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INIS and Nuclear Knowledge Management Section
IAEA Department of Nuclear Energy

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Information and Nuclear Newcomer States



Photo: IAEA

Greater interest in using nuclear energy from nuclear newcomer states has strengthened the demand for reliable and speedy information on various aspects of nuclear energy and related implementation programs. *Page 3*

Pilot Project Provides Free Access to the INIS Database

The INIS Secretariat launched the INIS Online Database Open Access Pilot Project in October 2008 providing free Access to the INIS Database for 10 countries. *Page 5*

Over 3 Million Records in the INIS Database

INIS, the leading worldwide reference database for published scientific literature on the peaceful uses of nuclear science and technology, conquered another milestone in 2008 by increasing the total number of its bibliographic records to over 3 million. *Page 6*



Photo: IAEA

Charting the Nuclear Knowledge Management Roadmap



Photo: IAEA

A meeting of Senior Officials on *Nuclear Knowledge Management: Cooperation for Development* pinpointed areas where the IAEA can help advance additional technical cooperative efforts to preserve and transfer nuclear knowledge. *Page 10*

Participating in the First European Conference on Nuclear Education and Training

NKM participated in the *International Conference on Nuclear Engineering Science and Technology - Education and Training (NESTet 2008)*, the first European conference dedicated to Nuclear Education and Training. *Page 11*



Photo: IAEA

Change of Leadership in the INIS and NKM Section

Since April 2008, Ms. Ruth Hahn-Weinert, Head of the IAEA Library, is the Acting Section Head of the INIS and NKM Section at the IAEA.

"Chairing the 34th INIS Liaison Officer Meeting I had the opportunity to meet over sixty INIS Liaison Officers. I have been impressed by their professional foresight and commitment to INIS' success. The meeting made a stride to maintain INIS relevance for future generations of nuclear scientists by opening public access to the database" said Ms. Hahn-Weinert.

Fast paced technological advances greatly influence information users' expectations in today's knowledge-based society. Human generated metadata is increasingly giving place to machine-generated metadata. Current information needs increasingly challenge and change traditional information bases. As an example, in a foreseeable future, a database's role will shift from providing access to bibliographic records to providing access to searchable and reusable text, data, voice and image.

Contemplating the challenges ahead, Ms. Hahn-Weinert noted that, for nuclear information centres to remain relevant, traditional contributions have to be aligned with the digital world. "We must focus on a commitment to extend our boundaries" she clarified. "We must ensure that the information we provide is of relevance to future generations and we must reinforce our efforts to make the scientific community aware of our support".

"In today's knowledge society the core function of nuclear information centres does not change: Trusted infor-

mation on the benefits and risks of nuclear energy and its applications must be available, accessible and exchanged as broadly as needed," Ms. Hahn-Weinert concludes.

Contact: Ms. Ruth Hahn-Weinert

Introducing Ms. Hahn-Weinert

Ms. Hahn-Weinert has over twenty years of experience in various management positions. Over the past seventeen years, Ms. Hahn-Weinert worked with the Library and Archives of the United Nations Office in Geneva, Switzerland. In 2006, she took on the position of Head of the IAEA Library and since 2 April 2008, she also assumes her duties as Acting Section Head, INIS & NKM. Ms. Hahn-Weinert is also the coordinator of the International Nuclear Libraries Network.



INIS and NKM at the GC 2008

The IAEA's 52nd General Conference of Member States took place from 29 September - 4 October at the Austria Center in Vienna. More than 130 IAEA Member States and over 1400 delegates attended the five-day event.



Photo: S. Padikkakudy, IAEA

Mr. Pryakhin giving a presentation at the INIS and NKM booth at the 52nd General Conference



Photo: S. Padikkakudy, IAEA

Ms. Atieh presenting INIS information resources to a delegate at the INIS & NKM booth during the 52nd GC

During the Conference, several exhibits illustrated selected aspects of IAEA programmes. INIS and NKM staff participated with a display highlighting and promoting Nuclear Information and Knowledge Management programs of the Section.

News from INIS

Information and Nuclear Newcomer States

The world we live in today is characterized as a world of crises. Already present food and poverty crises are now supplemented by global environmental, energy and financial crises. All efforts to foster world development and make it sustainable are impacted. The most influential minds and institutions around the world are trying to take us out of this social, economic and political condition of instability and danger, but there is still a long way to go.

