (To *EE Times* readers, it's not news: we had it Dec. 7, 1992, page 113.) If you missed it, both our story and "60 Minutes" said American technology companies are using below-prevailing-wage programmers from India and elsewhere to perform on-site work at U.S. corporations. U.S. firms use "body shops" that recruit, pay and bring over the foreign programmers. In our story, critics of the practice accused recruiters of exploiting an immigration loophole—the B1 visa, designed to allow foreign businessmen to operate here on a short-term basis—to import programmers.

Hewlett-Packard and its new chairman, Lewis Platt, caught flak in the "60 Minutes" piece. Lesley Stahl stalked Platt in the hallway of a conference center. Breathlessly trotting beside him, Stahl pumped Platt on why companies pull an end-run around American programmers. "No comment," Platt replied.

Of course, companies do it because they can land a Unix programmer for the equivalent of \$20,000 a year instead of the \$40,000 or \$50,000 required for a U.S.-bred programmer. However, as HP pointed out to us afterward, it's paid the equivalent of \$5,000 per programmer to the contracting firms. HP now required contractors to certify that "fair payment is made."

Nevertheless, this practice undermines the profession. While U.S. programmers line up at job fairs, foreign programmers are snapping up work in our country for half of what Americans would make. As "60 Minutes" pointed out, no one knows how many are here: Stahl said one estimate was 100,000. HP accuses the show of exaggerating its involvement; it says it has 270 under contract out of a work force of 96,000. But in this employment climate, widespread importation of foreigners to perform work that Americans could do, while not illegal, is snively and underhanded.

The Clinton administration is proposing to at least close visa loopholes. Good. Yet, in the end, nothing may help these U.S. programmers. Electronic dissemination of the work will step up, and banks of programmers are poised in front of workstations in India, Russia and Taiwan, waiting to process documents from the Capt. Blighs of our industry, who command their ships in quest of global treasure, their crews be damned.

Robert Bellinger

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I am concerned about my career and U.S. Engineering capabilities. Please enroll me as a member of AEA at the following grade.

SPONSORING MEMBER \$100___ SUPPORTING MEMBER \$50___ MEMBER \$30___

Name: _____ U.S. Citizen: _____

(Please Print)

Address: _____ Apt: _____

City: _____ State: _____ Zip Code: _____

Home Phone: _____ Work Phone: _____

Engineering Discipline: _____ Industry: _____

Please enclose check or money order and send to: AEA, Box 820473, Fort Worth, Texas 76182-0473

Signature: _____ Date: _____

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Defense Procurement Losses Cut Engineering Jobs

By David Lewis

INTRODUCTION: With the end of the Cold War the Defense Department has endured substantial budget reductions. Moreover, it now appears that those reductions will continue into the future. This note reviews and analyzes some published information on the impact of projected cuts in the procurement budget of the Department of Defense (DoD).

BUDGET CUTS AND JOB LOSSES: Table 1, which is excerpted from Reference 1, shows the (DoD) procurement budget has been cut from \$127 billion in 1985 to \$53 in 1993, or about 58% over 9 years. That is, there has been an enormous reallocation of resources.

1985	\$ 127.20
1986	117.70
1987	98.60
1988	94.70
1989	90.50
1990	89.70
1991	76.50
1992	62.50
1993	53.70

Table 1: The DoD Budgetary Authority For Procurement In Constant Fiscal Year 1993 Dollars (Numbers in Billions) Excerpted From 1993 House Appropriations Committee Report 102-627.

In Reference 2 DoD utilized their forecasting models to project what procurement budget cuts will mean in terms of jobs, including the jobs of engineers, scientists, and technicians. The forecast period is 1991 to 1997. The part of Reference 2 which lists the projected number of engineering, scientists, and technician jobs by year is excerpted in Table 2, below.

The DoD forecast shown in Table 2, shows the reduction their procurement authority will cause 58,000 engineers, 6,000 scientists, and 36,000 technicians will lose their jobs over the period 1991 to 1997.

It is important to note that the forecasts shown in Table 2 are only for reductions in procurement authority. Cuts to other DoD accounts such as the R&D budget, operations and maintenance budgets, etc. will only exacerbate the job loss situation.

