



# GO NUKE!

A newsletter from the North American Young Generation in Nuclear

IYNC Special Edition

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## IYNC 2004



### *A World of Innovations*

By Shannon Bragg-Sitton

Nearly 300 international delegates descended upon downtown Toronto, Ontario, Canada in early May to attend the 2004 International Youth Nuclear Congress. The third biennial IYNC, the 2004 Congress marked the first time that IYNC has been held in North America. This was a noteworthy event for NA-YGN, which had never before put on a stand-alone conference. IYNC 2004 was co-hosted by NA-YGN and the Canadian Nuclear Society, in cooperation with the International Atomic Energy Agency. NA-YGN certainly proved its worth, putting on a very successful conference attended by both young and established professionals from 35 countries, including 25 keynote speakers from nuclear science and technology world-

wide.

IYNC was officially established in April 2000 with its first congress in Bratislava, Slovakia. At the first IYNC international meeting, delegates composed the IYNC mission:

- To develop new approaches to communicate the benefits of nuclear power, as part of a balanced energy mix.
- To promote further peaceful uses of nuclear science and technology for the welfare of mankind.
- To transfer knowledge from the current generation of leading scientists and engineers to the next generation, and across international boundaries.

To live up to the IYNC mission, each congress has focused on developing a program that includes outreach to the

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### *Reflections on IYNC 2004*

By Larry Foulke  
2003-04 American Nuclear Society President

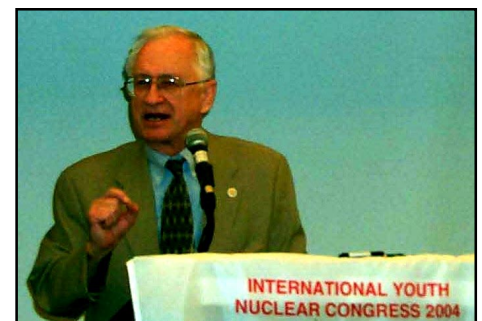
It was awesome! Such a great gathering of young people from all over the world! I was even somewhat surprised at how many YGN members this 67-year old knew.

I am pleased to have been able to be a participant for even a short time. ANS is proud to be part of this highly successful international youth conference and is committed to promoting the activities of students and

young members all over the world. I want to thank all those who worked to put together the conference; it was an excellent program and it was run well. I hope that your next IYNC will even be larger

and more successful. As I noted in my luncheon remarks on Monday, your

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**2003-04 American Nuclear Society President Larry Foulke addresses IYNC 2004 attendees.**

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## Foulke

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volunteer effort is important for promoting technical and social exchange.

My request to you at the luncheon was to please join me in taking action to "tell our story" - to reach a wider audience and give the public and our policymakers a sense of realism. I fear that the only things some of our policy makers know about nuclear power and low-level radiation are what they learn from anti-nuclear groups. You have the facts about our remarkable technology and you wear the white hats, like the good guys in the old cowboy movies. If you ride out and share these facts, and encourage other young folks to do so, we will eventually break down the anti-nuclear mythology that dominates the thinking of many in my generation. Many of you work or will work in the important industry of nuclear electric power. The U. S. National Academy of Engineering named electrification as the premier engineering achievement of the 20th century. This is a remarkable statement for the century of lasers, comput-

**There is no way this nation can afford not to build new nuclear power plants.**

ers, airplanes and space travel.

The U.S. economy is, according to Peter Huber, increasingly using energy in the form of electricity. Back in the 1880s, no electricity was used. Ever since, the share of all energy used in the United States in the form of electricity has grown to 40% and that trend will continue. According to Huber, more than 90% of the growth in energy demand since 1980 has been met by electricity. Tomorrow there will be more silicon in your car than steel. At a modest growth rate in electricity demand of 1.8% per year, the United States will need almost 400 new 1,000 Mwe base load plants within the next 20 years!! There is no way this nation can afford not to build new nuclear power plants. It's inevitable given the alternatives.