Availability of energy resources is in direct correlation to human well being and development prospects of any nation. Lack of energy and its cost are prohibiting factors for all nations, but particularly for developing countries. In his statement to the Commonwealth Finance Ministers Meeting on the global energy crisis in 2008, Dr. Mohamed ElBaradei, pointed out that “nuclear energy looks certain to play a larger role in the future energy mix of the developing world. Of the 35 new reactors currently under construction, 17 are in developing countries”.

This increased interest in using nuclear energy by developing countries is understandable. The nuclear power newcomer states see nuclear energy and nuclear power plants as large-scale and reliable power suppliers for large cities and their much needed industry infrastructure. Nuclear power emits almost no greenhouse gases and is therefore environmentally friendly, one of several major concerns for newcomer states. Sufficient uranium resources are available and expectations of a nuclear renaissance have prompted new uranium exploration. Furthermore, the cost of energy generated through nuclear plants has become more financially affordable while safety and reliability of the plants themselves have increased.

Greater interest from newcomer states has also strengthened the demand for reliable and speedy information on various aspects of nuclear energy and related implementation programs. Depending on the stage of development of their national infrastructure for nuclear power, information requirements of newcomer states vary. Users might be looking for information on economic and planning aspects, safety and security concerns, non-proliferation and other legal requirements, very technical and operational instructions, wider social impact or human resource constraints and development. The level of users' knowledge of information retrieval and use can also vary from inexperienced to very sophisticated. Users' information retrieval path usually starts with Google, but, frustrated with the information glut, they quickly turn to locally available resources such as libraries or information and documentation centres. Reference questions and requests for information are as wide as their

subject interests and information proficiency levels. This places considerable stress on the capabilities of locally available information specialists. Although willing to help, these may be frequently limited by their own experience and the information collections at hand.

So what is the role of the International Nuclear Information System (INIS) in this setting of heightened interest in nuclear energy and how can it assist newcomer states in obtaining much needed information?

INIS was established almost forty years ago in response to the IAEA's mandate to foster the exchange of scientific and technical information on peaceful uses of atomic energy. During all these years, INIS has been successfully fulfilling its mission by:

- creating a reservoir of nuclear information for current and future generations,
- providing quality nuclear information services to Member States, and
- assisting with the development of a culture of information and knowledge sharing.

INIS continues to play an important role in nuclear information management and knowledge preservation by processing most of the world's scientific and technical literature on a wide range of subjects from nuclear engineering, safeguards and non-proliferation to applications in agriculture and health. During this period, INIS has moved from a bibliographic database to a full text searchable resource. The number of full text documents in INIS accessible directly via the Web is currently 250 000, while the total number of bibliographic records exceeds 3 million. At present, INIS members total 142 (119 countries and 23 international organizations) and INIS still remains a main source of nuclear information for many IAEA Member States.

Providing open access to full-text non conventional literature (NCL) as requested by Member States was an important enhancement to the INIS Database. This ongoing project has as its objective to completely open the INIS Database and its full-text documents to all Member States. Endorsed by the 34th Consultative Meeting of INIS Liaison Officers held in November 2008, this project represents one of the main INIS development directions towards newcomer states.

INIS has continued its efforts to expand free access to its Database for universities. At the end of 2008, a total of 387 universities in 66 Member States were granted free access to the INIS bibliographic and full-text documentation via the Internet.

Information capacity building of newcomer States to nuclear energy is another important activity which includes training, assistance and feedback to a number of INIS centres, as well as improvement of all aspects of their INIS operation capabilities. In addition, the International Nuclear Libraries Network (INLN), coordinated by the IAEA Library, focuses in particular on the information needs of newcomer States by providing an international, not-for-profit forum for the exchange of best practices and lessons learned, creating the opportunity for networking and collaboration across organizations.

Information has always been considered, and has been proven to be, a very powerful tool. Comprehensive, well structured and organized, timely and easily accessible information definitely has its role as part of a reply to the increased interest in nuclear energy and in the easing of at least one of the current world crisis – the energy crisis.

Contact: Mr. Dobrica Savić

Introducing Mr. Dobrica Savić

Mr. Dobrica Savić joined the IAEA as Head of INIS on 1 November 2008. He has over 28 years of experience in various information management positions, 23 of which within the United Nations System (ICAO, UNESCO, World Bank, UNV). In his previous position at the International Civil Aviation Organization (ICAO) in Montreal, Canada, he was Chief of the Web and Documentation Management Section. His responsibilities included Web development, sales of electronic publications, CD-ROM production, records management, library and archives. He was also ICAO's Coordinator for Language Services (translation, interpretation, terminology and document control). During his time as a UNESCO expert, Mr. Savić worked in Africa establishing various government information and documentation centres.



