



May 2006

No 5

# *The ANS Globe*

*...e-news from the ANS International Committee*

## **From the editors**

The ANS Globe is the Bulletin of the American Nuclear Society's International Committee. This is the 5th issue in its recent reincarnation. The ANS Globe has as its mandate the dissemination of news of international interest to International Committee members and to others. Please send us your letters, articles, and/or comments for consideration towards the next issue.

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**Acknowledgements:** The editors would like to thank Mr. Mike Diekman of the ANS for his invaluable help in stimulating and collecting news items for the ANS Globe, and in ensuring the correctness and completeness of contact information for International Committee members and agreement Societies.

## **From the Chair**



Dear friends,

In line with the numerous signs of a “nuclear renaissance” that we have witnessed in many countries during the past year, a number of initiatives have begun to emerge, notably in the US, to turn this global trend into practical steps.

Emphasis is being placed on taking advantage of the potential offered by international cooperation to progress more efficiently in this endeavor. At the same time, the need to proceed with caution and lucidity has been voiced from various quarters, notably by industry, to ensure that crucial ingredients will be available, namely investment, qualified manpower resources, and non-proliferation assurances.

- In February, the US Energy Secretary Samuel Bodman launched the Global Nuclear Energy Partnership Strategy which “would enable the expansion of emissions-free

nuclear energy worldwide”. It includes designing advanced burner reactors to produce energy from recycled nuclear fuel and establishing a fuel services program allowing developing nations to acquire and use nuclear energy economically while minimizing the risk of proliferation. By developing advanced recycling technologies, the US and its international partners would change the way spent nuclear fuel is managed, assuring a safe, long-term and clean energy supply.

- In March, during their meeting in Moscow, G8 energy ministers called for promoting nuclear power in diversifying sources to enhance global energy security, noting in particular that “Safe and secure nuclear power represented a crucial alternative for those countries that chose to use it”.

Russian President Vladimir Putin said that concrete proposals to enhance global energy security will be presented at the July G8 summit in St Petersburg and sought support for Russia’s proposal to create international centers for nuclear fuel services.

- In the US, at a House hearing, a panel has debated on the GNEP. David Modeen, from EPRI, underscored that the expansion of nuclear depends on cooperation between government and industry: “This expansion must be built on a solid foundation, which includes safe operation of current reactors, deployment of Advanced LWR and the licensing and operation of Yucca Mountain.” As requested, a proposed legislation to move forward the licensing and construction process of Yucca Mountain has been sent to the Congress early April. Shane Johnson, from DOE, said that an order for a new reactor in the US would be a good way to “jump-start” the industry and Neil Todreas from MIT pointed out that GNEP’s success depends on many highly trained professionals - mainly from the new generation - to develop the new technologies.
- At the international level, GNEP broad implementation strategy calls for strengthening the cooperation of the US with its key international partners to accelerate the demonstration and deployment of new advanced recycling technologies enhancing proliferation resistance for more energy and less waste. An international fuel services program would improve the proliferation resistance and safety of expanded nuclear power.

Anticipating this trend towards improving global energy security in a sustainable approach and long-term perspective, the ANS has finalized in November its updated Strategic Plan with a broad emphasis on global interactions, and is currently preparing the associated Action Plan. Let me quote **President Reinsch** at his testimony before the House in March: “The ANS applauds the administration for stepping forward to articulate the GNEP - a broad vision of how the world can greatly expand the peaceful use of nuclear energy while minimizing the risk of proliferation. Since 1993, the ANS has organized biannual conferences at which global nuclear technology leaders have been challenged to develop such a vision. The emerging consensus has closely resembled GNEP, indicating a high likelihood of its future international acceptance”.

Let us continue challenging such a vision and building this consensus inside and outside our global nuclear network.



France Brès-Tutino

The incoming Annual Meeting will kick off with “A brilliant future: Nexus of Public Support in Nuclear Technology”.

## News from Sister Societies

- [Sad news from Belgium](#): The staff members, the management and the members of the board of SCK\*CEN (Studiecentrum voor Kernenergie - Centre d'Etude de l'Energie Nucléaire - Belgian Nuclear Research Centre) reported that Mr. Paul Govaerts, General Manager, passed away on January 25, 2006. The ANS Globe and the ANS International Committee offer sincere sympathies to Mr. Govaerts' family.
- [The ANS French Section](#):

[ANS President Reinsch](#) went to France last December to participate in the international conference ENC 2005, held in Versailles and cosponsored by ANS and ENS. He gave an invited address at the opening plenary session, organized by the two General Co-Chairs of the Conference: Larry Foulke for the ANS and Bertrand Barré for the ENS.

During the Conference, President Reinsch signed a Memorandum of Cooperation between ANS and the Association WIN Global, represented by its President, [Mrs. Junko Ogawa](#), with high-ranking participants from different countries. At the same occasion, another Memorandum of Cooperation was signed between WIN Global and the ENS, represented by its President [Bertrand Barré](#). Let us recall that the WIN Global Network has over 2000 members from 60 countries.

During his meeting with the French Section Board in Paris, President Reinsch stressed his strategic priorities as enhancing international cooperation and improving the role and involvement of the Young Generation in nuclear-society governance. His program also included a technical visit to the AREVA facilities at La Hague, specially organized for him with the participation of Mrs [Rosine Couchoud](#), Vice President of the French Section.

The photo shows Ms. Ogawa with [ANS President James Reinsch](#) (on the right), [ANS International Committee Chair France Brès-Tutino](#), and [ENS President Bertrand Barré](#) (on the left).