	Engineers	Scientists	Eng. & Science Technicians
1991	215	29	135
1992	202	27	127
1993	189	26	119
1994	179	25	112
1995	171	24	108
1996	164	24	103
1997	157	23	99

Table 2: Estimated Defense Employment by Occupation (Number of workers in thousands) Excerpted From: DoD publication "Projected Defense Purchases Detail by Industry and State—Calendar Years 1991 Through 1997."

We might note that against this background of 58,000 displaced engineers the claims of an acute engineering shortage continue unabated. Thus, for example, the Immigration Act of 1990, passed by your Congress, increased the annual numerical limit for employment based preference from 54,000 to 140,000, see Reference 3. In part this was to deal with the alleged acute shortage of engineers and scientists. Never mind that a minimum of 58,000 engineers were either about to be unemployed, or already unemployed. Never mind that engineering unemployment was, and is, at a historically high level.

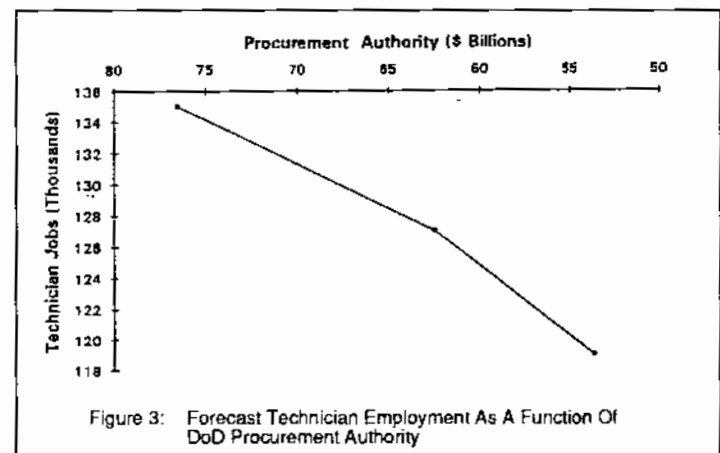
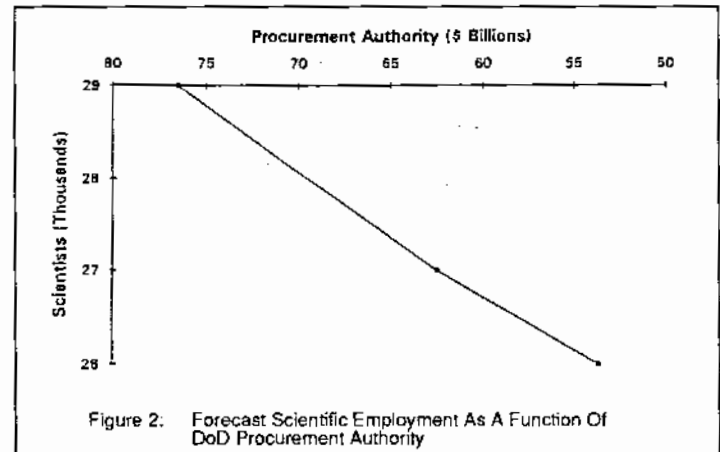
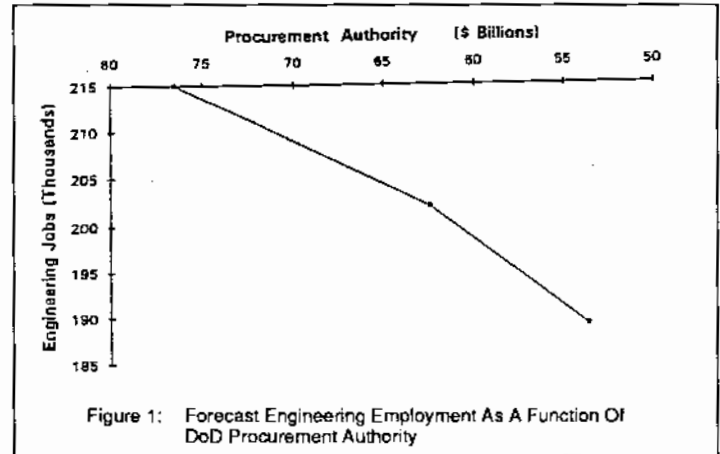
The time periods shown by Tables 1 and 2 overlap for the 3 year period 1991 to 1993. This is not a lot of overlap, but it is enough to undertake some preliminary analyses to try to estimate, however roughly, what incremental reductions in the Defense Department's procurement authority mean to the engineering and scientific community.