34th INIS Liaison Officers Meeting



Ms. Hahn-Weinert addressing participants during the 2008 ILO Meeting held in Vienna (Photo. T. Kalapurackal, IAEA).

The 34th Consultative Meeting of INIS Liaison Officers was held at the IAEA Headquarters in Vienna, Austria from 3-5 November 2008. Sixty-four Liaison Officers and representatives from 57 Member States and 3 international organizations got together to discuss the past two years' achievements as well as the challenges ahead. Liaison Officers participated actively; some chairing individual sessions, others giving presentations and many participating in the discussions. The 3 day long series of sessions, regional meetings and workshops focused on topics ranging from the strategic vision for INIS to Database content, technical developments, user needs and marketing.

The new information environment - advanced technology, global telecommunication infrastructure (e.g. the Internet), new information holders and providers, the need to meet new levels of requests from users, the pos-

sibility of integrating different types of information - permeated the discussions, encouraging strategic thinking on how INIS may steer towards the information needs of future generations and best fulfil its role as a modern nuclear information system. Discussions also centred on enhancements to the INIS Database, open access to nuclear information and INIS Database usage analysis.

A special session addressed to newcomers was held one day prior to the start of the consultative meeting. Over 20 participants attended and actively participated in this Introductory Session, which included discussions on the role of the INIS centres and that of the INIS Secretariat. This session was followed by three parallel regional meetings: the *Regional Meeting for Arab Speaking Countries*, the *Regional Meeting for Former USSR Countries* and the *Regional Meeting for Latin American and Caribbean Countries*.

During the consultative meeting, four side events took place; a workshop on Computer Assisted Indexing (CAI), a session on Digital Preservation, an International Nuclear Library Network (INLN) session and a session with representatives of countries considering/starting national nuclear programmes.

Highlights of the meeting included reinforcing the importance of accelerating the transfer of traditional information resources to a digital world. The *INIS Database on the Internet: Open Access Pilot Project* was fully endorsed by the Liaison Officers with a final objective of completely opening the INIS Database and its full-text documents to all Member States.

The meeting also strongly endorsed the assistance provided by the IAEA in building the capacity of national INIS centres to support national nuclear activities. The user needs studies conducted and presented by Japan, the Latin American Network on Nuclear Information (RRIAN) member countries and China were greatly valued by participants and it was suggested that similar studies be conducted by all INIS centres. Furthermore, participants highlighted comprehensiveness and timeliness of the INIS Database as the most important features for end users. Additional recommendations included using Web 2.0 technology in the new information system and continuing database enhancements.

Lastly, the meeting concluded by reiterating the importance of continuing to provide authoritative, trusted and reliable information on all aspects of the peaceful uses of nuclear science and technology.

Contact: Ms. Taghrid Atieh

Pilot Project Provides Free Access to the INIS Database: 10 Countries Participating in Pilot

As the need for reliable and trustworthy nuclear information resources continues to grow within our Member States, and to further disseminate INIS information to all those who need it, the INIS Secretariat launched the *INIS Database on the Internet: Open Access Pilot Project* in October 2008.

Within this pilot project, open access to the INIS Online Database and its full text collection has been provided to users in Argentina, Australia, Austria, Brazil, Canada, France, Japan, Sweden, Uruguay and the USA. This initiative has been strongly supported by the respective national INIS Liaison Officers and feedback has been overwhelmingly positive.

In 2009, this pilot project will expand to other countries. Up to date information on participating countries can be found on our web site, www.iaea.org/inisnkm. Users in participating countries are encouraged to access the Database and its full text collection at <http://inisdb2.iaea.org/>.

Contact: Ms. Taghrid Atieh

Remote Access to Computer Assisted Indexing Offered to Member States

Computer Assisted Indexing (CAI) offers many benefits to facilitate input preparation (indexing) and sub-

mission by National INIS Centres. From June 2004 to December 2008, 263 783 records have been indexed online using CAI, of which 59 770 records were indexed only in 2008. However, interactive indexing is not the only advantage of CAI. The system also features an automatic batch processing mode which enables it to run batches of documents and suggest descriptors for each record, which can then be approved, rejected or amended by subject specialists using FIBRE or any other input preparation software.