French Section members were very active in organizing two international Conferences which were held in the second half of 2005:

- M &C 2005, the NS Topical Meeting on Mathematics and Computation, Supercomputing, Reactor Physics and Biological Applications, held 11-15 September 2005 in the Popes' Palace in Avignon, and
- NURETH 11, the Eleventh International Topical Meeting on Thermal Hydraulics, held 2-6 October 2005, also in the Popes' Palace in Avignon.

Both meetings were of high scientific quality and very successful, attracting a very large international audience.

- Congratulations to [Frank Carré](#), Director for “Future Nuclear Systems” at the Nuclear Energy Division of the CEA/French Atomic Energy Division and Chair of the French Section, who has been elected to the ANS Board of Directors as European Representative.
- And congratulations as well to International Committee Chair [France Brès-Tutino](#), who was reappointed by ANS VP Harold McFarlane as Chair of the International Committee for one year.
- [The Canadian Nuclear Society](#) is currently very busy organizing the ANS PHYSOR-2006 Reactor Physics Topical, which it will host in Vancouver 2006 September 10-14. PHYSOR (PHYSics Qf Ractors) is a series of high-profile, international Topical Meetings of the ANS sponsored by the Reactor



Physics Division and held every two years. PHYSOR-2006 is expected to attract more than four hundred of the world's leading reactor physicists, nuclear engineers and computer scientists to make presentations on their latest work and to discuss the physics of current and future reactors and a broad range of related subjects. The meeting will be preceded by a Workshop on Sunday September 10, with presentations on three reactor-physics programs: TRITON (presented by Oak Ridge National Laboratory), PARCS (presented by Purdue University), and DRAGON (presented by École Polytechnique de Montréal).

Other conferences organized for this year by the Canadian Nuclear Society are its 27<sup>th</sup> Annual Conference on June 11-14 and its 5<sup>th</sup> International Steam Generator Conference on November 26-29, both in Toronto. Courses are also being offered this year on Reactor Physics and CANDU Fuel Technology.

In other news: At the end of the ANS Summer Meeting in Reno, Globe co-editor [Benjamin Rouben](#) will become Chair of the ANS Reactor Physics Division.

- [European Nuclear Society](#): [Dr. Bertrand Barré](#) sends this report. The ENS was founded in 1975 and is a federation of 26 nuclear societies from 25 countries - stretching from the Atlantic to the Urals and on across Russia to the Pacific. The ENS connects these national nuclear member societies with the principal aim of fostering and coordinating their activities on an international level. In relation to this, the society encourages the exchange of scientists and engineers between different countries and sponsors meetings devoted to scientific and technical matters and to communications on nuclear applications. At the same time, ENS serves as the Brussels-based contact point with relevant European institutions and international governmental and non-governmental organizations and with other organizations having similar aims.

The main service to ENS members is to provide up-to-date information on all issues relating to the peaceful uses of nuclear energy by drawing on the expertise available within the member societies. The most visible public-information products are in the form of: position papers, statements, conferences (see below), publications (ENS News) and website ([www.euronuclear.org](http://www.euronuclear.org)).

### **Mark your diary for the ENS conferences below!**

Event details are on <http://www.euronuclear.org>.

- Waste management: **TopSeal 2006**, 17-20 September 2006, Olkiluoto, Finland
- Nuclear fuel performance: **TopFuel 2006**, 22-26 October 2006, Salamanca, Spain
- Nuclear communicators: **PIME 2007**, 11-14 February 2007, in Italy
- Research reactor fuel management: **RRFM 2007**, 11-14 March 2007, Lyon, France
- Science & technology: **ENC 2007**, 16-19 September 2007 in Brussels, Belgium

Also of important note: Following the ENS Board and General Assembly that took place in December last year, ENS has a new President for the two-year term January



2006 to December 2007. He is [Frank Deconinck](#), a Belgian from the Flemish city of Gent. Congratulations to Dr. Deconinck!



- [Japan: Dr. Kiyoto Aizawa](#), Senior Executive Advisor to the President of JAEA, reported on recent nuclear topics in Japan. Some of these are:
  - On 2005 October 1, the Japan Nuclear Cycle Development Institute (JNC) and the Japan Atomic Energy Research Institute (JAERI) were merged into a single organization, the Japan Atomic Energy Agency (JAEA). The mandate of the JAEA includes basic and applied research on nuclear energy and the nuclear fuel cycle, human-resource development, and the dissemination of nuclear information, and special studies as requested by the Government.
  - In 2005 October, the Atomic Energy Commission of Japan (AECJ) issued a new nuclear energy policy outline. In this outline, the Japanese government set a target of 30-40% for the share of nuclear power in the total power generated in 2030. It also mandated that a Japanese Fast Breeder Reactor must be a reality by 2050.

On behalf the International Committee, Chair Brès-Tutino wants to convey her best congratulations to [Dr. Hisahi Ninokata](#), who has just been elected to the ANS Board of Directors as representative of Asia/Oceania.

- [Mexico](#): Past President [Juan Luis Francois](#) reports that the Sociedad Nuclear Mexicana (SNM) and the Sociedad Mexicana de Seguridad Radiológica (SMSR) will hold their 2006 Annual Meeting in Acapulco, México, 2006 September 3-7. The meeting is framed by the First Pan-American International Radiation Protection Agency (IRPA) Congress, which is being organized under the umbrella of the IRPA and with the approval of the International Atomic Energy Agency. This event will gather the community of researchers, engineers, students and professionals in general, interested in the development of nuclear science and technology and radiological protection. The theme of the Congress is “Challenges and Tendencies for the American Continent Concerning Radiological Protection, Nuclear Safety, Security and the Environment”.

