Networks for Collaboration in Nuclear Education and Training

The role of networks for collaboration in nuclear education and training was highlighted at a side event during the IAEA’s 57th General Conference. With more than 100 participants, the event presented various IAEA initiatives, including IAEA-fostered three regional educational networks: the Asian Network for Education in Nuclear Technology (ANENT); the Latin-American Network for Education in Nuclear Technology (LANENT); and AFRA Network for Education in Nuclear Science and Technology (AFRA-NEST). The event showcased a live demonstration of experiments in a research reactor, an interactive e-learning series for nuclear newcomers, and the signing of a cooperation agreement among the educational networks.

On behalf of the networks, Mr Barrachina, Centro Atómico Bariloche, National Atomic Energy Commission of Argentina (CNEA) and Chairperson of LANENT delivered a keynote speech. He emphasized the close cooperation among the industry, academia, and the government as vital players in improving nuclear education and attracting young talents. He described joint efforts to leverage e-learning tools and resources through the Cyber Learning Platform for Nuclear Education and Training (CLP4NET).

Network reps.: Mr Mallam (AFRA-NEST), Mr Hadiljahyono (ANENT), Mr Ambrosini (ENEN), Mr Barrachina (LANENT)
Message from the Section Head

Dear Reader,

First of all, we wish you all the best in the coming year!

It has become increasingly clear to Member States that creating, sharing and transferring knowledge is critical for the safe and efficient management of any nuclear activity. Many Member States now have knowledge management programmes in place and are gaining a better understanding of the specific characteristics of nuclear knowledge needs to achieve the distinctive mission and vision of their organizations.

For the members of the Nuclear Knowledge Management Section, the last 9 months were mainly dedicated towards the implementation of our existing programme consisting of the various schools, knowledge management assist visits, close cooperation with our various educational networks, and the completion of guidelines, reports and technical documents.

At the same time, in response to Member States’ needs, we started some very interesting new initiatives aimed at enhancing nuclear safety and economics. Among these you can find the university initiative for a master’s degree in nuclear management (see p. 6), the promotion and support of communities of practice, the national nuclear education capability assessment and planning (CAP) framework, the life-cycle design basis knowledge management (see p. 9), the establishment of a nuclear education network in the region of the commonwealth of independent states (CIS), and the development of a knowledge management guide.

Please contact us if you have any questions regarding knowledge management in the nuclear industry. We also invite you to find out more about our programme initiatives, products and services through our website at: www.iaea.org/nuclearenergy/nuclearknowledge/. We will be pleased to assist you!

John de Grosbois

contd. from page 1 “Networks of Collaboration…”

A cooperation agreement was signed by four representatives, Mr Haditjahyono of the National Nuclear Energy Agency (BATAN), Indonesia representing ANENT, Mr Mallam, Nigeria Atomic Energy Commission representing AFRA-NEST, Mr Ambrosini representing the ENEN as well as Mr Barrachina representing LANENT. They expressed their hope to strengthen their partnership and pledged their best efforts to implement the action plan.

Mr de Grosbois, SH of NKMS chaired the event, while Ms Sbaffoni (left), Group Leader of the Nuclear Knowledge Management Section moderated the discussions together with other NE staff that jointly planned and organized this event.

Practical arrangements were also concluded between the IAEA and the ENEN to achieve the objectives of capacity building and human resource development in the field of research, education, training and outreach in nuclear science and technology, and to strengthen and broaden the partnership and to support mutual activities in Europe, Asia, Africa and Latin-America through the IAEA-fostered regional educational networks, ANENT, LANENT and AFRA-NEST.

Further practical arrangements were signed between the IAEA and the University Institute of Advanced Studies (IUSs) of Pavia, who has a record of cooperation with the IAEA for more than 10 years. IAEA staff members have frequently been invited to lecture in the Nuclear and Ionizing Radiation Technologies master courses and the Ph.D. School on Understanding and Managing Extremes (read more).

We are looking forward to many more fruitful years of cooperation with those institutions!

Article by Keiko Hanamitsu, NKMS
France Signs Agreement in Nuclear Education and Training

The IAEA and France signed an agreement that will enable French nuclear organizations to play a bigger role in IAEA activities in nuclear education and training, particularly in newcomer countries.

