2006 NUCLEAR ENGINEERING STUDENT DELEGATION
WASHINGTON, D.C. JUNE 26-28, 2006

Policy Statement

Paul Kollath-Romano, Rensselaer Polytechnic Institute (Chair)
Jill Rydalch, Idaho State University (Vice Chair)
Jess Chandler, Georgia Institute of Technology
Tony Elliott, Oregon State University
Katherine Gray, University of Missouri at Columbia
Grant Kopec, University of Illinois at Urbana-Champaign
David Hawn, The Ohio State University
Gary Sanford, University of Florida
Tyler Schweitzer, North Carolina State University
Erica Sherman, Rensselaer Polytechnic Institute
Leah Spradley, Vanderbilt University

Executive Summary

We, the 2006 Nuclear Engineering Student Delegation, feel strongly that nuclear research and technology are essential to the present and future welfare of the United States. Nuclear energy will complement other sources of energy as an economically competitive and non-emitting energy source. Increased domestic nuclear energy production will foster job growth at home. In addition, developments in nuclear energy technology will allow the U.S. to retain its global technological superiority.

There is an ever-growing interest and enthusiasm for the nuclear sciences in our peers, and we ask you to support the following programs that promise to benefit both students and society. We welcome your feedback and look forward to any opportunity to further express our views regarding these important issues.

- We support continued funding for students in the nuclear sciences through the Department of Energy's **University Reactor Infrastructure and Education Assistance** program.

- As academia has experienced a loss of research facilities in the past decade, we feel that it is important to encourage the development of new research reactors, e.g. the proposed training and research reactors as part of the SUNRISE program (See full text).

- We, the Delegation, support domestic research and development in the areas of fusion theory and the basic sciences. We also support our in-kind obligations to the ITER fusion reactor project.

- We support the provisions proposed in **The Nuclear Fuel Management and Disposal Act (S.2589)** to facilitate licensing and construction of the safe, permanent geologic disposal of spent nuclear fuel at Yucca Mountain.

- We believe that the United States should codify a national spent nuclear fuel management strategy that will remain consistent for years to come.

- We support the development and implementation of reprocessing in order to fully utilize the energy in spent nuclear fuel, thus decreasing the number of geologic repositories needed in the future.

- We support the pursuit of a Global Nuclear Energy Partnership.

Policy Statement: Full Text

Twelve years ago, the first Nuclear Engineering Student Delegation to Washington, D.C. was formed to reinstate funding for research reactors. Today, the Delegation to Washington, D.C. continues to express the views of the student population on nuclear science, policy, and education. Every year, the Delegation is made up of a diverse group of students from the nation's most prestigious nuclear engineering programs, representing various disciplines within the nuclear sciences. The students independently organize and run this three-day trip to Washington, D.C. The Delegation is not representing any organization or university, as the attending students are expressing views that they themselves support.

For any further information regarding any of these issues, please contact Paul Kollath-Romano at romano@nesd.org or visit our website at http://www.nesd.org/. Thank you for your consideration.

In the upcoming years, the United States will be faced with two major problems: a rising energy demand and an aging nuclear workforce. In response to the growing energy crisis and the incentives laid out in the Energy Policy Act of 2005, utilities are taking steps towards building new nuclear power plants. Each year, hundreds of nuclear engineers become eligible for retirement. As a result of this age disparity, it is imperative that university programs produce well-educated and qualified nuclear engineers to replace the retiring workforce and support the growing industry.

Federal support of undergraduate and graduate students in the nuclear-related disciplines is a necessary component to fulfill the workforce needs of the nuclear industry.

- The Department of Energy's University Reactor Infrastructure and Education Assistance (URIEA) program has been a major contributor in supplying human capital to the energy, environmental, health care, and national security sectors. This program has been an integral part in providing fellowships, scholarships, research grants, and awards in the fields of nuclear engineering, health physics, and radiochemistry.
- The President's FY07 budget has eliminated all funding for the URIEA program. This will adversely affect university nuclear engineering programs across the country. In the case of North Carolina State University, the nuclear engineering program will lose approximately 1.15 million dollars for research. In addition, the lack of funding may induce a greater-than-normal attrition rate for nuclear engineering students such that enrollment levels would decline. Other universities may experience comparable setbacks in research funding and enrollment levels.

We, as a Delegation, support the reinstatement of this funding for the President's FY07 budget and feel that it is vital to the welfare of university nuclear engineering programs and the growth of the nuclear industry.

As academia has experienced a loss of research facilities in the past decade, we feel that it is important to encourage the development of new research reactors. Funding and promoting research reactors and collaboration between universities, government, and the private sector will help to improve the quality of education that students receive at nuclear engineering programs thus contributing to scientific advancements.

- Research reactors at universities give students a hands-on experience with the operation of reactors as well as valuable research opportunities. Having operation experience will aid students as they pursue careers in the nuclear power industry and facilitate the transition of knowledge from established professionals to young engineers.