At the beginning of this year, a new Board of Directors of the Sociedad Nuclear Mexicana was installed for the period 2006-2007. The new President of the SNM is [Dr. Gustavo Alonso](#), who is invited to the International Committee Meeting in Reno, on June 4, to give a presentation on the status of nuclear energy in Mexico.

- [Morocco](#): AIGAM, The “Association des Ingénieurs en Génie Atomique du Maroc” held a very successful Conference in Rabat, Morocco, 2005 November 24-25, with the theme “Nuclear Energy, Today and Tomorrow”. The Conference Program spanned several topics, such as perspectives on the development of nuclear energy in Morocco, economic aspects, training and research in nuclear technology, knowledge transfer, nuclear power in the international context, etc. There were many international invitees and speakers, Conference from France, the USA, and the OECD. ANS contributions to the Conference included a paper on the High-

Temperature MHR Design by Dr. A. Shenoy of General Atomics, and papers on “Nuclear Energy Technology: Benefits, Ecology, Economy” and on “Safety Culture” by Mr. F. Mark Reinhart of the US NRC.

**Upcoming Conference PHYTRA1:** The Moroccan Association for Nuclear Engineering and Reactor Technology “GMTR” is organizing the PHYTRA1 Conference, to be held in Marrakech, Morocco, 14-16 March 2007. This is the first International Conference organized by “GMTR”, following three national conferences. The objective is to gather scientists and engineers from different countries who share the same interest in reactor physics and nuclear technology. PHYTRA1 will also be a celebration for the operation of the first research reactor in Morocco (TRIGA Mark II), expected to be commissioned in 2006. Marrakech, founded about 1062, is one of the most popular and exciting cities of Morocco and is considered the first tourist destination in the country. It is full of monuments such as the Saadian tombs, the Koutoubia mosque, the Badia and the Bahia imperial palaces and the immense basins of Menara and Agdal. Not very far from the city center rise the high Atlas Mountains.

- **Thailand:** [Dr. Somporn Chongkum](#) of the Nuclear Society of Thailand reported on the Society’s activities in 2005. Activities in the 2<sup>nd</sup> half of 2005 included:
  - January: Annual Meeting at the Department of Nuclear Technology, Chulalongkorn University
  - February: With the Ministry of Science and Technology, organized the “World Year of Physics 2005 - Einstein’s Miraculous Celebration”
  - March: With the International peace Foundation, organized a special seminar by Prof. Jerome I. Friedman, Nobel Laureate in Physics, “Science: A Bridge to Peace”
  - March: Participated in the 4<sup>th</sup> Session of UNESCO’s “World Commission on the Ethics of Scientific Knowledge and Technology, Bangkok, Thailand
  - April: With Chulalongkorn University, organized special seminar by Mr. Chip Algrove, Director of Homeland Security, Canberra Inc., on “Security Equipment and Systems for Preventing Radiological and Nuclear Terrorism”
  - May: organized 3-day workshop for 550 science teachers on “Fundamentals of Physics Extended”
  - June: Participated in ICAPP 2005, Seoul, Korea
  - July: Participated in “Nuclear power Asia Pacific 2005”, Hong Kong
  - August: With Ministry of Science and Technology, organized “Science Week in Thailand”, attended by more than 100,000 people
  - October: With the Thai Institute of Physics, organized the Workshop “Emerging Technology and the Role of Physicists”
  - November: Participated in APEC Symposium on “Foresighting Future Fuel Technology, From Scenarios to Roadmaps”, Chiangmai, Thailand
  - Celebrated the publication of “Nuclear Fuels”, by V. Keshagupta and P. Sarasuddhi
  - Organized scientific visits to Nam Ngum Dam – Electricity of Laos, Chulabhorn Dam (Northeast of Thailand), and the Customs Department, Deep Seaport, Laem Chabang, “X-Ray Inspection Facilities”.

- [OECD](http://www.nea.fr): Information gleaned from the NEA Press Room on the Nuclear Energy Agency's website (<http://www.nea.fr>)

The just-published 2005 edition of Nuclear Energy Data (the “Brown Book”, considered as a standard reference for nuclear energy data) gives official figures on the status and trends in nuclear electricity generation and the fuel cycle in OECD countries. At the start of 2005, there were 352 nuclear units in operation in 17 OECD member countries, seven fewer than the year before. However, despite this reduction, nuclear generating capacity in the OECD increased by almost 1% and nuclear-generated electricity increased by over 4% over the previous year.

In all, nuclear power plants produced 23.5% of the electricity generated in OECD member countries during 2004; in Belgium, France, the Slovak Republic and Sweden it was over 50%. Improved performances compared to 2003 allowed nuclear power's share of electricity generation to increase in six OECD member countries (Canada, France, Germany, Hungary, Japan and Sweden).

At the end of 2004, eight nuclear units representing a total capacity of 6.6 GWe were under construction in OECD countries, with firm commitments for 19 more representing a total capacity of 24.1 GWe. All but one of these are destined for the OECD Pacific region. However, one new reactor, an EPR (European Pressurised Water Reactor), has been firmly committed in OECD Europe in Finland, marking the first new unit in this region in many years.

## Highlights from the 2005 November Washington Meeting

At the 2005 November meeting, the International Committee adopted a suggestion from member Sophie Gutner to form an ad hoc working group for liaison and interface with ANS Professional Divisions, and named the following as initial members of this working group:

- Sama Bilbao y León – Environmental Sciences Division
- Dominique Grenèche – Fuel Cycle and Waste Management Division
- Juan Luis Francois – Reactor Physics Division.