As a leading institute in the field of nuclear research and training, which also advises the Government of France on nuclear related matters, the CEA is responsible for coordinating the cooperation between the IAEA and French entities, in particular in the area of nuclear education and training.

The CEA and French nuclear organizations are capable of offering unique and high quality programmes that cover a broad range of nuclear disciplines. For example, during the 57th General Conference last September, the CEA contributed to the Side Event on Networks for Collaboration in Nuclear Education and Training by introducing online access to its research reactor in Saclay, France, for training purposes.

Governor Frédéric Journès emphasized the importance of education and training as an essential part of safe development in the peaceful uses of nuclear energy. “France is fully committed to sharing its expertise and to assist Members States willing to develop nuclear programmes to build the necessary capabilities and competencies,” he said.

The practical arrangements provide a framework between the Agency and the French nuclear organizations, including academic institutes, research facilities and industry partners, for further cooperation in the following areas:

- providing access to French nuclear research reactors and relevant nuclear facilities for education and training purposes;
- organizing education and training courses to support countries starting or expanding their nuclear power programmes;
- providing opportunities and assistance for students to pursue their academic curricula in the French educational system, particularly with the provision of potential scholarships;
- appointing experts to participate in IAEA expert missions to disseminate nuclear knowledge and experience; and
- organizing joint meetings and conferences to disseminate knowledge and experience in nuclear education and share best practices on educational outreach programmes.

More information can be found on our NKM Webpage.

Mapping Organizational Competencies

In most nuclear organisations, workforce planning and human resources management focus on roles and positions. Competency needs and the appropriate training requirements are described on the level of individuals, e.g. the systematic approach to training and job-task analysis. This may be sufficient in a situation where an organization is in a stable state and operating as usual, but in a new organization or in the situation where the business environment changes, an additional approach to managing competencies is needed.

The NKM Section is developing an approach for mapping organizational competencies which connects organizational competencies to strategic objectives and business processes of an organization.

In 2013, the Nuclear Knowledge Management Section arranged two consultancy meetings on mapping organizational competencies, one in Palo Verde, U.S.A. and one in Vienna. During the meetings, organizational competency was defined as the ability of an organization to meet its objectives effectively and efficiently through the interaction of: people having the appropriate explicit, implicit and tacit knowledge and skills, behaviours and culture, processes, procedures, systems and technology and organizational structure in its given environment. Competency mapping was recognised as a tool whose main purpose is to inform about the decisions and actions necessary to manage organizational competencies and to develop an action plan to align competency with the mission.

The above figure depicts eleven components of good competency management.

One practical application for competency mapping is the knowledge loss risk assessment. According to the experiences collected from North-American nuclear operating organizations, most utilities have a programme for knowledge transfer and they apply knowledge loss risk assessment tools. These efforts are mainly put in use in engineering departments. When compared to other departments of an NPP, engineering typically has a lower level of standardisation of work procedures and relies on single experts. The participants identified interviews as the most common approach to identifying knowledge at risk. In some organizations, the knowledge risk assessment efforts concentrated on individual knowledge at risk and in some organizations on critical functions of the organization. In addition to identifying knowledge at risk, the importance of knowledge capture was recognised. When, in addition to identifying knowledge at risk, an organization has an action plan for knowledge capture, the risk of the critical knowledge loss is mitigated more efficiently.

Article by Tellervo T. Juurmaa, NKMS
After successful stints in Italy, Japan and the United Arab Emirates, the IAEA's School for Nuclear Energy Management was for the first time held in the USA. Hosted by the US government and the Nuclear Power Institute affiliated with Texas A&M University, the School ran for three weeks, from 18 March to 5 April 2013. Some 24 participants were from countries as diverse as Argentina, Brazil, China, Ghana, Malaysia, Nigeria, Saudi Arabia, South Africa, Turkey, UK, Uruguay, as well as the U.S.A. The School is part of continuing efforts by the IAEA to address the management challenges in the nuclear industry. It provides a unique international educational experience for young professionals from developing countries and is aimed at building future leadership to manage and support nuclear energy programmes. All participants are carefully selected professionals from ages 28 to 45 with managerial potential in the nuclear industry, academia, government agencies and public sector entities in their countries.