Let me close by encouraging each of you to also get engaged with the professional nuclear society in your nation. They need your enthusiasm and they are looking to you for the next generation of leadership in the profession. Just think, the people who will build Gen IV reactors in 2030 are in GRADE SCHOOL right now! And by that time, you will be the leaders of the profession in your countries.

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## Innovation

From Page 1

local community (e.g., via a public event such as a "Fun Run"), professional development workshops, and opportunities for young professionals to interact with established experts in the field through the more traditional technical and panel sessions, in addition to less formal social events.

At IYNC, delegates are given the opportunity to share their own work with their colleagues via poster and oral presentations in an un-intimidating environment of peers, while also meeting key goals in their professional development plans by attending workshops tailored to those just starting out in their careers. 2004 workshops included Communication: Effective Processes for International Organizations, Fast Reactor Knowledge Preservation and Transfer, and Media Training.

The communications

workshop, chaired by IYNC Network President Alexander Tsibulya, took a different approach than one might expect at a nuclear conference, considering how the nuclear industry might learn from the effective communication methods employed by the international activist organization Greenpeace.

While most nuclear professionals are not formally trained to speak to the public on nuclear issues, it is important for each of us to learn to speak about nuclear technology such that the public is able to grasp its benefits. To help prepare young professionals for encounters with the media, each IYNC has held a media training workshop that offers participants the opportunity to learn effective methods of accurately conveying a technical concept to the media, focused around the needs, interests, concerns, and expectations of the public. Not only did participants learn skills on how

to better communicate with the public, they were put to the test - with an on camera interview - by experts at the IAEA in public information and communications skills! Lisa Shell of Dominion Generation commented, "Being filmed was intimidating, but there is no better way to learn and prepare for the real situation."

After three very successful conferences (Slovakia, 2000; South Korea, 2002; Canada, 2004), IYNC 2006 will be held in Scandinavia as a joint venture of the Swedish and Finnish young generation net-

works. Additional volunteers are being sought for IYNC 2006 committees- if you are interested, please contact the IYNC 2006 Local Chair, Martin Luthander ([martin.luthander@iync.org](mailto:martin.luthander@iync.org)).

Since IYNC 2004, several articles have appeared in publications around the globe, highlighting the success of the congress. For more details, check out the CNS Bulletin (June 2004), NucNet (<http://www.worldnuclear.org>, No. 11, posted at [www.iync.org](http://www.iync.org)), and the Nuclear News (August 2004).

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# GO NUKE!

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# IYNC 2006

## *Preparations Are Underway to Welcome You to Scandinavia*

By Martin Luthander

In May 2004 at IYNC 2004 in Toronto, Ontario, Canada we learned that the next congress for young people in the nuclear industry will be held in Sweden and Finland in June 2006. Therefore the Swedish and the Finnish Young Generations would like to welcome you all to Scandinavia. The technical program of the congress will be held in Stockholm, Sweden with an extended technical visit to Olkiluoto, Finland.

"Smorgasbord" is one of very few Swedish words in the English language and it is exactly what the delegates will experience first upon arrival to Stockholm. The local government councilor of Stockholm is pleased to in-

vite all delegates to the City Hall for a buffet. This is where the Nobel Price Award Dinner is held every Dec. 10. Following this welcome to Scandinavia, a formal opening of the congress will be held on the Monday in the Royal Opera, located in the very heart of Stockholm.

The venue of the technical program will be in the Royal Institute of Technology, also in Stockholm, and it will run Monday afternoon through Wednesday. On Wednesday night there will be a huge passenger ferry that will take us all to Turko in Finland. It is an overnight transfer and the delegates will expe-

rience one session describing Young Generation activities throughout the world. The delegates will then spend one full day in



Stockholm from the air.

Finland where there will be an extensive technical visit including the construction of the world's first EPR, geological repository, NPP, etc.

A Farewell Dinner will be held in Finland before the boat takes all back to Stockholm. Friday, June 23, the day that the delegates return to Sweden, is a very special Friday. Not only is it the last day of the congress but also it is the so-called "Midsummer evening." This is a highly traditional day in both Sweden and Finland where family and friends gather in common joy and festivities. It will be a pleasure to end the IYNC 2006 in such a manner.