- Over the years, the number of research reactors has significantly declined from approximately 65 university research reactors in 1980 to under 30 research reactors in 2006. This is a major loss for nuclear engineering programs which have been gearing up to support the growing industry.
- The Southeast Universities Nuclear Reactors Institute for Science and Education (SUNRISE) is seeking to develop and operate a regional reactor user facility. This facility would be located at the Savannah River National Laboratory and would be used by 18 colleges and universities.
- The SUNRISE program would entail creating a training reactor, a research reactor, and laboratories. These facilities would give students the opportunity to learn how to operate a nuclear reactor and participate in innovative research.
- The Battelle Energy Alliance at Idaho National Laboratory (INL) consists of Battelle, BWX Technologies Inc., Washington Group International, the Electric Power Research Institute, and an alliance of university collaborators. The goal of this alliance is to support the Center for Advanced Energy Studies (CAES) at INL. CAES will support research in advanced reactors and the methods to design these reactors. This alliance is a paradigm of national laboratories, private-sector organizations, and universities working together in an effort to advance research and student participation.

We, the Delegation, support these innovative programs that will provide students with valuable operational and research experience. We also believe that the unique collaboration between national laboratories, private-sector organizations, and universities is necessary for improving the quality of research produced in our country as well as encouraging students to pursue careers in research.

ITER is an international fusion project of significant benefit. We applaud the Department of Energy's FY07 budget request for the Office of Science as it pertains to the fulfillment of our in-kind obligations to the ITER project. On the other hand, these international responsibilities should not come at the cost of basic domestic science and fusion theory. The proposed budget shifts funding away from the enabling research and development while cutting funding of the basic sciences with the adverse consequence of dropping many of our domestic university research programs and funding for faculty, graduate students, and postdoctoral fellows. For example, the fiscal support for Historically Black Colleges and Universities was significantly reduced.

We believe our country should be strengthening our domestic fusion engineering expertise while fulfilling our obligations under the auspices of the ITER agreement.

Even with the potential waste minimization benefits of reprocessing, the Yucca Mountain repository is still necessary. We support the provisions that streamline the construction and operation of Yucca Mountain outlined in **The Nuclear Fuel Management and Disposal Act (S.2589)** including:

- The section eliminating the arbitrary and artificial 70,000 metric ton capacity limitation on Yucca Mountain. There is no scientific basis for this capacity and preliminary scientific studies suggest that Yucca Mountain is capable of safely isolating a higher capacity.
- The provisions simplifying the regulatory framework over issues such as air permits and water rights. These provisions do not weaken public health and environmental laws. They clarify jurisdiction and consolidate duplicative environmental review.
- The provision on transportation exempting certain materials from requirements under the Resource Conservation and Recovery Act. This provision does not degrade safety; rather, it places responsibility with the appropriate agency, the Nuclear Regulatory Commission, to regulate

radioactive materials as was done in 40 CFR 266: Storage, Treatment, Transportation, and Disposal of Mixed Waste[1], which applies to the Waste Isolation Pilot Plant.

Reduce, reuse, recycle has been a long standing effective means to solve excess waste issues on all fronts in our society and should be extended to the nuclear fuel cycle for several reasons:

- Removing fissionable material effectively reduces the amount of spent nuclear fuel needed to be stored at a repository. This in turn will alleviate costs associated with the creation of additional repository sites.
- Although reprocessing may not currently be economical, the United States should pursue research and development of these technologies to eliminate the immediate need for additional repositories.
- Reprocessing allows the reuse of 97% of the material in spent nuclear fuel.
- Reprocessing would, if implemented in the near future, alleviate problems associated with retrieving spent nuclear fuel from a geologic repository at a later date.
- We, the Delegation, support using the Nuclear Waste Fund towards reprocessing technologies.

The United States should codify a national spent nuclear fuel management strategy that will remain consistent for years to come. We support a consistent long-term spent nuclear fuel management strategy to decrease risk and cost at all stages of the nuclear fuel cycle:

- **Operation**: Currently, reactor operators are forced to store their spent nuclear fuel onsite longer than initially planned. Operators must take additional measures to ensure the physical safety of the spent nuclear fuel while facing increasing pressure from stockholders as fuel management costs rise.
- **Recycling**: Uncertainty in federal support led to the failure of two fuel recycling facilities, one in New York and one in South Carolina. These facilities were constructed in an environment favorable to a closed fuel cycle and were subsequently abandoned when President Carter shifted U.S. policy by banning fuel reprocessing. While the ban has since been lifted, the nation has been slow to rebuild the infrastructure necessary to support new spent fuel recycling facilities.
- **Fuel Production**: The capability of the U.S. uranium production industry has declined as no new reactors have been ordered in the nation. A resurgence of nuclear power will require greater availability of fuel. Investors are hesitant to fund mining operations with an uncertain outcome.

At the dawn of the nuclear age, a few scientists dreamt of bringing about world prosperity through the safe and peaceful use of the atom. The Global Nuclear Energy Partnership is a plan to realize that dream.

- Every step of the GNEP program is in and of itself a significant achievement, and each spurs economic prosperity and fosters the development of proliferation-resistant plants.
- GNEP utilizes reprocessing and advanced reactors to minimize waste.
- GNEP is inextricably linked to the success of Yucca Mountain and the development of new technologies.

The obstacles of building this worldwide nuclear partnership are demanding. Concrete planning and appropriate financial commitment are a must for this program to flourish. It is a grandiose dream and we, the Delegation, support turning it into a reality.

---

[1] http://www.epa.gov/radiation/docs/mixed-waste/530-f-01-008.pdf