"My main message to you, as future leaders of the nuclear industry, is that everyone involved in nuclear power must have a total commitment to safety. Additionally, governments, operators and regulators must be as open and transparent as is compatible with maintaining safety and security. If you are honest in acknowledging problems as they arise, you will have more credibility when you explain that nuclear power actually has an excellent safety record," IAEA Director General Yukiya Amano told participants in his opening statement.

Lectures, presentations and group work from the IAEA, Texas A&M, American Nuclear Society, the US Department of Energy, the US Nuclear Regulatory Commission, as well as experts from nuclear facilities and other organizations ensured that each subject area of the school curriculum was covered by the most competent specialists in the world. Special features of this intensive three-week training included a trip to Atlanta, Georgia, to meet representatives of the Institute for Nuclear Power Operations (INPO) and the World Association of Nuclear Operators (WANO) and a visit to the nuclear power plant construction site of Vogtle Nuclear Power Plant Units 3 and 4 in Waynesboro, Georgia.

The lectures included topics such as nuclear power, nuclear fuel cycle and waste management, lessons learned from the Fukushima Nuclear Power Plant accident, energy planning, economics and finance, national nuclear infrastructure development from planning to decommissioning, reactor technologies and selections, nuclear security, emergency preparedness and response, nuclear law, international conventions and relevant mechanisms, nuclear safety, non-proliferation, human resources and knowledge management, stakeholder involvement and public communication.

**More Women at 8th IAEA Nuclear Energy Management School in Trieste**

**Trieste, Italy --** The 8th IAEA Nuclear Energy Management School opened its doors on 15 July 2013 to 43 young nuclear professionals. Participants came from 28 countries, including those that plan to introduce nuclear power or other nuclear technology applications. The usual location of the annual session of the School is the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy.

An interesting feature of this year's school was the increased representation of women. Typical to the industry, men were in a strong majority in the previous seven sessions. This year the number of qualified female applicants was high, which is reflected in the selection: 17 out of 43 participants were women.

The three-week programme provided a critical overview of the nuclear field in the global context. The curriculum walked the participants through the main principles of nuclear power, such as long-term commitment, benefits for society, protection of people and the environment, security, non-proliferation, resource efficiency, and continuous improvement. The presentations focused on the components of a successful national nuclear power programme tuned to national needs, finding its place in the national energy mix and was clearly regulated with the help of nuclear law.

Another strong aspect of the NEM School was to encourage the bridge of knowledge exchange between leaders and managers of the global nuclear sector and the young professionals who will succeed them in the next decades. In this context, practices and techniques in finance, human resources, information and knowledge management in nuclear organizations were explained in depth. Lectures, video sessions, group activities and panel discussions, technical tours and case studies were aimed at ensuring a multidimensional vision and learning atmosphere for the participants.

"The IAEA Nuclear Energy Management School not only highlights the vital need for competent nuclear specialists worldwide, but also is a proven way forward," said IAEA Deputy Director General Alexander Bychkov, who headed the Department of Nuclear Energy, in his opening speech.

This year’s programme was designed to be more interactive than previous ones, leaving more room for debates. National presentations focused on areas of expertise of each participant.

Lecturers selected for the school in Trieste were leading experts in the nuclear field. This year, 27 specialists from the IAEA and national nuclear organizations served as the faculty of the school.
IAEA's Nuclear Energy Management School in Japan

The joint IAEA - Japan Nuclear Energy Management School (NEM School) was implemented with the local host of Japan Nuclear Human Resource Development Network, The University of Tokyo, the Japan Atomic Energy Agency, and the Japan Atomic Industrial Forum on 27 May to 10 June 2013 in Tokyo and Tokaimura, Japan.

The IAEA annually institutes the NEM School with the International Centre for Theoretical Physics (ICTP) in Trieste, Italy since 2010, and it is open to all Member States. The NEM School Japan is a regional initiative, targeting major nuclear newcomer and existing countries mainly in Asia. The school was held for the second time following its successful inauguration in 2012.

The NEM School aims to provide unique international educational experience for young professionals who will be leaders in the nuclear sector. There were 32 participants; half of them from Japan and the other half came from so-called nuclear newcomer countries and China. The curricula covered a wide range of topics related to peaceful uses of nuclear technology such as energy policy, safety, security, safeguard, human resource management, knowledge management, reactor technologies, and fuel cycle. One of the advantages of holding the school in Japan is the wide range of facilities available for site visits such as reactors in commercial operation and in the case of R&D, various type of reactors, training facilities to experience security system and simulators, not only nuclear power stations but also fuel fabrication makers.