In 2008, Bulgaria, China, Germany, Energy Technology Data Exchange (ETDE), Finland, Japan, Malaysia and Vietnam used the CAI batch processing mode to process 13 424 records. Since 2005, the number of records processed by CAI batch has increased to 37 004.

At the request of the INIS Liaison Officers, a remote access feature to CAI was set up and implemented in June 2007 and is available at <https://cai.iaea.org>. This external access to CAI is provided by using a secure connection that guarantees the encryption of sensitive data transmitted over the Internet. This feature was tested during 2007 and 2008 by Argentina, Brazil, China, the Czech Republic, ETDE, France, Germany, India, Japan, Switzerland, Uruguay and Uzbekistan. Since May 2008, remote access to CAI is being provided to all Member States as a regular service of the INIS Secretariat.

Member States desiring further information or interested in using this service should contact the INIS Secretariat.

Contact: Mr. Alexander Nevyjel

Great Progress in Digital Preservation

To ensure consistent, high level image quality as well as the interoperability and accessibility of digitized nuclear information resources and their long-term preservation for future generations, the INIS Secretariat has adopted general principles based on leading institutions' guidelines and best practices and on its own wide-ranging experience. A document providing information about the digital preservation processes carried out by the INIS Database Production and Imaging Group was published in October 2008. It includes technical processes, standards used, hardware, software, processes related to scanning, quality control, workflow, Optical Character Recognition (OCR), verification, preservation, storage, and other connected issues. This document is available in the INIS Member Area (INIS Information Letter No. 253) or in the draft version of the *Handbook on Nuclear Knowledge Management*.

Non Conventional Literature (NCL) collections from 29 countries have been converted from microfiche to digital medium in 2008, namely: Algeria, Belgium, Brazil, Bulgaria, Chile, Colombia, Costa Rica, Cuba, the Czech Republic, Ecuador, Egypt, Finland, Guatemala, Indonesia, Japan (*part 1*), Malaysia, Mexico, the Netherlands, Peru, Poland, Portugal, Romania, Sweden, the Syrian Arab Republic, Turkey, Uruguay, Uzbekistan, Venezuela, and Vietnam. Digitized country sets are available online from the INIS Database and were provided to Member States.

Another remarkable achievement is the result of the close cooperation between INIS and the US National Centre. After the digitization of several thousands of US NCL reports by the Secretariat, the US Department of Energy Office of Scientific and Technical Information (OSTI), reviewed its collection and recently authorized open access to the full text of over 20 000 reports through the INIS Online Database. Additional documents are being made publicly accessible as they become digitally available and efforts to digitize all reports continue.

In addition to applying OCR to text in Latin and Cyrillic characters, satisfactory results in OCR of Chinese (*Simplified*), Japanese and Korean were also achieved. As a result, the collections of China and Korea have already been re-processed and close collaboration with the National INIS Centre of Japan is underway. Furthermore, tests are being carried out to identify suitable OCR software for Arabic, Armenian, Hebrew and Thai.

Some of the noteworthy digitization projects successfully completed in 2008 include:

- All back volumes up to vol. 39 of the English and French language versions of the *IAEA Bulletin*. An archive of fully searchable issues powered by INIS bibliographic metadata is available online at www.iaea.org/bulletin. Digitization of the Spanish language edition will be completed over the next year before other language versions are undertaken.
- All IAEA General Conference documents dating back to 1957 as well as all the Board of Governors documents of the past 50 years. These are available online at the IAEA GovAtom website.
- All *IUREP* publications available at the IAEA on World Uranium Resources. This collection dates back to the early 1980s and covers individual orientation phase mission reports, national favourability studies, etc.
- 11 volumes of the series *Directory of Nuclear Reactors*, including several drawings, were digitized in close cooperation with the IAEA Library and Archives.
- Digitization of Member States' technical reports. This major project, also done in collaboration with

the IAEA Library and supported by the new Metadata Extracting Tool (MET) and CAI, is expected to take from 5 to 10 years depending on available resources.

In collaboration with the National INIS Centres, several digital preservation projects are ongoing (e.g. Mexico, Serbia, Uruguay, the International Nuclear Data Committee at the IAEA) or are being established, particularly in Latin America and the Caribbean Region (e.g. Chile, Colombia, Cuba).

The ultimate goal of all these digitization efforts is to provide INIS users with online, easily searchable, full text access to this valuable information via the INIS database.