As a starting point, the relationship between employment, as measured in jobs, and procurement authority, measured in millions of dollars, was modeled as a straight line. Straight lines were fit to appropriate data from References 1 and 2 using MathCad™ linear regression algorithms. Computed slopes for each job category are listed in Table 3.

Engineer	1.12
Scientist	.13
Engineering/Science Technician	.69

Table 3: Job Loss Per Million Dollar Budget Decrement.

The basic data used are plotted in Figures 1, 2, and 3 so the reader can judge the degree to which the straight-line model is appropriate.



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("Defense Procurement" continued)

A cursory review of Figures 1 through 3 might lead to the conclusion that the choice of axes is unusual. However, the graph format was chosen to show that employment is trending down in all 3 occupations. Moreover, as time increases to the right, funding decreases.

Table 3 shows that for about every \$890,000 lost in the Defense Department procurement budget one engineering job is lost. Thus, if the Clinton administration were to cut \$1 billion in procurement from the defense budget there would be about 1,100 engineering jobs lost.

The data in Table 3 show that one scientist loses their job for every \$7.7 million in procurement budget cuts. Thus, scientists are significantly insulated from cuts to the procurement budget.

This is not entirely surprising. The employment of scientists might reasonably be more closely coupled to the DoD research and development budget than to the procurement budget.

Only 1 technician job is lost for every \$1.4 million in budget cuts. Which is to say that engineers are significantly more vulnerable to procurement budget cuts than technicians. This result may be because many technicians work for scientific establishments so that as a group technicians are somewhat sheltered from procurement budget cuts.

WHAT DOES 58,000 JOBS LOST MEAN AND HOW THE GOVERNMENT (IS) TRYING TO MAKE THE SITUATION WORSE: In the previous section we showed the DoD projected a loss of 58,000 engineering jobs as the result of reductions in their procurement authority over the years 1991 to 1997. A key issue is the impact of a job loss of that magnitude.

Clearly, to the affected individual a job loss can be devastating, but is it statistically significant? The key to resolving this issue is the measure of the total number of jobs in the occupational field.

We do not know the total number of U.S. engineers since to a very large extent an engineer is whoever declares themselves to be an engineer. Nevertheless, certain crude comparisons are possible which lend some meaning to the statistic of 58,000 jobs lost.

The combined U.S. membership of the 4 largest engineering professional societies, the Institute of Electrical and Electronic Engineers, the American Society of Mechanical Engineers, the American Society of Civil Engineers, and American Society of Chemical Engineers, is approximately 512,000, Reference 4. If each of the 58,000 displaced engineers were a member of one of these 4 professional societies their aggregate unemployment rate would be approximately 11%.

Clearly, 11% unemployment in any occupation would be significant.

On balance, we would expect the unemployment rate to be significantly less than 11% since many engineers are not members of any professional society. Unemployment rates of 2.7% have been reported, Reference 5, however, to the extent that persons working actively in the field personally know unemployed engineers actively searching for work, it is likely that accepted unemployment rate of 2.7% substantially understates the true unemployment rate.

Perhaps just as significant is some appreciation as to how the Federal Government is lending its assistance to make the problem worse. The 1990 Immigration Reform Act increased the number of employment preference visas available to foreign nationals from 54,000 visas per year to 140,000 visas per year. This was done, in part, because of the alleged shortage of engineers.

Think about it, assume membership in engineering professional societies reflects, even approximately, the number of engineers in the U.S. economy. EACH YEAR the Government provides employment preference visas to a foreign population equal to more than 27% of the current combined population of the four largest U.S. engineering societies. This access to the U.S. job market can only slow the re-employment rate of displaced persons.

The fact that engineering unemployment has stabilized, even at the current high rate, suggests that foreign engineers and scientists must be at least moderately aware that the U.S. "shortage" of engineers and scientists is an artifact.