Lectures about the Fukushima accident were also given. The participants learned theories by in-class lectures and later had the opportunity to deepen their understanding through site visits related to the theories and through the real cases of Japan as well as other Asian countries.

The next NEM School in Japan is planned to take place in June 2014.

Article by Fumio Adachi, NKMS

Annual ICTP/IAEA Nuclear Knowledge Management School in Trieste

Participants in the 2013 IAEA/ICTP Nuclear Knowledge Management School arrived very well prepared, thanks to the Cyber Learning Platform for Nuclear Education and Training (CLP4NET), managed by the IAEA’s Nuclear Knowledge Management Section.

The annual School of Nuclear Knowledge Management (NKM), jointly organized by the IAEA and the International Centre for Theoretical Physics (ICTP), took place on 12-16 August 2013 at the worldwide renowned ICTP Institute, close to the picturesque town of Trieste, Italy. The intensive one week course was directed at young professionals from the nuclear field that are, or may be in the near future, in charge of managing nuclear knowledge. The IAEA’s technical cooperation programme supported the participation of 13 of the 40 participants.

Out of the 140 applicants to this year’s School, 100 young professionals were preselected for an online pre-training course, hosted on the IAEA’s Cyber Learning Platform (CLP4NET). The pre-training course was introduced last year and proved to be a useful tool to ensure that all selected participants would have the same level of understanding of nuclear knowledge management when arriving at the school. This in turn allowed participants to use their time at the NKM School to the fullest extent, and to focus on sharing experiences and participating actively in group projects.

The NKM School provided participants with a unique opportunity to benefit from high quality, intensive training on the implementation of nuclear knowledge management. The teaching staff was composed of highly-regarded specialists in the NKM field, and participation in the School offered students the opportunity to share views and experience in essential aspects of nuclear knowledge management, both with experts and international peers, in a studious but friendly atmosphere.

The School focused on methodologies and practices for NKM, including aspects such as processes and organizational culture, information technology, and human resource development and its impact on NKM implementation. The School also presented good practices and lessons learned from programmes implemented in academia, technical support organizations, industry, regulatory bodies and other governmental entities.

The next NKM School will take place in the last week of August 2014, celebrating 10 years of successful cooperation between IAEA and ICTP in Knowledge Management topics, and 50 years of the existence of ICTP. Info and Application at: ICTP NKM School website.

Article by Monica Sbaffoni, NKMS
IAEA Launches the Virtual Nuclear Management University Initiative
Aimed at Enhancing Nuclear Safety and Economics

Leading nuclear engineering universities from across the world have started work on developing an IAEA-endorsed curricula for a Master's programme on management for nuclear energy professionals. The goal is to have universities implement such programmes through the Virtual Nuclear Management University (VNMU), a mutual cooperation and collaboration platform facilitated by the IAEA.

Twenty representatives from Belgium, France, Germany, Ghana, Italy, Japan, the Russian Federation, South Africa, Spain, the United Arab Emirates, the United Kingdom, the United States of America and the World Nuclear University met for the consultancy meeting to explore collaboration on masters programmes in nuclear management and a virtual nuclear management university (VNMU) at the IAEA in Vienna, 25-27 November 2013 and to discuss the project implementation.

"Currently no full Master's degree programme is available specializing in the management aspects of nuclear technology, science and engineering," said Alexander Bychkov, IAEA Deputy Director General and Head of the Department of Nuclear Energy when opening the meeting. "Recognizing this need, the VNMU will play an important role in enhancing nuclear safety and economics in Member States dealing with nuclear energy."

Participants stressed that due to the complexity of nuclear technologies, the long life-cycles of nuclear facilities, and the changing operational conditions, effective management and decision-making processes were critical for maintaining high levels of safety. VNMU will address future workforce demand for competent managers in Member States by improving the quality and availability of nuclear management education, mainly through common academic curricula, networking among universities and relevant stakeholders, and e-learning platforms.