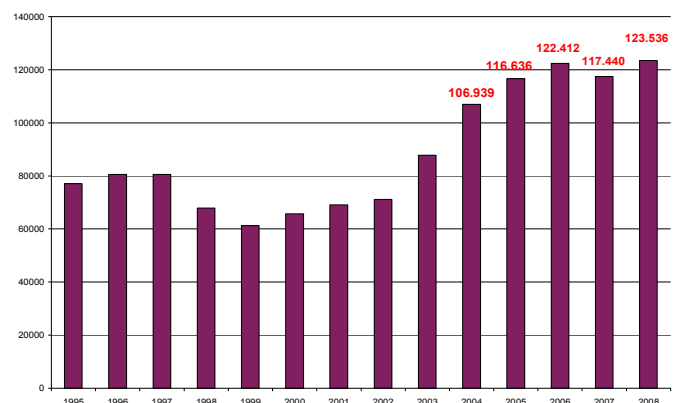
Contact: Ms. Seyda Rieder

Over 3 Million Records in the INIS Database

INIS, the leading worldwide reference database for published scientific literature on the peaceful uses of nuclear science and technology, conquered another milestone in 2008 by increasing the total number of its bibliographic records to **over 3 million**. This remarkable achievement is a direct result of all participating INIS Members' contributions over the past 38 years.

The jubilee record number 3 000 000 was entered in November 2008 bearing the reference number 39:103219. This Hungarian record is one of the **123 536** records that were added to the database in 2008, comprising the highest annual production result achieved in the history of INIS.

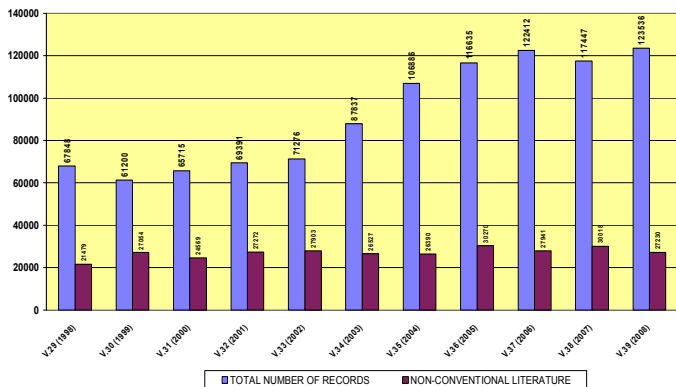
Over the past years, the annual input of records into the INIS Database has increased constantly. Production in 2008 was double the number of entries in 1999 and resulted in 5.2% more records added than in 2007. There is a continuous effort to improve the coverage of articles published in core nuclear journals and conferences held



INIS Production Statistics 1995-2008

worldwide. This effort enhances the comprehensiveness of the INIS Database, which covers all areas of IAEA activities.

Also in 2008, **27 227** documents were added to the INIS collection of non-conventional literature (NCL) which includes scientific and technical reports, conference proceedings, patents, theses, and preprints. **252 057** full-text documents are now available in PDF and can be downloaded directly from the INIS online database.



INIS Database Production Statistics 1998-2008: Conventional vs Non-Conventional (Grey) Literature

Contacts: Mr. Alexander Nevyjel, Ms. Seyda Rieder

New Enhancement: INIS Database on DVD in 2009

Early 2009, the INIS Database archives (1970-2007), currently available as 11 CD-ROMs, will be replaced by two DVDs.

The DVDs will include INIS data from 1970-2008. The INIS Database monthly updates however, will continue to be distributed on CD as well as on the IAEA FTP server.

Contact: Ms. Taghrid Atieh

Providing INIS Atomindex in XML

The INIS Secretariat is preparing to replace the current exchange format, ISO 2709 (1973), used to distribute the INIS Atomindex with a new XML based output format. Although the current format, developed in the late 1960s, adequately addressed the technological needs of its time, it no longer meets the requirements of modern technology. Benefits from this change in format include unlim-

ited record length, increased readability, support of hierarchical relations and full integration with the web.

To ensure a smooth transition to the new XML based output format, tests have been carried out in conjunction with previously identified National INIS Centres and appropriate improvements have been made accordingly.

Full implementation of the XML output format will take place on the 1st of January 2009, starting with Vol. 40/01. The current ISO 2709 format will continue to be made available until the end of 2009. In parallel, the entire Atomindex (back volumes) will be converted to the new XML format and will be made available to INIS Members upon request.