In the area of co-operation with international societies, Chair France Brès-Tutino indicated that the International Committee is working to complete the renewal of the agreement between the ANS and the Nuclear Society of Russia. Also, three new agreements are being proposed and the Committee voted to recommend them for approval by the ANS Board:

- with the British Nuclear Energy Society (BNES)
- with Women in Nuclear Global (WIN Global) – cf. the article above
- with the North American Young Generation in Nuclear (NAYGN)

**Note:** Subsequent to the International Committee meeting, the ANS Board approved the BNES and WIN-Global agreements and tabled the proposed agreement with the NAYGN.



## Summary of Dr. Akira OMOTO's speech on the Nobel Peace Prize

[Dr. Akira OMOTO](#), Director of the IAEA Division of Nuclear Power, participated in the ANS Winter meeting in Washington, DC, in November 2005. During the reception before the meeting, he and John Cleveland, on behalf of the IAEA and [Dr. Mohammed ElBaradei](#), the Director General (DG), received the ANS Presidential citation from Mr. Reinsch. In response to this, Dr. Omoto made a short speech as follows:

*“On October 7<sup>th</sup>, which was the day the Nobel Peace Prize was announced, Director General Mohammed ElBaradei sent a somewhat emotional message by email to every staff member, which states: “I could not be more proud than I am today to be your Director General”. We, the staff members of the IAEA, are also very proud of working for the Agency and for him. I would like to thank the President of the ANS, Mr. Reinsch, for the kind words on the Nobel Prize. Yes, we are very glad of course that our activities and our efforts have been recognized by this Prize. At the same time we feel very humble, because we feel we are encouraged to keep doing what we are doing more effectively with integrity, sincerity and full impartiality. Receiving the Prize strengthens our resolve to fulfill, with all our strength, both aspects of the Agency’s mandate, which involve working against the misuse of nuclear material for weapon programmes, and working to ensure the benefits of nuclear energy for peaceful uses through the world. Coincidentally, the US GAO report on non-proliferation, which was released on the same 7<sup>th</sup> October 2005, noted that although the IAEA has taken steps to strengthen safeguards, detecting clandestine nuclear weapons programmes is still not assured.*

*Now, the Agency is often characterized as the “UN nuclear watchdog” by CNN. However, that phrase does not characterize everything that the Agency does. First of all, I do not think I look like a watchdog. Our second mandate is the use of nuclear science and technology for peaceful uses throughout the world. In this context, there are many developing countries in almost every corner of the world talking positively about the future role of nuclear power. Their primary reason is the need for energy to support the growth of economy, population and per capita energy consumption in the quest for better quality of life, while caring about energy security and sustainability.*

*The growth of primary energy consumption in 2004 was 8.9 % in the Asian Pacific region, whereas the world average was 4.9%. India needs capacity addition of 10GWe/yr to support GDP growth of 7% per year. To meet this need for additional electric power capacity, India plans to expand its nuclear capacity 9 fold by 2022. China already ranks Nr. 2 in world energy consumption, and is the world’s Nr. 2 consumer of oil. It also has an ambitious programme to increase nuclear capacity 6 fold by 2020. Asian countries are on the leading edge of the coming nuclear power expansion. For that reason, the success of every aspect of these Asian nuclear programmes – including safety, reliability, proliferation resistance, and technological excellence – will be of vital importance to the peaceful use of nuclear energy in the world. Global support from countries with advanced nuclear programmes will be needed to pave the way to this success. Ensuring the benefits of nuclear energy for sustainability and at the same time preventing the misuse of nuclear material for weapons programmes is our challenge.”*

Dr. OMOTO also participated in the ANS panel titled “Planning a Country’s First Power

Reactor”. Using slides, he explained the rising expectation to the role of nuclear power and its implications. He especially emphasized that uranium exploration and mining activities must be initiated to support global expansion of nuclear power. He said that, although as compared with the current demand of uranium (68,000 Ton/year for 360 GWe) the world resources are ample when including unconventional (in phosphate deposits), the demand outpaces supply since 1985 and after 2 decades of low price, uranium price is increasing significantly. He also offered the observation that even the ambitious near-term nuclear deployment plans in India and China still cannot offset the increase of GHG emission by using fossil fuels in those countries. He also discussed three activity areas of the Agency to support the IAEA Member States when they choose the nuclear power option; supporting informed decision-making by use of information and computer tools; country specific Technical Cooperation projects such as energy planning, infrastructure building, first NPP and scenario assessment; and reduction of institutional impediments.

## *The New International Mini-Forum*

Chair France Brès-Tutino had invited two speakers to this Mini-Forum on the agenda of the International Committee Meeting held in Washington: Dr. C. Milu, President of the Romanian Society for Radiation Protection, and Dr. Sue Ion, President of the British Nuclear Energy Society.

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**The first speaker was Dr. Constantin Milu**, President of the Romanian Society for Radiation Protection. Dr. Milu presented a very interesting look at the status of nuclear-power development in Romania. This comprehensive presentation was prepared with Dr. Ioan Rotaru, President of AREN (Romanian Association for Nuclear Energy).

Romania has a population of about 23 million people. It is a full member of NATO since 2002, and looks forward excitedly to becoming a member of the European Union in January of 2007.

In 2004, gross electrical-power generation in Romania was 56.9 TWh (gross), of which 29% was provided by hydro power, 61% by fossil plants, and 10% by the Cernavoda Nuclear Power Plant, which is located on the Black Sea. Looking to the future, the portion of nuclear electricity is planned to be increased to 22% by 2015, with fossil electricity production dropping to 54%.



**Current and Future Units at Cernavoda Nuclear Power Plant**

Cernavoda NPP Unit 1 was declared in service on December 2, 1996. It is a CANDU-6 reactor of gross output 706.5 MWe, designed by Atomic Energy of Canada Limited. It uses natural uranium as fuel and heavy water as moderator and coolant.