Nuclear facilities tend to have two types of new managers: nuclear engineers or scientists with little or no formal management education, and those with little or no nuclear education. At VNMU programmes, each student would be assessed and offered courses tailored to individual needs, using a basket to choose from approach. Pre-requisite courses would be necessary for some entrants. At the end, all graduates would demonstrate a high level of management competence in all key areas defined by the curricula.

The VNMU will enable partner universities to collaborate on delivery of a combination of management courses to obtain a diploma or a Master's degree. The IAEA will help universities to jointly develop and implement VNMU-compliant programmes and eventually support peer review of each university’s courses to encourage sharing of best practices.

Member universities will be free to offer the VNMU curricula in any mixed-mode of delivery appropriate to their needs. They will be encouraged to make English-language versions of their courses available online to promote sharing and improve accessibility for both working nuclear professionals and for students in developing regions. The IAEA’s Cyber Learning Platform for Nuclear Education and Training (CLP4NET) will support online distance and e-learning courses from VNMU member universities. The CLP4NET includes both a learning management system (LMS) and a content management system (CMS).

The IAEA’s Nuclear Knowledge Management Section in the Department of Nuclear Energy is using Japanese extra-budgetary funds for the start-up of the VNMU. Other Member States are invited to consider contributing funds. The VNMU will be open to participation of all nationally recognized Member State universities. The Agency, through the Nuclear Knowledge Management Section, has been supporting regional educational networks to foster partnerships among education and training institutions across the world (read more).

Article by Fumio Adachi and Ryoko Kusumi, NKMS
Practical Approaches to Risk Management of Knowledge Loss in Nuclear Organizations

A knowledgeable and skilled workforce is an essential element in the implementation and safe operation of all nuclear facilities as well as nuclear technology research and development and we are now in the progress of developing a new publication on Risk Management of Knowledge Loss in Nuclear Organizations.

It is well recognized that many NPP operators face a challenge in the loss of experienced workers and the knowledge and skills they possess. Often this knowledge is undocumented and it requires years of training and experience to build it up again. The loss is caused by a variety of factors including: the retirement of long-term employees, internal transfers and promotions, or resignation where employees leave the nuclear industry.

All these risks can be mitigated with careful plans and a clear strategy for long-term preservation of knowledge within the project. Organizational evolution of a nuclear project requires the upfront planning of competencies needed at each phase, and the simultaneous creation of knowledge transfer plans for core competencies and skills. In addition, the organizational knowledge must be captured and codified at each phase.

We focus our activities on gathering and sharing best practices in the area of Knowledge Loss Risk Management in order to:

- increase awareness among nuclear organizations’ managers of the need to develop a strategic approach and action plans to identify and reduce the risks of critical organizational and individual knowledge and skills loss;
- increase capability of nuclear organizations’ proactively to manage the risks and mitigate the impact of critical knowledge loss;
- provide processes and tools for nuclear organizations management to conduct assessments to determine the risks of current and potential loss of critical knowledge.

Managing knowledge across all phases of nuclear projects and plants means ensuring the availability of essential knowledge required for safety functions throughout the service life, taking into account changes that inevitably occur with time, such as: organizational changes, evolution of information systems and related media and formats, changes in IT infrastructure, etc.

The methods and tools can be easily adapted for usage. Today the IAEA methodology on knowledge loss risk assessment is widely spread and applied in many Member States, such as: USA, Canada, Russia, Bulgaria, China, Hungary, Czech Republic, Ukraine, Germany, UK, and others.

The IAEA gathered experts in consultancy meetings to collect ideas and case studies from NPP operators and technical support organizations. One of those events took place in Palo Verde NPP, USA on 8-12 April. The next meeting was held at the IAEA’s Headquarters in Vienna on 3-7 June 2013. The collected material will be included in the aforementioned IAEA publication Risk Management of Knowledge Loss in Nuclear Organizations, which will be issued in 2014.

Article by Vitalii Kolomiiets, NKMS
1st AFRA-NEST General Assembly
26 - 30 August 2013, Arusha, Tanzania

AFRA Member States have prioritized education and training in nuclear science and technology as a key enabler to achieving sustainable social and economic development across the African continent.