Welcome to Scandinavia in June 2006.

For more information please refer to [www.iync.org](http://www.iync.org) or contact Martin Luthander ([martin.luthande@iync.org](mailto:martin.luthande@iync.org)) or Alexander Tsibulya ([alexts@iync.org](mailto:alexts@iync.org)), General Co-Chairs for IYNC 2006.



Finland's Olkiluoto nuclear power plant.



IYNC 2004 published over 200 technical papers and boasted participants from over 35 nations!

Source: [www.iync.org](http://www.iync.org)



## Is YOUR Contact Information Up To Date?

You can now update your contact information through a Web form at [www.na-ygn.org/aboutus/member.cgi?login=1](http://www.na-ygn.org/aboutus/member.cgi?login=1)

Stay in the know -- update your NA-YGN contact information TODAY!

# Knowledge Transfer in Focus: Fast Reactor Design and Development

By Dave Pointer

Two mini-workshops were held at IYNC to provide opportunities to discuss the conservation and transfer of knowledge accumulated by the generation of professionals who developed fast reactor technology to the next generation of nuclear professionals. The fast reactor technology development programs of the 1960s, 70s and 80s led to a significant understanding of the principles of fast reactor design, construction, operation, and control. While interest in the implementation of fast reactor technology for power generation has been limited since that time, this technology is receiving renewed interest as part of the international Generation IV nuclear plant development programs.

The workshop sought to identify opportunities to transfer the experience gained from past programs to young professionals working on current and future programs.

Each workshop began with a brief discussion of the history of the development of fast reactors and the basic differences between fast and thermal reactors. Participants then sought to identify the obstacles that are likely to threaten the conservation of the knowledge base developed in past programs and limit future applications of fast re-

actor technology as the Generation IV plant designs are deployed and to suggest actions to address those obstacles. Three primary obstacles were identified by both groups and similar actions were proposed to address two of the three obstacles.

### Obstacle 1

Nuclear engineering education programs do not devote sufficient time and resources to the discussion of fast reactor technology. Many participants indicated that even the most basic differences between fast and thermal reactor systems (i.e. absence of or reduced moderation, increased production and fissioning of plutonium isotopes, etc.) were not discussed in their coursework.

#### Action 1a

Research and development institutions interested in preserving fast reactor technology expertise should develop and freely distribute instructional materials and lesson plans for use in undergraduate and graduate courses.

#### Action 1b

Accreditation boards should require nuclear engineering programs to provide a broader background on nuclear reactor technologies in addition to the thermal reactor technologies primarily

in industrial use today.

### Obstacle 2

The commercial component of the nuclear power industry is not sufficiently involved in the development of advanced power production concepts, limiting the likelihood of commercial implementation of advanced reactor technologies and opportunities for conservation of accumulate knowledge within the commercial component of the industry.

### Action 2

Major reactor technology research and development initiatives, such as Generation IV, should seek to integrate representatives from all levels of the power industry in order to cultivate a commercial environment in which there is a need and a desire for advanced technology and to ensure that proposed technology meet the operational needs of the industry.

### Obstacle 3

Political sensitivities and non-proliferation agreements limit the study and development of fast reactor technology options in much of the world, leaving nations which have already developed plutonium based technologies with the responsibility of maintaining this knowledgebase.

# IYNC Games Kick Off Conference

By Shannon Bragg-Sitton

To start the Congress off on the right "foot," delegates from around the world engaged in an international football game (that's soccer to the Americans out there!). After a short Fun Run through downtown Toronto, delegates gathered at a nearby gymnasium for the much-anticipated game. Stewart Lynas, IYNC National Representative for the UK, commented, "Both the fun run and the soccer match were great fun, and offered a chance to see some of the beautiful city of Toronto. Showing off the nuclear front to the people of Toronto got some funny looks, but the smiling faces and exuberance of youth was well received." Rather than forming teams based on country or regional affiliations, or based on technical areas of expertise, delegates simply divided themselves into two multinational teams, ready to demonstrate their athletic prowess. After an hour of fast and frenetic play, the score stood tied at 1-1. IYNC International Chair Sergey Klykov from Russia summed up the game results quite appropriately, concluding that "Friendship was the winner!" The afternoon of light-hearted fun provided an exceptional start to a week of international collaboration.