Romania is self sufficient in uranium and heavy water and has developed the required national infrastructure to manage nuclear facilities. Cernavoda 1, operated by NUCLEARELECTRICA SA, has consistently achieved an excellent performance, with, for example, a gross capacity factor of 90% in 2004. In addition, it avoids the release of about 4 million tons of CO<sub>2</sub> per year into the environment, and also displaces the import of about 1.4 million tons of oil per year.

An interim dry spent-fuel facility has been built at Cernavoda NPP, in cooperation with AECL. The first module was commissioned in May 2003, and construction of two more modules is on-going. A final capacity of 27 modules is planned, sufficient to accommodate 50 years of the spent fuel from two CANDU-6 units during their lifetime. Cernavoda Unit 2, a similar CANDU, is currently being commissioned, with a large number of activities aimed at first criticality in September 2006 and commercial operation by 2007 March. With two units in production, the share of nuclear electricity will rise to 18%.



A feasibility study is also on-going for a third CANDU unit in Cernavoda, scheduled for operation in the 2012-2013 time frame.



Romania produces CANDU nuclear fuel in a plant in Pitesti (shown at left), using domestic uranium and yellowcake and imported zircaloy components.

CANDU Fuel Bundle



It is clear that the Cernavoda NPP has played and will continue to play an important



role in Romania's energy security and sustainability and improved environmental protection. It is recognized as being a safe, efficient and clean source of electricity. On account of its proven performance and benefits, the Romanian nuclear industry has earned strong support at the highest administrative and political levels. Nuclear power will reduce Romania's dependence on suppliers of primary resources from outside Europe, in line with the EU policy of increasing the security of the energy supply.

In terms of professional societies, Romania is well served by the Romanian Nuclear Energy Association (AREN) and the Romanian Society for Radiation Protection (RSRP).

AREN was founded in 1990 and has about 200 individual and 10 corporate members. It is a member of the European Nuclear Society, and a founding member of the Romanian Atomic Forum (ROMATOM). AREN's main objective is to foster and support nuclear power. Its annual "Nuclear Energetic Days" features an exhibit on nuclear power (with the participation of the nuclear industry), a display and contest of children's drawings, and the "Ionel Purica" Award, presented to an individual with a record for dedication to nuclear development and promotion. AREN publishes the bilingual "Nuclear Energy" magazine. Other programs being developed are the International Symposium on Nuclear Energy – SIEN, and activities aimed at the Young Generation and Women in Nuclear (WiN) groups.

The Romanian Society for Radiation Protection is a non-advocacy, not-for-profit professional association also founded in 1990, and with about 170 members. RSRP's aims are to communicate the scientific, technical, medical and legal aspects of radiation protection, as well as to protect the general population and radiation workers against harmful effects of ionizing radiation. RSRP has a library of more than 1,800 books on radiation protection. It holds annual meetings and Conferences, such as the Conference on Radiological Protection in the Third Millennium, in Vatra Dornei, Suceava, in 2001.

In fact, RSRP invites everyone to the IRPA Congress it is organizing on "Regional and Global Radiation Protection Aspects":





The second speaker was Dr. Sue Ion OBE, FEng, FIM, FINucE, President of the British Nuclear Energy Society. Dr. Ion has been BNFL's Group Director of Technology since 1992. She has extensive working knowledge of the nuclear fuel cycle, fuel manufacture and reprocessing and recycle technologies. Dr. Ion was 1993 winner of the UK's Hinton Medal for outstanding contribution in nuclear engineering. A Fellow of the Royal Academy of Engineering, the Institute of Materials and the Institute of Nuclear Engineers, Dr. Ion is also a member of various

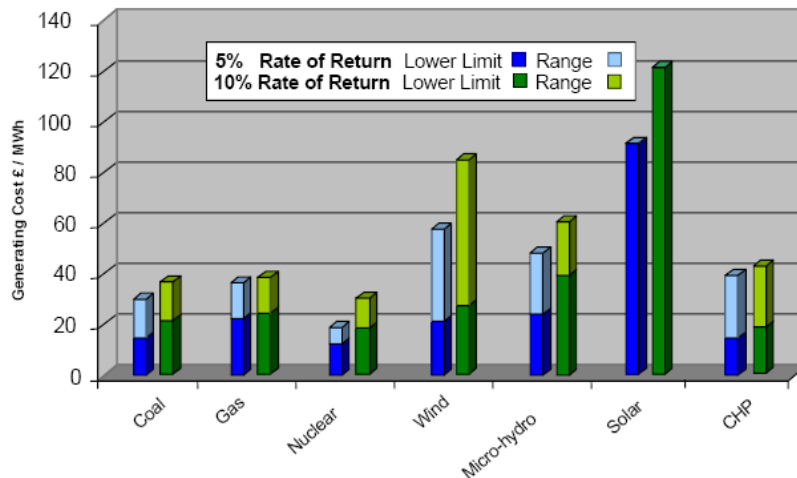
international bodies, including the IAEA's Standing Advisory Group on Nuclear Energy (SAGNE). In 2002, Dr Ion was awarded the OBE for services to the nuclear industry. She is President of the British Nuclear Energy Society and a Vice President of the Royal Academy of Engineering.

Dr. Ion spoke about "The UK Situation for Nuclear Energy".