SUMMARY: There has been a massive reduction in the procurement appropriation to the DoD over the period 1985 to 1993. As a result of the massive budget reductions many tens of thousands of engineers, scientists, and technicians are going to lose their jobs, or have already lost their jobs.

The unemployment rate of engineers is at historically high levels.

Against this background of displacement, unemployment, and general disruption in the normal flow of personnel Congress authorized roughly an additional 86,000 employment preference visas. This can only aggravate an already bad situation.

References:

1. 1993 United States Congress House Appropriations Committee Report 102-627.
2. "Projected Defense Purchases Detail by Industry and State—Calendar Years 1991 Through 1997," published by the Department of Defense, Nov. 1991.
3. United States Department of State Bureau of Consular Affairs, 1991 Report of the Visa Office, pg. 116.
4. Private communication from the AAES.
5. IEEE Salary Survey Results as reported in the 1993 May/June issue of the IEEE's news supplement "The Institute."

New Engineering Shortage Scam: The White-Male "Shortage" Myth

The shortage-shouters have always used very indirect methods to support their claims of current or impending engineering shortages—and there was always some gimmick involved. Examples: it was pointed out that Japan graduates more engineers in proportion to population than the U.S.—but it was ignored that a high percentage of Japanese engineering graduates never work in engineering, that Japanese engineers get most of their engineering educations from their employers, or that Japan proportionately produces far fewer science graduates than the U.S. Or it was pointed out that a higher percentage of college students in the former West Germany majored in engineering—but it was ignored that that country produced proportionately far fewer engineers than the U.S.

Or the American Electronic Association raised a big ruckus because its survey of employers' projected engineering hiring plans over the following several years predicted huge shortages—but it ignored that such surveys had long been known to exaggerate future demand because of employers' optimism about future individual market shares and the health of the general economy. Or it was pointed out that engineers have the highest starting salaries at the bachelor's degree level (even the U.S. Department of Labor, in a

recent Occupational Outlook Handbook, promoted this scam)—but the grotesque levels of salary compression and age discrimination in engineering were ignored. Or it is pointed out that American grade school students score low in international comparison tests of math and science knowledge—but it is ignored that Americans tend to spend more years in school than people in other countries. And the National Science Foundation's recent infamous report projecting huge shortages of scientists and engineers considered only supply and ignored demand. Some of these shortage scams have eventually been discredited, but like the nightmarish monster Hydra of Greek mythology, it seemed that the engineering shortage myth grew two heads for every one that was cut off.

Of course, the shortage-shouters avoid more direct—and therefore more reliable—indicators of the true state of the engineering job market. The truest indicator of a shortage is the price of a commodity, but engineers' incomes have always ranged from poor to mediocre in comparison to other occupations requiring comparable training. Other good shortage indicators would be: (1) a small percentage of engineers working outside of engineering; however, a very large percentage of engineers is working outside of engineer-

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(*"New Engineering" continued*)

ing; (2) a high level of utilization of those nominally employed as engineers—but there are inadequate numbers of support personnel; (3) a negligibly small unemployment rate—but shortage shouting has continued even when the nominal engineering unemployment rate was high, like now; (4) an absence of complaints from engineers about difficulty in finding engineering work—but such complaints are rampant.

Many people—including many engineers—probably have the mistaken idea that the shortage shouting began in earnest with the launch of Sputnik in 1957, but it actually began before that. In 1955, the National Science Foundation (whose recent shortage-shouting efforts most engineers are painfully aware of) released a report which claimed that the supply of research scientists and engineers fell far short of industry needs. Thus, the shortage-shouters have been wrong for nearly forty years, and often a glut of engineers appeared in place of a predicted critical shortage. By any reasonable standard of credibility, the shortage-shouters should have long ago crawled into a hole, not to emerge for at least the next 50 years.