Top right: Mark McIntyre keeps the games participants in line.

Inset: Gamers at the IYNC engage in a friendly soccer match.

Right: IYNC attendees take a break from the fun and games to pose for a photo op.





U.S. participants perform their national anthem, "The Star-Spangled Banner."

## Innovations in Conference Planning

By Lisa Shell

The theme of IYNC 2004, "A World of Innovations," was chosen to highlight what the nuclear field has to offer in innovative technologies. It could have just as well been chosen to emphasize the "out-of-the-box" approach that organizers took in planning special sessions and activities. Some of the highlights included:

### Advanced Reactor Debate

Representatives of companies that have designed or are designing advanced nuclear power plants were invited to participate. Milt Caplan of Atomic Energy of Canada Ltd. presented the ACR-700, Maurice Magugumela of South Africa's PBMR Ltd. presented the Pebble Bed Modulator Reactor, Takeo Shimuzu of Toshiba Corporation presented the Advanced Boiling Water reactor, and Regis Matzie of Westinghouse presented the AP 1000.

### Nuclear Game Show

IYNC hosted its first nuclear gameshow: ConFusion! De-

signed and hosted by Lisa Shell of Dominion Generation, the gameshow pitted a team of young professionals, the "Neutrons" against a team of established professionals, the "Protons." Each team was international in its makeup; no two players came from the same country. Contestants competed in a "Jeopardy"-style game of nuclear trivia, a head-to-head race to remove full protection gear correctly and in the right order, and a mini-scavenger hunt that required audience assistance and participation. Kudos to CNS president Jeremy Whitlock for volunteering to race Stewart Lynas of the United Kingdom in the gear removal race. Moving swiftly enough to be mistaken for a young professional, Whitlock was beaten in this segment by mere tenths of a second. Although the final score was close, the Neutrons squeaked through as the winning team, partly due to some ingenious solutions to the items sought in the scavenger hunt. When told to find a dosimeter, the Neutrons brought a glass of water to the front of the room. A nearby health physicist said

that radiation exposure could be measured by the amount of free radicals in the water. The judges were skeptical but awarded the Neutrons partial credit. Hopefully, there will be a rematch in 2006!

### National Anthem Singing Contest

After a long day of meetings, IYNC participants were often ready for a relaxing meal and a little socializing. A favorite event was the National Anthem Singing Contest at the "Night on the Town" sponsored by Westinghouse. With so many countries represented, the group was serenaded in several languages! Participants in the "contest" included Russia (perhaps the largest and most patriotic group), Croatia (a small group, but with a lot of heart!), Sweden and Finland (singing together, demonstrating the very close ties between these countries), Canada, the USA (this rendition even included props and choreography!), Slovakia, France, Germany, and Slovenia. Extra points for bravery went to Germany and Slovenia, who graced the event

## Test Your ConFusion!

1) Name that Radioisotope for 100: In my elemental form, I am a man-made metal that at normal conditions is crystalline and silver-white. I was discovered by Glenn Seaborg in 1944. Like all isotopes of this metal, I am radioactive and I have a half-life of 432.7 years.

2) Who Am I? For 500: In 1898, I discovered two new elements in a sample of uranium pitchblende and one of them was named after my native country.

3) Around the World for 400: The first commercial plant of the EPR design is scheduled to begin operating in May 2009 in this country.

4) Acronymphobia for 400: VVER

5) Go for the Gold for 300 (answers are Gold sponsors): This company's site has 6 operational nuclear reactors and is located on Lake Huron.