The Government's Energy White Paper "Creating a Low Carbon Economy" put the energy policy on four pillars: environment, energy reliability, affordable energy, and competitive markets. Safety was recognized as being paramount. There was no overt support for nuclear, however CO<sub>2</sub>-emission avoidance was an important target, and nuclear was recognized as generating virtually no greenhouse-gas emissions. The affordability of the various energy alternatives could be compared from the OECD study of 2005 March:



## Affordability - Worldwide Summary of OECD Study



Source: "Projected Costs of Generating Electricity"; OECD; March 2005

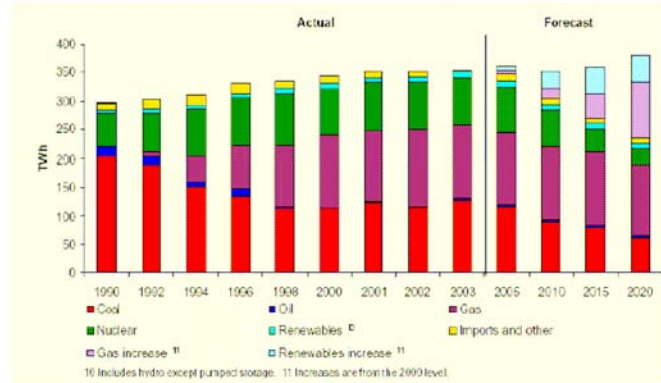
Nuclear possesses an advantage in the reliability of costs: the contribution of fuel to total



energy costs is less than 20% for nuclear, compared to over 60% for natural gas.

The supply mix in the UK has changed significantly in the last 15 years: as illustrated here:

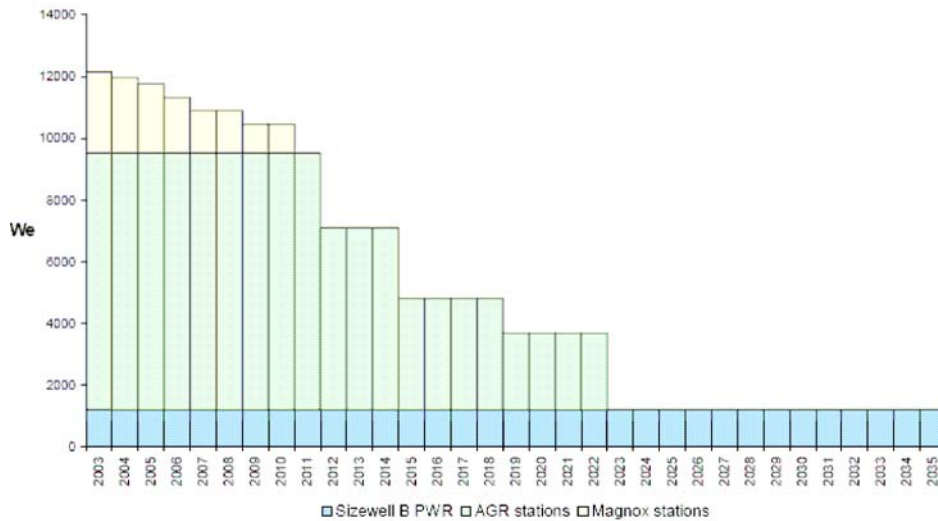
**bnes** British Nuclear Energy Society  
**Recent and Forecast Changes in the Electricity Supply Mix**



Source: DTI / Ofgem JESS report, November 2004

The program of closure of the current nuclear fleet in the UK is as follows:

**bnes** British Nuclear Energy Society  
**The Nuclear Closure Programme**



Nuclear options which can be considered currently are the ABWR of GE, Toshiba and Hitachi, the Russian VVER, the CANDU-6 PHWR of AECL, the Indian AHWR, the APR-1400 planned for Shin-Kori in Korea, the APWR of Westinghouse and Mitsubishi, planned for Tsugura in Japan, the Framatome-ANP EPR being built in Finland, the Westinghouse AP1000, the ESBWR under development by GE, and the Advanced CANDU Reactor being developed by AECL.

A timeline for nuclear new build which can be used as basis (starting from the issue of the revised energy policy) would be a Phase 1 of about 3 years for selection of a licensable design and receipt of the regulator's consent on the site and design, a Phase 2 of about 2 years for licenses to be issued and the investment decision to be made, and finally a Phase 3 of about 5 years from signing of the construction contract to the plant being on stream.

Public attitudes to nuclear power have changed considerably over the last few years. In July 2001 there was 60% opposition against and only 20% support for the building of nuclear power plants to replace those to be phased out in the future. In December 2004, opposition had dropped to 30%, while support for new nuclear plans had actually risen to 35%! Similarly, overall impressions of the nuclear industry and of nuclear energy are now more favorable (33%) than unfavorable (27%).

In conclusion, there are clear signs of positive changes in public attitudes towards nuclear energy. In the UK Government's review of the energy situation, nuclear is sure to be fully considered. The entire international panoply of reactor designs will be studied for selection. And for the long-term, high-temperature and fast reactors are apt to come under very serious consideration.

## Young Generation Corner

### IYNC-2006!

IYNC2006 will be held [June 18 - 23, 2006 in Stockholm, Sweden](#). The Technical Program of the Congress consists of four scientific tracks with technical presentations, keynote speakers, panel sessions and workshops. The Technical Program will also include a visit to Olkiluoto, Finland, to see the first EPR reactor under construction and a deep geological repository for spent fuel. In addition to the comprehensive Technical Program, a number of voluntary Social Program events are arranged. These activities will introduce the participants to the beauty of the Scandinavian nature and traditions of the Midsummer festival.

## Societies with Collaboration Agreements with ANS

The following is a list of nuclear societies with collaboration agreements with the ANS, along with the corresponding website addresses. The Table contains also a few other entries of interest to ANS International Committee members.