But, the brazen shortage-shouters do not know when enough is enough, and like mad scientists they have now used their limitless imaginations to come up with yet another fraudulent theory for the purpose of once again resuscitating the engineering-shortage Frankenstein. The theory this time is based on the myth that there is a critical "shortage" of new white-male (particularly "native" white-male) workers. The theory goes like this: since native white-males have been the "traditional" source of engineers, and since young native white-male workers are supposedly becoming virtually extinct, the engineering profession is faced with dire shortages, particularly if large numbers of women and minority males are not lured into the profession.

Of course, everyone is aware that white males, particularly young white males, have been declining as a proportion of the workforce. However, what really raised hysteria that there was an impending "shortage" of white-male workers was a misleading statistic promoted by the Hudson Institute in its recent report titled *Workforce 2000*. This statistic was that native-white males would account for only 15% of the growth of the total workforce in the period 1988-2000; that is, the numerical growth of the native white-male workforce would be equal to 15% of the growth of the entire workforce. However, employers hire real, live new workers, not abstract "growth" percentages. And the U.S. Dept. of Labor projects that non-Hispanic white males (using a different group classification than was used in *Workforce 2000*) will be an enormous 32% of new workers in the period 1990-2005.

In case the 32% figure is not high enough to convince you that the white male segment of the workforce is not a has-been, there is more. Daniel Seligman, in his *Fortune* magazine article (Jan. 28, 1991, page 107) titled "The Case for White Males," stated, "it seems a complete non sequitur to suggest that we should be de-emphasizing the role of white males just because they will no longer represent a majority of the workforce. They will still be a plurality, after all. White male workers will still be growing in number. In 2000 they will still outnumber white females, or any combination of minorities. And in workplaces that really did reward talent and merit, they would continue to get a good share of the best jobs."

The U.S. Bureau of Labor Statistics (*Monthly Labor Review*, Nov. 1991, page 41) has forecast the following breakdown of the U.S. workforce for the year 2005 (well past the year 2000): Non-Hispanic white males, 38.2%; non-Hispanic white females, 34.8%; minorities of both sexes, only 27% (including white Hispanics!). Also, the number of non-Hispanic white males in the workforce was projected to grow from about 53.8 million in 1990 to 57.5 million in 2005; the so-called "baby-bust" was not a bust at all but was really a return to more reasonable birth rates following the reproductive binges of the baby-boom era. And finally, Asian-type males, who are even more "over-represented" in engineering than white males, were lumped together with under-represented groups for the purpose of promoting this engineering-shortage scam.

To further add to the confusion, the report "Workforce 2000" used the misleading term "net new worker" in referring to the growth statistics, assuming that "net" would be universally understood to

refer to the excess of workforce entrants over workforce leavers. Also, the Hudson Institute carelessly omitted the qualifier "net" from several places in the report (initially including the first page of the executive summary at the beginning of the report), but these omissions were probably of little actual consequence because the statistic is inappropriate and misleading regardless of what it is called (though a good part of the debate over the statistic was wasted over quibbling about whether the term "net" was ambiguous here).

The widely-publicized 15% "net new worker" statistic was gleefully embraced by the many powerful groups which could benefit from a real or imaginary "shortage" of white male workers. Reverse discrimination could now be justified as a "business necessity" or as being essential for "competitiveness." The white-male shortage myth created what a sociology professor called "a minor industry for diversity consultants—social workers paid fancy fees for what borders on quackery." And, of course, corporate bosses and engineering professors could now justify frantic efforts to recruit more engineering students—especially females and under-represented minority males—despite the fact that our engineering schools are already producing too many engineers for a glutted job-market. And helping those efforts are, of course, the mouthpieces of those professors and bosses—the old-line engineering societies.

The feature article on workforce diversity in the June 1992 issue of *IEEE Spectrum* magazine utilized the misleading 15% figure. And a recent NSPE *Engineering Times* article ("Glass-Ceiling" Issues Addressed in NSPE Report," Sept. 1992, page 16), in an effort to raise shortage hysteria, falsely stated that the pool of white males in the workforce is shrinking and unfairly compared the numbers of new white male workers with all of the new female workers: "nearly one-third of the new entrants to the labor force between 1988 and 2000 will be white males, while some 52% are expected to be women." (At least the NSPE did not cite the misleading 15% figure. More recent figures from the U.S. Dept. of Labor project that females will be 49.5% of workforce entrants in the period 1990-2005, compared to 32.2% for non-Hispanic white males, a figure cited above). However, the main reason for the increase in females' share of the workforce is an increase in the ratio of working females to non-working females, not a "shortage" of white-male workers. And new non-Hispanic white-male workers, projected to be a huge 32.2% of all workforce entrants in the period 1990-2005, will even by themselves be more than numerous enough to maintain the surplus of engineers indefinitely.