To support this goal fifty delegates gathered in Arusha, Tanzania for the 1st AFRA-NEST General Assembly from 26th to 30th August 2013. Twenty-four African Member States were represented with delegates from Universities, Research Institutes and Laboratories and National Atomic Energy Commissions along with the Asian Network for Education in Nuclear Technology (ANENT), the UK Nuclear Technology Education Consortium (NTEC), the European Nuclear Education Network Association (ENEN) and the International Atomic Energy Agency.

AFRA-NEST, a Network for Education for Science and Technology was conceived at the AFRA (African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology) Ministerial Conference held in Aswan in 2007. The main objectives of AFRA-NEST are to facilitate the operation and networking of higher education, training and related research in Nuclear Science and Technology (NS&T) in the African region, and to foster sustainable human resource development and nuclear knowledge management, to satisfy the needs of African countries with/without higher education and training, in the priority areas of non-power and power applications of nuclear energy. A key component of an agreed Action Plan, which is administered by a High Level Steering Committee, was the formation of a General Assembly of all AFRA-NEST Members. The IAEA provide scientific and funding support to enable AFRA-NEST to achieve their objectives and facilitate national benchmarking of national nuclear educational resources, facilities and programmes.

The General Assembly (GA) was opened with presentations from Dr M. M. Mbarawa (Minister Communications, Science and Technology, Tanzania), Professor I. S.N. Mkilia (Director General, Tanzania Atomic Energy Commission) and Professor S. Abdulrazak (Chair of AFRA), welcoming all the delegates to the United Republic of Tanzania and expressing their support for the activities of AFRA-NEST and the General Assembly.

Over the following two days, presentations were made on the work of AFRA outlining the objectives of the GA. To support the formation of AFRA-NEST, presentations were made on the history and status of ENEN, ANENT, NTEC and networking experience from Korea. There was also a presentation from the Russian Nuclear Energy State Corporation, Rosatom, on their Human Resource Development Programme. The second day was concluded with further presentations on topics such as capacity building concept definitions and roles of Governments, benchmarking nuclear education and training, planning and economics for sustainable energy development.

AFRA priority areas were also presented, including the activities of the Africa Virtual University for Cancer Control (VUCNet), the integrated nuclear infrastructure (INIR) group support for Member States interested in nuclear power, common requirements for curricular development in nuclear engineering, as well as examples of experience of eLearning technologies in the region. The third day opened with an enthusiastic debate to re-draft the AFRA-NEST statutes followed by an equally enthusiastic knowledge marketplace.

A cluster analysis on the knowledge marketplace helped to identify the ARFA-NEST GA working groups on information and communications technology (ICT), human resource development (HRD) planning, research reactors and human health education and training. Delegates selected their working group and established their terms of reference, including priority project concepts.

After a very successful week the GA concluded with endorsement of the revised AFRA-NEST statutes and formal establishment of the four Working Groups, as well as agreements to foster the establishment of national nuclear education and training networks, based on the Nuclear Knowledge Management (NKM) and Nuclear Safety Capacity Building self-assessment methods and tools.

The Department of Nuclear Energy, through the Nuclear Knowledge Management (NKM) Section, fosters nuclear education networks, and together with the Integrated Nuclear Infrastructure Group (INIG), the Department of Nuclear Applications, Programme of Action for Cancer Therapy (PACT), the Department of Nuclear Safety, Programme and Policy Unit, and the Department of Technical Cooperation (TC), Division for Africa, co-organized this General Assembly under the TC Fund - AFRA Project RAF0031 - Promoting Human Resources Development and Nuclear Knowledge Management (read more).
Design Basis Knowledge Management

On the last week of October, the ‘Inter-regional Knowledge Management Workshop on Life-cycle Management of Design Basis Information – Issues, Challenges, and Approaches’ was held at the IAEA Headquarters.

The objectives of the meeting were to:
- share practical experience in design basis knowledge management (DBKM) and present case studies;
- identify areas of common concern, opportunities for improvement and areas where collaboration may be possible;
- provide recommendations on improvement of existing IAEA safety standards.

The event was organized in cooperation with Nuclear Energy and Nuclear Safety Departments. More than 40 participants attended the meeting including 27 experts from Member States, both developed and embarking countries. Different national experiences related to the lifecycle threats and consequences of nuclear design basis knowledge loss and the associated approaches to managing them were shared and discussed.