Answers: (1) What is Cesium-137? (2) Who is Marie Curie? (3) What is Finland? (4) What is Vode Vodjanie Energitičeskie Reactor? (5) What is Bruce Power?

with their national anthems as the sole representatives of their countries!

Events like these served to foster interaction among the diverse participants. All in all, the IYNC organizers did a fantastic job ensuring that IYNC 2004 was no ordinary conference. Your boss may not have enjoyed himself, but when a conference is organized for and by the young professionals of the nuclear industry breaking new ground is a matter of course.

**GO NUKE!**

# Social Prestige of the Nuclear Profession

By Shannon Bragg-Sitton

At the 2004 International Youth Nuclear Congress in Toronto, Ontario, Canada, young professional attendees gathered to discuss the "Social Prestige of the Nuclear Profession" in an informal discussion session moderated by Peter Gowin of the International Atomic Energy Agency (IAEA). Panelists included: Sebastian Luppi Berlanga (CNEA, Argentina), Elvina Finzi (Politecnico di Milano, Italy), Tilen Jenko (Slovenia), Reuben Mogafe (NECSA, South Africa), Kwan-Kyoo Choe (KAERI, South Korea), and Shannon Bragg-Sitton (LANL, United States).

At the start of the discussion session, panelists were asked to introduce themselves and to say a few words about the status of nuclear science and technology in their home countries. Attendees quickly found a wide array of feelings toward the nuclear profession around the world. While some countries are turning away from nuclear technology due to fear and misunderstanding of the associated technologies, others are beginning to turn around the anti-nuclear referendums. Regardless of the situation in each of their countries, panelists expressed a need for maintaining nuclear knowledge and taking a more active role in public communication efforts. Throughout the profession, leading experts are aging, but there are few young people entering the field to take on their roles or to absorb the vast amounts of knowledge their experience has bestowed. It is our responsibility as nuclear professionals to change this trend. The IAEA is working to maintain nuclear knowledge, and this role calls for the assistance of the young generation in establishing initiatives such as mentoring programs, outreach activities, etc.

This spawned a discussion that considered how one might approach the public to garner support for nuclear science and technology, with an attempt to "turn the tide" of public opinion for nuclear applications and other areas of science and engineering. The overall feeling was that it is the responsibility of each nuclear professional to take an active role in commu-

nicating with the public. Some applications of nuclear science and technology, such as medical diagnostics and treatments, are well accepted by the general public, but the tie between this and power applications are not readily apparent to a layman. More well known applications can be used as a starting point for discussions, leading to an opportunity to explain the vast applications of nuclear. The "sexier" applications of nuclear, such as space power and propulsion, can also be used as "hooks" to bring people into the field.

A general conclusion or "action item" that came from the discussion was that we, as professionals in the nuclear field, need to be convinced of our mission for nuclear energy and we need to speak honestly with the public, presenting a common message. Our ability to accomplish this mission can be maximized by taking advantage of the position, prestige, and contacts of the IAEA.

Within the community, nuclear professionals need to work to create a map of nuclear knowledge to ensure that key information is not lost for future generations of scientists and engineers. Accomplishment of this mission will require the establishment of links and communications across the field -- both from one discipline to another, as well as across international boundaries. In addition to the guidance and support provided by the IAEA to organizations such as the IYNC, the newly established World Nuclear Association and World Nuclear University may also be able to provide assistance in this mission. A gathering like IYNC tends to counter the negative connotation of a nuclear career within our own internal community -- the energy in meetings like IYNC maintains the momentum among our peers, keeping them in the industry.

In general, panelists and attendees believe that management support for young professional participation in the professional societies is well supported. Senior scientists and engineers are encouraged by the enthusiasm of the youth for the nuclear profession. However, many young professionals tend to shy away from involvement in professional activities and

outreach events, stating that there is a lack of support of their management for these activities. While travel dollars are tight in all companies, organizations, government agencies, etc., the importance of young generation involvement in professional activities appears to be recognized by management. It appears that support of involvement in the professional community is strong at the highest level in companies and other agencies (e.g., CEO, President, etc), but not necessarily at the intermediate management levels that are concerned with day-to-day details of operation. Both funds and manpower resources are limited, and it is often difficult to allow employees to spend time on non-work activities, despite the long-term benefits that arise from these involvements.