The Phantom Engineer

Reach Out

Reach Out to the active volunteers that are making this publication possible. Tell them what you like or what you dislike. Provide them with questions, answers and information or just a hand written note of appreciation. Believe me when I tell you that it is important to let your volunteers know that you care.

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NEW ENGINEERING GRADS AREN'T MAKING IT INTO ENGINEERING EMPLOYMENT

Nov. 1993, (c) Robert A. Rivers
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Engineering employment participation by new engineering graduates is showing significant declines according to data obtained from the Engineering Workforce Commission's 1993 salary survey (1). That survey showed approximately one third in engineering employment. The 1983 salary survey (3) showed three quarters of new graduates in engineering employment. By 1990, that salary survey (2) showed slightly less than half of new graduates in engineering employment.

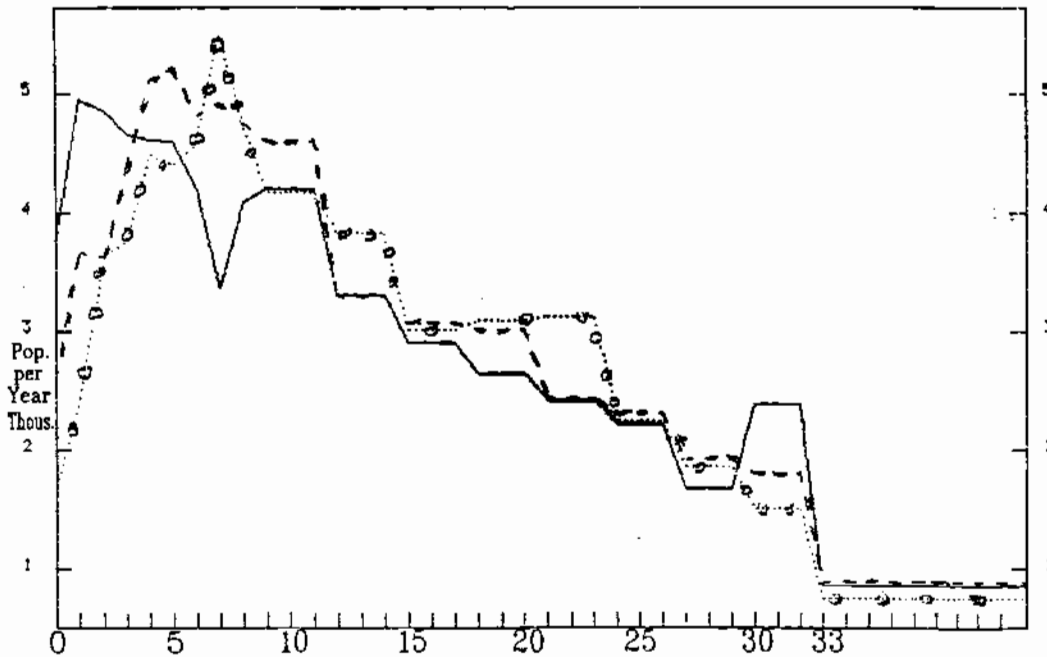
The survey of engineering employers nationwide and for a large number of engineering employing units collects data on base salaries and populations as a function of years from BS degree. As a result, data on population as a function of years from BS degree is available for over 111,000 BS engineers counted. The data is available in one year intervals for years 0 through 8, then in three year intervals up to 32 years from graduation. The balance of the data is basketed

in the 33+ category. The three year interval data has been divided by three and the 33+ divided by ten to provide for presentation on a scale consistent with the 0 through 8 year data. The median BS degree age has been found to be age 23 and may be used to roughly translate the data to an age base.

