



AMERICAN NUCLEAR SOCIETY EDUCATION & TRAINING DIVISION

MESSAGE FROM THE CHAIR

Greetings!

I am amazed at how quickly time has passed in my role as Chair for the Division. It seems like only yesterday that I was assuming the lead from Brian Hajek and looking forward to the challenges this opportunity would bring. I would like to thank Chair Elect Pierre Tremblay, Vice Chair Dick Coe, Secretary Wes Hines, Treasurer Kent Hamlin and Programs Coordinator Mike Robinson for all their efforts to move our Division forward. Together, we have accomplished a great deal.

In preparation for the upcoming meeting “The Next 50 Years: Creating Opportunities” in San Diego, Mike Robinson has been hard at work organizing sessions for the event. Among the topics will be discussions on how to engage environmental groups, communications, student research, and myths of the nuclear age. These should be exciting events that I am sure everyone will benefit from.

Ed Naessens has also been hard at work in his role as Chair of the Membership Committee. Through his efforts we are seeing a continued interest in ETD and in membership. In that vein, I encourage you to spread the word of what our group is about and encourage others to join us. As we grow, more and more possibilities open to us.

As requested by Larry Foulke, ANS past president, we participated in a review of high school texts to determine if an anti-nuclear bias existed in them. Harry Bernhard, Larry Durham, and Ed Naessens participated in the study and a summary of their report appears later in this newsletter.

Special thanks also to Ann Winters, our ETD Work Force Committee Chair who has been continuing the work started by Ted Quinn, and is working on an ETD policy statement on Education and Workforce Issues.

The final touches are being made for the 2005 ANS Annual Meeting in San Diego, June 5-9. The “Town and Country Resort and Convention Center” is, of course, a tremendous venue that offers not only the special requirements for a large organization such as ours, but also some wonderful amenities as well. ETD will be sponsoring a number of sessions at the event and I hope you will be able to attend and take advantage of the information that will be offered.

It has been a pleasure to serve as the Chair for the ETD Division this past year, and a great privilege to work with so many dedicated individuals. I wish Pierre every success in the year ahead, and I look forward to seeing you all in San Diego.

Jane LeClair
ETD Chair

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2005 ANNUAL MEETING SAN DIEGO, CALIFORNIA

Submitted by: Mike Robinson, Programs Coordinator

The 2005 ANS Annual Meeting: The Next 50 Years: Creating Opportunities will be held in San Diego, CA, from June 5 to 9, 2005 at the Town and Country Resort & Convention Center. The Education and Training Division is sponsoring five sessions:

1. Education and Training: General, Monday p.m.
2. Engaging the Anti's: Communications with Environmental Groups, Wednesday a.m.
3. "Too Cheap to Meter" and Other Myths of the Nuclear Age-Panel, Wednesday a.m.
4. Focus on Communications: Speaking with the Media-Panel, Wednesday p.m.
5. Research by U.S. Department of Energy-Sponsored Students, Thursday a.m.

For more information and the preliminary program, visit the ANS website (<http://www.ans.org/meetings/>).

ANS NUCLEAR ENGINEERING EDUCATION FOR THE DISADVANTAGED (NEED)

Submitted by: Bill Vernetson, Education Subcommittee Chair

The ANS Nuclear Engineering Education for the Disadvantaged (NEED) program provides educational and professional assistance to the culturally and economically disadvantaged to encourage their participation in nuclear science and technology. The ANS NEED Committee has oversight for the program. It approves funds for scholarships directly supporting students with economic and cultural disadvantages. It provides financial support for NEED Grants for Academic Programs (NGAP) and Motivational Grants for pre-college school programs.

1. Under the NGAP heading, the ANS NEED Committee makes awards to institutions with nuclear programs for recruitment-related activities to increase the representation of women and minorities in nuclear programs. This recruitment must be toward enrollment in some nuclear-related area of interest (disciplines or topics) that is of special interest to at least one of the ANS Professional Divisions. An NGAP award is limited to \$1,000 on an annual basis. Award recipients are asked to send the ANS NEED Committee a brief description of how the award is

used and must do so before they are allowed to receive a second award. An average of 8 awards is given per year.

2. NEED provides grants for kindergarten through high school programs. These Motivational Grants are used for equipment and materials to teach science and math including nuclear topics. The funds also are used for tours to nuclear power plants and other nuclear-related facilities such as research reactors and medical facilities. Schools apply for the grants and follow up with program reports. These grants are available to schools and other entities representing the culturally or economically disadvantaged. These grants are typically in the \$1,000-\$5,000 range with the number per year ranging from 5 to 8.
3. John and Muriel Landis Scholarships and the Delayed Education for Women (DEW) Scholarship compose the 10 NEED (9 Landis, 1 DEW) scholarships offered annually. They are for \$4,000 and are periodically increased to assure making a difference for the recipients. Each scholarship is given based on the cultural and economic need of students pursuing a course of study in nuclear science or engineering. The 9 Landis scholarships are for regular full-time students; the 1 DEW scholarship is specifically allocated for a woman for full-time pursuit of a degree but whose education has been interrupted for some reason. These scholarships have been awarded for students returning for bachelor's degrees after delays as long as 10-15 years.