<b>Society</b>	<b>Website or E-Mail Address</b>
Asociación Argentina de Tecnología Nuclear	-
Associação Brasileira de Energia Nuclear	<a href="http://www.aben.com.br">www.aben.com.br</a>
Association des Ingénieurs en génie atomique du Maroc	-

Atomic Energy Society of Japan	<a href="http://wwwsoc.nii.ac.jp/aesj/index-e.html">wwwsoc.nii.ac.jp/aesj/index-e.html</a>
Australian Nuclear Association	<a href="http://www.nuclearaustralia.org.au">www.nuclearaustralia.org.au</a>
Bangladesh Nuclear Society	-
British Nuclear Energy Society	<a href="http://www.bnes.com">www.bnes.com</a>
Bulgarian Nuclear Society	<a href="http://www.bgns.bg">www.bgns.bg</a>
Canadian Nuclear Society	<a href="http://www.cns-snc.ca">www.cns-snc.ca</a>
Chinese Nuclear Society	<a href="http://www.ns.org.cn">www.ns.org.cn</a>
Croatian Nuclear Society	<a href="http://hnd.zvne.fer.hr">hnd.zvne.fer.hr</a>
Czech Nuclear Society	<a href="http://www.csvts.cz/cns">www.csvts.cz/cns</a>
European Nuclear Society	<a href="http://www.euronuclear.org">www.euronuclear.org</a>
Hungarian Nuclear Society	<a href="http://www.kfki.hu/~hnucsoc/hns.htm">www.kfki.hu/~hnucsoc/hns.htm</a>
Indian Nuclear Society	<a href="http://www.indian-nuclear-society.org.in">www.indian-nuclear-society.org.in</a>
Israel Nuclear Society	<a href="mailto:alfassi@bgumail.bgu.ac.il">alfassi@bgumail.bgu.ac.il</a>
Lithuanian Energy Institute	<a href="http://www.lei.lt">www.lei.lt</a>
Malaysian Nuclear Society	<a href="http://www.mint.gov.my/mns">www.mint.gov.my/mns</a>
Nuclear Energy Society of Kazakhstan	<a href="http://www.nuclear.kz">www.nuclear.kz</a>
Nuclear Energy Society of Russia	<a href="mailto:ns@kia.ru">ns@kia.ru</a>
Nuclear Energy Society of Slovenia	<a href="http://www.drustvo-js.si">www.drustvo-js.si</a>
Nuclear Energy Society of Thailand	<a href="http://www.nst.or.th">www.nst.or.th</a>
OECD/Nuclear Energy Agency	<a href="http://www.nea.fr">www.nea.fr</a>
Polish Nuclear Society	<a href="http://www.ptn.nuclear.pl">www.ptn.nuclear.pl</a>
Romanian Nuclear Energy Association	<a href="http://www.aren.ro">www.aren.ro</a>
Romanian Society for Radiological Protection	<a href="http://www.ispb.ro/rsrp.htm">www.ispb.ro/rsrp.htm</a>
Slovak Nuclear Society	<a href="http://www.nuc.elf.stuba.sk">www.nuc.elf.stuba.sk</a>
Sociedad Nuclear Española (SNE)	<a href="http://www.sne.es">www.sne.es</a>
Sociedad Nuclear Mexicana	<a href="http://www.sociedadnuclear.org.mx">www.sociedadnuclear.org.mx</a>
Ukrainian Nuclear Society	<a href="http://www.ukrns.odessa.net">www.ukrns.odessa.net</a>
Women in Nuclear - Global	<a href="http://www.win-global.org">www.win-global.org</a>
<b>Affiliated National Societies</b>	<b>Website or E-Mail Address</b>
Belgian Nuclear Society	<a href="http://www.bns-org.be">www.bns-org.be</a>
<b>Associated Nuclear Organizations</b>	<b>Website or E-Mail Address</b>
International Nuclear Societies Council	<a href="http://insec.dyndns.org">http://insec.dyndns.org</a>
Pacific Nuclear Council	<a href="http://www.pacificnuclear.org">www.pacificnuclear.org</a>
<b>Non-U.S. Local Sections</b>	<b>Website or E-Mail Address</b>
Austrian Section	
French Section	<a href="http://local.ans.org/france/">http://local.ans.org/france/</a>
Italian Section	
Japanese Section	
Latin American Section	<a href="http://www.las-ans.org.br">www.las-ans.org.br</a>
Korean Section	
Swiss Section	
Taiwan Section	<a href="mailto:u805301@taipower.com.tw">u805301@taipower.com.tw</a>

# Calendar of Events

## Some Upcoming International Conferences on Nuclear Topics

(Please let us know your upcoming conferences for inclusion in this space)

## 2006

- 30 April - 3 May: RRFM 2006, “Research Reactor Fuel Management 2006”, Sofia, Bulgaria - <http://www.rfm2006.org>
- 30 April - 4 May: 2006 International High-Level Radioactive Waste Management Conference, Las Vegas, NV, USA - <http://www.ans.org/meetings>
- 8-9 May: Platts European Nuclear Energy Conference (“Opportunities for Growth and Investment in Europe”), Radisson SAS Boulogne, Paris, France - <http://www.platts.com/Events/ENO/index.html>
- 9-12 May: “Climate Change Technology Conference: Engineering Challenges and Solutions in the 21st Century”, Ottawa, Ontario, Canada (organized by Engineering Institute of Canada) – <http://www.ccc2006.ca>
- 30 May - 1 June: WIN GLOBAL 14<sup>th</sup> Annual Meeting, Waterloo, Ontario, Canada (hosted by WIN Canada) – <http://www.win-global.org>
- 4-8 June: ANS Annual Meeting and ICAPP 2006, and Embedded ANS Topical “Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors”, Reno, Nevada, USA - <http://www.ans.org/meetings>
- 11-14 June: 27<sup>th</sup> Annual Conference of the Canadian Nuclear Society and 30<sup>th</sup> CNS/CNA Student Conference, Toronto, Ontario, Canada, “Nuclear Energy – A World of Service to Humanity” – <http://www.cns-snc.ca>
- 18-23 June: 2006 International Youth Nuclear Congress - IYNC, Stockholm (Sweden) and Olkiluoto (Finland) – <http://www.iync.org>
- 25-29 June: Conference of the Latin American Section of the ANS, Buenos Aires, Argentina, “Energy Crisis in Latin America and Nuclear Power” - <http://www.las-ans.org.br>
- 26-30 June: International Seminar on Dismantling Experience of Nuclear Facilities, Saclay, France (organized by the European Nuclear Education Network Association, ENEN) – e-mail: [sec.enen@cea.fr](mailto:sec.enen@cea.fr)
- 17-20 July: 14th International Conference on Nuclear Engineering (ICONE 14),