The key areas of workshop focus were:
1. issues and challenges of maintaining the plant design basis knowledge;
2. regulatory and utility challenges for maintaining design basis knowledge;
3. knowledge management issues and challenges related to design authority and design changes; and
4. the challenges faced by newcomer countries – how they can become technically knowledgeable customers, and how the IAEA can support them.

The head of the Department of Nuclear Energy, Mr Alexander Bychkov opened the event and highlighted that:

"The responsibility for safety in nuclear is a shared responsibility. We all must restore and keep the public’s trust in achieving safety. We all share in the consequences when safety is not achieved. We have a collective duty and the know-how to manage the hazards of nuclear technology to acceptably low levels of risk. This must be done through responsible policy, strategy, investment, planning and oversight to achieve sustainable benefit from nuclear energy infrastructure in each Member State, and this requires a sustainable life cycle approach to nuclear technology and systems. To do this requires systematic approaches and robust management systems to control nuclear energy, it is complex. It is an intensely knowledge-based and knowledge-driven technology system, with very long time lines. And it will remain so. In the larger picture, Member States must recognize that their nuclear energy sectors are complex socio-technical knowledge systems. To achieve the full benefits from this technology system, it must be adequately supported in each Member State through policy and investment to ensure it is effectively established, reinforced, and maintained as an industrial infrastructure.”

As a result of the meeting, it was agreed to further the efforts to draft of the publication on DBKM. Additionally, Mr Alexander Bychkov proposed to organize a side event during the next year’s General Conference focusing on modern approaches to the DBKM.

Article by Vitalii Kolomiiets, NKMS

We Congratulate the Laureates!

The European Master of Science in Nuclear Engineering (EMSNE) Award Ceremony of the European Nuclear Education Network Association (ENEN) took place for the second time during the IAEA General Conference and 13 new laureates, who had travelled to Vienna for this purpose, received their certificates (read more).
Upcoming Meetings in 2014

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Place</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-9 May</td>
<td>Training on Latin-American Network for Education in Nuclear Technology (LANENT)</td>
<td>Cuernavaca, Mexico</td>
<td>M. Sbaffoni</td>
</tr>
<tr>
<td>2-5 June</td>
<td>Technical Meeting on the Asian Network for Education in Nuclear Technology (ANENT)</td>
<td>Ulan Bator, Mongolia</td>
<td>R. Kusumi</td>
</tr>
<tr>
<td>9-26 June</td>
<td>Nuclear Energy Management School in Japan</td>
<td>Tokyo, Japan</td>
<td>F. Adachi</td>
</tr>
<tr>
<td>30 June - 4 July</td>
<td>Technical Meeting on Networking Educational Networks</td>
<td>Vienna, Austria</td>
<td>M. Sbaffoni</td>
</tr>
<tr>
<td>7-11 July</td>
<td>Technical Meeting on the AFRA-Network for Education in Nuclear Science and Technology (AFRA-NEST)</td>
<td>Abuja, Nigeria</td>
<td>U. Ugbor</td>
</tr>
<tr>
<td>25-29 August</td>
<td>Joint IAEA / ICTP School for Nuclear Knowledge Management</td>
<td>Trieste, Italy</td>
<td>M. Sbaffoni</td>
</tr>
<tr>
<td>22-26 September</td>
<td>Regional Knowledge Management School in Korea</td>
<td>Daejeon, Republic of Korea</td>
<td>M. Sbaffoni</td>
</tr>
<tr>
<td>6-10 October</td>
<td>Training Meeting to Facilitate Communities of Practice for Nuclear Knowledge Management Practitioners in Operating Facilities</td>
<td>Vienna, Austria</td>
<td>V. Kolomiets</td>
</tr>
<tr>
<td>13-17 October</td>
<td>Technical Working Group Meeting on Nuclear Knowledge Management</td>
<td>Vienna, Austria</td>
<td>J. de Grosbois</td>
</tr>
<tr>
<td>10-14 November</td>
<td>Technical Meeting to Prepare Guidance Documents for Capacity Building</td>
<td>Vienna, Austria</td>
<td>Z. Pasztory</td>
</tr>
<tr>
<td>24-28 November</td>
<td>Technical Meeting on Preparation of Guidance Document on Life-cycle Management of Design Basis Knowledge</td>
<td>Vienna, Austria</td>
<td>V. Kolomiets</td>
</tr>
<tr>
<td>17-28 November</td>
<td>Joint IAEA / ICTP School on Nuclear Energy Management</td>
<td>Trieste, Italy</td>
<td>T. Yanev-Karseka</td>
</tr>
</tbody>
</table>

Dates, venues, etc. might change according to Member States needs and availability of participants.