All scholarship applications and information are posted at www.ans.org/honors on the ANS website. The Committee meets at the Annual and Winter ANS national meetings on Sunday evenings and also conducts much business by email.

ANS NEED Committee: Bernadette Kirk, Chair,
Bill Vernetson, Education Subcommittee Chair

THE REALITY OF HIGH SCHOOL TEXTBOOKS WITH RESPECT TO NUCLEAR SCIENCE AND TECHNOLOGY INSTRUCTION

Submitted by: Harry Bernhard, Larry Durham, Ed Naessens

Background

In mid-2004, the immediate past president of the American Nuclear Society (ANS), Larry Foulke, requested the Education and Training Division (ETD) to consider the applicability of an ANS "realism initiative" to the arena of nuclear technology training and education. After much intra-division deliberation and consultation with Dr. Foulke, it was decided in November 2004 to focus on the possibility that an anti-nuclear bias exists in high school textbooks. Were such a bias to be present and pronounced, it could potentially inhibit high school students

from later pursuing the study of post-secondary study related to the nuclear technology field.

The ETD chair for 2004-2005, Dr. Jane A. LeClair of Constellation Energy, asked the following individuals to conduct a study to explore the existence of such textbook bias.

- Mr. Harry A. Bernhard
- Dr. Lawrence B. Durham
- Col. Edward Naessens

A decision was made to begin by focusing on a review of high school physics, chemistry, and general science textbooks. This report reflects the results of that review as reported by March 1, 2005.

General Findings

Perhaps the most instructive finding to date has been that chemistry and science textbooks should definitely be included in any such review. As is usually the case, this conclusion came from the involvement of those persons closest to the action – in this case, high school teachers. Therefore, if further research is deemed necessary, the sample of those textbooks should be expanded beyond the two listed above.

The next most important finding is that there seems to be more of an anti-nuclear bias in the less-technical, less-detailed textbooks typically used for the lower grade levels and for students characterized either as less-inclined to take additional science/physics courses or less capable (or both). Should this be a general phenomenon, it is of even greater concern because those students are far less likely to receive mediating information in later courses.

In general, however, there did not appear to be a pronounced anti-nuclear bias in the texts reviewed. To the contrary, while most of the texts mentioned the hazards associated with nuclear power plants, they also noted the positive factors associated with nuclear power plants such as less atmospheric pollution and no carbon dioxide emissions – unlike fossil fuel power plants. All but one mentioned the problems associated with nuclear waste; yet, even in so doing, several described those problems as being more economic and political than technical. One text had an “alternative assessment” directing the students to define and explain NIMBY (without divulging that it stands for “not in my backyard”). Several texts did use photographs of “mushroom clouds” in ways that could contribute to negative perceptions being created subconsciously by the readers; however, the effect was subtle.

The reviewers found it encouraging that practically all texts reviewed covered fusion reactors to varying degrees. While all were realistic, none were negative about the need – if not the probability – for that technology to be made operational. One author described fusion as “the perfect, long-term energy solution”. The fact that such universal support was found for fusion research to continue was heartening.

Consistent with the second finding above, the more detailed and technical the texts were, the more apt they were to provide a balanced, reasoned examination of the risk-benefit tradeoffs associated with nuclear power plants. Curiously, only one text mentioned the Three Mile Island accident; but most mentioned the Chernobyl accident. No text reported on the use of nuclear power plants outside the United States.

As a by-product of the textbook analysis, teacher conversations revealed that visits to and support from area nuclear facilities make definite positive impressions as do visits by university nuclear engineering faculty to the high schools. The chemistry teacher contacted bragged about the Geiger counter that the school had been given by an area nuclear power plant. Teacher contacts also confirmed that fewer students take physics and chemistry because they think that they can secure high-wage jobs without having to endure the academic rigor of advanced mathematics, physics, chemistry, etc. This observation also makes a case for increasing visits to schools by those involved in nuclear science and technology. Ignorance is not always bliss!

Conclusions

In short, the hypothesis that textbooks used in high school physics are biased against nuclear technology was not confirmed. To the contrary, the texts reviewed typically presented balanced, realistic perspectives that challenged the readers to examine all sides of issues by weighing costs, benefits, and trade-offs. High school textbooks are not the root cause of nuclear workforce “pipeline” problems. Therefore, no “witch-hunt” is necessary.