Figure 1 shows the employment curves for the three noted survey years of 1983, 1990, and 1993. The solid line from 1983 data shows that the new graduates were almost all in engineering employment. The minor peak on the right hand side of the curve is explained by the WWII GI Bill graduates still employed.

The dashed line representing 1990 data is beginning to show a lowered absorption of new graduates into engineering employment compared to 1983. Part but not most of the lower employed population can be explained by the fall off of new engineering degrees. By 1993, the dotted line, it appears conclusive that a majority of the new engineering graduates did not make it into engineering employment. In addition, the prior two years of graduates are significantly underrepresented in engineering employment. By 1993, the WWII veterans have disappeared from the scene.

1. Engineering Workforce Commission, "Professional Income of Engineers 1993", Washington DC
2. Engineering Manpower Commission, "Professional Income of Engineers 1990", Washington DC
3. Engineering Manpower Commission, "Professional Income of Engineers 1983", Washington DC



1983 — 1990 - - - - 1993 - - - - Years Since BS Degree
 Figure 1, Survey Population vs Years Since BS Degree

Sample Copies Available

Members of the American Engineering Association are encouraged to submit names and addresses of friends and associates who they think would be interested in receiving a sample issue of the "American Engineer."

Names should be sent to: AEA, P.O. Box 820473, Fort Worth, TX 76182-0473.

Reader's Voice

This column in the "American Engineer" is for readers to voice an opinion relevant to any issues that affect the professional life of an engineer. Articles or letters should be in good taste and not slanderous. Each submission should include the name, address, home and business phone of the writer. Except for short excerpts, we will include the writer's name, city and state (unless the writer requests anonymity). We reserve the right to edit each submission, as long as we don't change the gist of it. We assume that authors who send us material have accepted these conditions, unless they instruct us otherwise in writing.

From G.Z. of Westbury, NY: - "I'd like your readers to share some of my views and experiences. A. We should all write to our Congressmen and let them know that they must do more to help the economy. I have written to Rep. David Levy of New York about depressed U.S. industry. B. We must all become computer literate so that we can operate a computer, store lists of prospective employers and resumes on floppy disks, and function in a computerized engineering environment. C. I am now employed as a senior electronics technician and could not function even at this level, if I hadn't become computer literate. D. Colleges and industry must change their attitudes. Otherwise neither will survive. It's unrealistic for: industry to foot the bill for the high cost of continuing education, and for colleges to expect a flood of night students to pay high tuition costs. The answer is: 1. Colleges will have to produce and market self-teaching videos at reasonable prices, as new technology developments or in some other way subsidize costs of these videos.

Editor: Here's a reader who not only has opinions about the problems afflicting U.S. engineers, but also does something about these problems, i.e. writing Congress and writing AEA; he has the initiative to do something. The fact that he had to accept lower-

paying employment speaks volumes about engineering careers in the U.S. Can all our readers match his initiative?

From L.F. of L.A.: - "The following is a list of some of the crimes the National Society of Professional Engineers (NSPE) has committed against the engineering profession: (1) It opposed reasonable federal-employee ethics rules that would help prevent old-line engineering societies from exploiting federal taxpayers' money to help keep themselves in power. (2) It lures females and under-represented minorities into the engineering profession despite the existing overcrowding. (3) It is obsessed with precollege education (example: NSPE promotion of MATHCOUNTS, a precollege math competition) and other trivia while neglecting the many afflictions plaguing the profession. (4) It pretends that the rosy-looking results of its widely-publicized member salary surveys are representative of the profession, ignoring the fact that managers—who tend to have above-average compensation—are over-represented in NSPE membership. (5) It has opposed a court ruling requiring an environmental review of NAFTA (North American Free Trade Agreement). (6) It wants the engineering BS degree to be an absolute requirement for professional registration. (A PhD degree in Physics, for example, would not be sufficient—even with additional engineering courses.) (7) It has arrogantly appointed itself as the 'official' lobbying representative of the engineering profession. (8) It pretends to represent the typical working engineer, when in reality it represents management."

Editor: AEA needs more readers like L.F., who get steamed up about issues affecting our profession. These are the people who write the branches of U.S. government to make change. These are also the people who furnish ideas to fan out to AEA readership.

Robert Bruce, AE Editor
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