It is the duty of the young professionals to seek out management support to initiate and maintain involvement in these activities -- management is more supportive than most young employees think! The messages and results generated in meetings like IYNC need to leave the congress, such that industry leaders can see the results and the benefits of young professional involvement in the community. The goals of IYNC can be aligned with the overall goals of the nuclear community (e.g., internal goals of one's company), maximizing our ability to accomplish the goals of the organization.

Many delegates emphasized a need to focus on developing countries, which often require additional support to establish a presence in the professional community. This may be an ideal place for the IAEA to focus some of its funds to ensure that the nuclear community maintains international involvement of all countries that are involved in research, development and application of the peaceful uses of nuclear technology.

The IAEA is working to assist in the maintenance of nuclear knowledge. While the IAEA is an international organization, most of the activities must occur at the level of the member states, in cooperation with local government agencies and

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# EVENTS

## National and International Events

**Nov. 14-18, 2004** American Nuclear Society Winter Meeting and Technology Expo. Washington, D.C. [www.ans.org](http://www.ans.org)

**Nov. 14-19, 2004** 2004 International Mechanical Engineering Congress & Exposition. Anaheim, Calif. [www.asme.org](http://www.asme.org)

**Feb. 13-16, 2005** 2005 Health Physics Society Midyear Topical Meeting. New Orleans, La. [www.hps.org](http://www.hps.org)

**Feb. 13-17, 2005** Space Technologies and Applications International Forum 2005, "Forward with a New Age of Exploration". Albuquerque, N.M., [www.unm.edu/~isnps/staif/](http://www.unm.edu/~isnps/staif/)

**April 17-21, 2005** Monte Carlo 2005. Chattanooga, Tenn. [www.ans.org](http://www.ans.org)

**April 25-29, 2005** 5th International Conference on Isotopes, Brussels, Belgium. [www.jrc.nl/5ici/](http://www.jrc.nl/5ici/)

**May 14-15, 2005** Young Generation Professional Development Workshop (co-located with the Nuclear Energy Assembly). Washington, D.C.

**May 15-18, 2005** International Congress on Advances of Nuclear Power Plants (ICAPP '05). Seoul, Korea

**May 16-18, 2005** Nuclear Energy Assembly. Washington, D.C.

**May 16-20, 2005** 13th International Conference on Nuclear Engineering (ICONE13). Beijing, China. [www.asmeconferences.org/ICONE13](http://www.asmeconferences.org/ICONE13)

## Get Noticed!

Upcoming events and deadlines that you would like to be included in the *Calendar of Events* can be submitted at any time for posting on the web. Include the date, location, title of the event, and the event host or sponsor in an e-mail to [gonuke@na-ygn.org](mailto:gonuke@na-ygn.org).

**June 5-9, 2005** 2005 American Nuclear Society Annual Meeting. San Diego, Calif. [www.ans.org](http://www.ans.org)

**June 5-9, 2005** Space Nuclear Conference 2005 (SNC '05), an Embedded Topical Meeting at the 2005 ANS Annual Meeting. San Diego, Calif. Abstracts Due: Dec. 1, 2004. [www.ans.org/goto/space](http://www.ans.org/goto/space)

**June 12-15, 2005** 26th Annual CNS Conference & 29th Annual CNS/CNA Student Conference. Toronto, Ontario. [www.cns-snc.ca](http://www.cns-snc.ca)

**Aug. 7-10, 2005** Utility Working Conference. Amelia Island, Fla.

## Prestige

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infrastructure. An emphasis needs to be placed on knowledge transfer in specialty

areas, which may be at risk for disappearance. The connection between the IAEA and international organizations such as the IYNC should be strengthened and enhanced to ensure that the vast amount

of knowledge that has been generated in the nuclear field is not at risk, and to further the education of the public to garner support for the continued development of nuclear science and technology.



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