And, most certainly, there were missed opportunities in all of the texts reviewed to cover the full range of current and potential uses for nuclear science and technology. That’s why those involved in nuclear science and technology must continue to do their jobs with dedication and safe precision; and, to seize every opportunity to be *missionaries* for the peaceful use of nuclear science and technology to enhance the lives of people around the globe. We have the “goods” and the market is “ripe”. We’ve just got to seize every opportunity to “sell” the products – and, where opportunities don’t present themselves, we must make them!

REPORT ON ETD WORKFORCE TASK FORCE

Submitted by: Ann D. Winters, Chair, ETD Work Force Committee

In November 2004, the ANS Workforce Task Force Committee transferred to the Education and Training Division as the ETD Work Force Committee. The Committee is dedicated to continuing the excellent work originated by its first chairman, Ted Quinn, past ANS President, and carried forward over the

years by Ted and his later co-chair, Andy Klein, Oregon State University. A major focus area has been nuclear science and technology and health physics communication outreach to all levels of science and engineering education to promote student awareness of nuclear majors as career options. Other focus areas have been knowledge retention and generational issues in the work place, and planning for current and future workforce needs of the nuclear industry. The Committee will continue its emphasis in these and other workforce related areas. We are continuing close collaborations with the Nuclear Energy Institute, the Department of Energy, the Nuclear Engineering Department Heads Organization, and other industry organizations to ensure complementary efforts for the industry. As part of these efforts, the Committee is developing an ANS Education and Training Division Policy Statement, "Education and Nuclear Industry Workforce Issues 2005," to be issued later this year.

WOMEN IN NUCLEAR - DURHAM CHAPTER

Submitted by: Helen Spencer, Ontario Power Generation

The following is a brief outline of WIN Durham Chapter, its objectives and activities in 2004 and 2005.

WIN Durham Chapter, a voluntary organization, is organized and led by women employed by Ontario Power Generation. The two objectives of the chapter are: to provide public awareness about nuclear energy and the nuclear industry and to establish a framework within OPG Nuclear where women can further their professional development.

In 2004, WIN Durham's inaugural year, the Chapter developed a leading group organization, developed a charter and held two membership meetings that were well attended.

In 2005, WIN Durham Chapter is developing its relationships with external nuclear groups in the community, such as students from the University of Ontario Institute of Technology. The first meeting of the year will help members with public speaking. This will enable members to speak about the benefits of nuclear power and its related activities to the community.

WIN Durham Chapter supports WIN Canada, and other international WIN meetings. For example, WIN, Durham Chapter attended the U.S. WIN Conference in 2004 and will participate in the U.S. Conference in 2005. Additionally, WIN, Durham Chapter is on the organizing committee of WIN International Conference, to be held in Canada, for the first time, May 29- June 2, 2006.

WIN Durham Chapter, is also continuing its mentoring program for staff at OPG and other WIN members. WIN Durham is cognizant of the upcoming shortage of skilled

workers due to expected attrition. Therefore, WIN encourages and fosters an interest in the nuclear industry with young women.

Other community events that WIN Durham Chapter is planning on participating in include: attending local fairs, and sponsoring high school engineering teams.

In summary, WIN Durham Chapter, is continuing to work towards its goals and looks forward to participating in the 2006 International WIN Conference. For more information, see the WIN website: <http://www.world-nuclear.org/win-global>

2005 WINTER MEETING: WASHINGTON DC

Submitted by: Mike Robinson, Programs Coordinator

The 2005 ANS winter meeting, entitled *Talk About Nuclear Differently: A Good Story Untold*, will be held in Washington DC, from November 11 to November 13 at the Omni Shoreham Hotel. Additional information is located at the ANS website (<http://www.ans.org/meetings/>). The Education and Training Division is again showing its commitment to active meeting involvement by sponsoring thirteen sessions:

1. Engaging the Anti's: The Antinuclear Perspective – Panel
2. Communicating with Your Congressperson or Senator – Panel
3. Focus on Communications: Speaking to the Media – Panel
4. Focus on Communications: Communications is Science, Too – Panel
5. Focus on Communications: Meet the Media – Panel
6. U.S. Department of Energy Innovations in Nuclear Infrastructure and Education (INIE) Research – Contributed
7. Progress and Review of U.S. Department of Energy Innovations in Nuclear Infrastructure and Education (INIE) Programs – Panel
8. Education and Training: General – Contributed
9. Training, Human Performance, and Workforce Development – Contributed
10. Training Excellence Awards – Invited
11. Innovations in Nuclear Engineering Education, Training, and Distance Learning – Invited & Contributed
12. Current Experience in Meeting Training and Workforce Challenges for New Nuclear Power Plants – Invited & Contributed
13. Student Design Competition - Invited

Summaries will be accepted until June 10, 2005. We are excited to hear about your new projects, successes, and lessons learned, and welcome your submissions. The complete call for papers has been posted on the ANS web site.