Recent Publications

- **Design Features and Operating Experience of Experimental Fast Reactors**
  Read more

- **Impact of Knowledge Management Practices in NPP Organizational Performance - Results of Global Survey**
  English. 2013
  Read more

- **Knowledge Management for Nuclear Research and Development Organizations**
  Read more

- **Managing Nuclear Knowledge—A Pocket Guide**
  English. 2012
  Read more


How to order IAEA Publications: [http://www-pub.iaea.org/books/HowToOrder.aspx](http://www-pub.iaea.org/books/HowToOrder.aspx)
DEPARTING STAFF

We would like to say goodbye to our dear colleague, Ms Keiko Hanamitsu, who left the NKM Section in January 2014.

‘Thank you, Keiko, for your outstanding contributions in the past seven years - we wish you a bright future full of pleasant challenges.’
The conference will focus on the global challenges of capacity building, human resource development (HRD), education and training, nuclear knowledge management and establishing/maintaining knowledge networks.

The following Topics have been identified as subjects for the conference sessions:
1. Human Resources and Capacity Building
2. Building and Sustaining Capacity through Education and Training
3. Preparing the Next Generation of Nuclear Professionals
4. Knowledge Management
5. Knowledge Networks

The Nuclear Knowledge Management Section is co-organizing this conference and contributes in the following areas:
- Highlight education and training programmes and practices
- Emphasize the role of nuclear knowledge management for knowledge transfer and HRD
- Elaborate on the role and scope of various knowledge networks.

Deadline for submission of Abstracts: 15 January 2014! For more information, visit the conference webpage.

THE IAEA SCHOOLS

Joint ICP/IAEA School on NUCLEAR KNOWLEDGE MANAGEMENT
25-29 August 2014, ICTP Miramara, Trieste, Italy

The 10th edition of the School of Nuclear Knowledge Management (NKM School) is jointly organized by The Abdus Salam International Centre for Theoretical Physics (ICTP) and the International Atomic Energy Agency (IAEA). On top of recognizing a decade of successful cooperation between the IAEA the ICTP, 2014 will also mark ICTP’s 50th anniversary.

The School is a certificate course aiming to provide specialized education and training on development and implementation of knowledge management programmes in nuclear science and technology organizations.

The School focuses on methodologies and practices, and explores various dimensions of NKM such as processes and tools, challenges and benefits, culture influence, relationship with human resource development, information technology for knowledge preservation and sharing, etc. Learning is supplemented with real life examples, good practices and lessons learned from NKM programmes in different types of nuclear organizations. The aim is to encourage ‘forward thinking’ and to make theory and insights directly applicable in the workplace.

Info and Application at: ICTP NKM School website

Deadline to register: 7 March 2014

Joint ICP/IAEA School on NUCLEAR ENERGY MANAGEMENT
17-28 November 2014, ICTP Miramara, Trieste, Italy

The purpose of this school is to provide a unique international educational experience aimed at building future leadership in managing nuclear energy programs from among promising young professionals from countries, particularly newcomer countries that seek to develop nuclear power or other nuclear applications, who show promise as future leaders of the nuclear industry, academia and public sector entities. It will enable the transfer of IAEA specific knowledge to Member States towards their capacity building efforts.

The prospect of a continuing world-wide use of nuclear technology - for the generation of electricity and other energy services and in a diversity of nuclear applications in medicine, agriculture, and industry, as well as the ageing cadres in the field - points to the need for new and greatly expanded global cadre of nuclear professionals. A highly competent management is vital to the success at all stages of development or re-launching of a nuclear programme.

This school will focus mainly on training young professionals from developing and developed countries with managerial potential on aspects of the industry that will ensure their broad understanding of the current issues that need to be tackled in their various countries.

Info and Application at: ICTP NEM School website

Deadline to register: 18 May 2014

Impressum

Nuclear Knowledge Management e-Bulletin
January 2014

Prepared by the Nuclear Knowledge Management Section, Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre, PO Box 100, 1400 Vienna, Austria