Miami, FL, USA - <http://www.asmeconferences.org/icone14>

- 26-31 August: 11th Tihany Symposium on Radiation Chemistry, Eger, Hungary, <http://www.tihany.kfki.hu>
- 4-8 September: “Acapulco 2006”, VII Regional Congress of Radiological and Nuclear Safety, XVII Annual Meeting of the Sociedad Nuclear Mexicana, & XXIV SMSR Annual Meeting, Acapulco, México, “Challenges and Tendencies for the American Continent Concerning Radiological Protection, Nuclear Safety and Environment – <http://www.smsr.org.mx>
- 10-14 September: ANS Topical Meeting: Physics of Reactors 2006 (PHYSOR-2006), “Advances in Nuclear Analysis and Simulation”, Vancouver, British Columbia, Canada (organized and hosted by Canadian Nuclear Society) – <http://www.cns-snc.ca/physor2006>
- 10-12 September: Canadian Institute of Mining Field Conference, “Uranium: Athabasca Deposits and Analogues”, Saskatoon, Saskatchewan, Canada - e-mail: [kelly.evans@cogema.ca](mailto:kelly.evans@cogema.ca)
- 17-20 September: TopSeal 2006 (tri-annual conference on waste management organized by the European Nuclear Society), Olkiluoto, Finland – <http://www.topseal2006.org>
- 15-20 October: 15th Pacific Basin Nuclear Conference (15<sup>th</sup> PBNC), Sydney, Australia (organized by Australian Nuclear Association and Institute of Engineers Australia), “A Pacific Nuclear Future: *Nuclear Science and Engineering for a Sustainable Society*” – <http://www.pbnc2006.com>
- 23-27 October: RRMCM 2006, 52nd Annual Radiobioassay & Radiochemical Measurements Conference, Chicago, IL, USA, <http://www.rrmc2006.org>
- 12-16 November: ANS Winter Meeting, Albuquerque, New Mexico, USA – <http://www.ans.org/meetings>
- 12-16 November: 5th ANS International Topical Meeting on Nuclear Plant Instrumentation, Controls, and Human Machine Interface Technology, Albuquerque, New Mexico, USA – <http://www.ans.org/meetings>
- 26-29 November: 5<sup>th</sup> CNS International Steam Generator Conference, Toronto, Ontario, Canada (organized by the Canadian Nuclear Society) – <http://www.cns-snc.ca>





## 2007

- 4-7 February: Conference on Nuclear Training and Education (CONTE), Jacksonville, FL, USA - <http://www.ans.org/meetings>
- 14-16 March: First Moroccan International Conference on Physics and Technology of Reactors and Applications (PHYTRA1), Marrakech, Morocco (organized by the Moroccan Association for Nuclear Engineering and Reactor Technology “GMTR”) - <http://www.fst.ac.ma/gmtr/phytra1/phytra1.html>
- 3-6 April: WORLDCOR’07, World Congress on Radiochemistry & the Nuclear Sciences, “Radiochemistry – The Universal Science”, Washington, DC, USA, <http://worldcor.radiochemistry.org/>
- 14-18 May: ICAPP 2007, International Congress on Advances in Nuclear Power Plants, Nice, France - [Contact: Sylvie Delaplace – icapp2007@sfen.fr](mailto:icapp2007@sfen.fr)
- 3-6 June: 28<sup>th</sup> Annual Conference of the Canadian Nuclear Society and 31<sup>st</sup> CNS/CNA Student Conference, Saint John, New Brunswick, Canada – <http://www.cns-snc.ca>
- 11-15 June: ENC 2007, Manchester, United Kingdom (to be hosted by the British Nuclear Energy Society on behalf of the ENS)
- 24-28 June: ANS Annual Meeting, Boston, MA, USA – <http://www.ans.org/meetings>
- 12-17 August: 19<sup>th</sup> International Conference on Structural Mechanics in Reactor Technology (SMiRT-19), Toronto, ON, Canada – <http://www.engr.ncsu.edu/smirt-19>
- 12-16 August (tentative dates): 13<sup>th</sup> International Conference on Environmental Degradation of Materials in Nuclear Systems – Water Reactors (DEG 07), Canada
- 16-19 September: ANS Topical Meeting on Decommissioning, Decontamination and Reutilization & Technology Expo, “Capturing Decommissioning Lessons Learned”, Chattanooga, TN, USA – <http://ddrd.ans.org>
- 24-28 September: Central and East European IRPA Regional Congress, “Regional and Global Radiation Protection Aspects”, Brasov, Romania (organized by the Romanian Society for Radiation Protection) – <http://www.ispb.ro/rsrp.htm>
- 11-17 November: ANS/ENS International Winter Meeting, Washington, DC, USA – <http://www.ans.org/meetings>



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