Contact: Ms. Seyda Rieder

New INIS Member

Mozambique joined INIS in May 2008, bringing the total number of INIS members at the end of 2008 to 142 (119 countries and 23 international organizations).

The National INIS Centre for Mozambique is located at the Faculdade de Ciências, Departamento de Física, Universidade Eduardo Mondlane, Maputo. Dr. Alexandre Maria Maphossa is the INIS Liaison Officer, and Mr. Rego João Afonso is the Alternate INIS Liaison Officer.

Contact: Ms. Taghrid Atieh

Usage Analysis of the INIS Online Database

2008 marks the 10th anniversary of the launch of the INIS Database on the internet at the IAEA. Since its launch exactly 10 years ago, it continues to be the most famous INIS product.

To fulfil the key objectives of the INIS Secretariat of improving usability and ensuring that future services and product developments are based on user needs and expectations, continuously learning about our users' requirements is essential. Therefore, it is crucial to better understand the INIS Database visitors' behaviour. This can be accomplished by learning usage patterns, requested subjects, years and type of literature, usage of existing features and INIS authorities, such as the Thesaurus; and other aspects.

The INIS Secretariat conducted an analysis of the INIS online Database usage in 2007 and results were presented at the INIS / ETDE Joint Technical Committee meeting that same year in November. Since then, the project was further extended to include usage analysis of

the Database contents. The main objective of this second phase of the project was to plan future trends in developing the subject content of the INIS Database, so that we could continue to fulfil Member States' nuclear information needs.

The results of this analysis were presented at the 34th Consultative Meeting of the INIS Liaison Officers in Vienna, Austria, which took place from 3– 5 November, 2008.

Contact: Ms. Taghrid Atieh

Free Access to the INIS Online Database: Number of University Users Growing

At the end of 2008, 387 Universities in 66 Member States have complimentary access to the INIS Online Database. Students and teaching staff at these universities now can easily access the database, which is the world's leading information source on the peaceful applications of nuclear science and technology. We encourage universities and academic institutions in INIS Member States to contact us and benefit from this cost-free service.

Contact: Ms. Taghrid Atieh

Supporting INIS Centres in Member States

In line with the INIS Secretariat's endeavour to support the active participation of National INIS Centres, either in establishing new centres or upgrading existing ones, a number of activities have taken place during 2008. In close cooperation with the IAEA Department of Technical Cooperation (TC), activities have taken place under projects being implemented in Burkina Faso, Egypt, Niger and Uzbekistan.

INIS Liaison Officer of Sweden, Mr. Lars Edvardson, on expert mission to the National INIS Centre of Burkina Faso

This two week mission provided expert advice on the operation of the National INIS Centre and focused on: subject aspects of input preparation; search and information retrieval from the INIS Database on CD and on the internet, and the INIS non-conventional literature; and promotion of INIS. Seven staff members from both the INIS centres of Burkina Faso and Niger attended this training and acquired the necessary knowledge and expertise to adequately run the centres and provide relevant nuclear information services to end users.

Thanks to the two national projects, the newly established National INIS Centres of Burkina Faso and Niger

INIS Online Database: New Enhancements

As the number of users of the INIS Online Database increases, particular attention has been given to enhancing this product to fulfil user needs. Icons have been introduced for different types of links so that users may easily distinguish between full text or web resources included in a record. Also, we have expanded access to our NCL collection, opening access to over 50 000 additional INIS full texts. Open access to additional INIS full text documents is being granted gradually as documents are made available and users are being kept informed accordingly.

Furthermore, the **Arabic Interface of the INIS Online Database is now available**. End users in the Arabic world will be able to enjoy searching and retrieving information using an interface in their own language. Our special thanks to the National INIS Centre of the Syrian Arab Republic for this valuable contribution. The Arabic interface complements the existing interfaces in English, German, Japanese, Portuguese and Spanish.

Contact: Ms. Taghrid Atieh



Mr. Edvardson delivering training to Mr. Donatien Sawadogo (INIS Liaison Officer of Burkina Faso), Mr. Toudjani Soumana (INIS Liaison Officer of Niger) and other staff of the INIS Centres of Burkina Faso and Niger (Photo: Sweden INIS Centre).

are now well equipped and have skilled personnel currently providing input to the INIS database, utilizing it and offering INIS services to interested users in the country.

National INIS Centre of Romania hosted training for Armenian INIS Centre



Mr. Cristu, the INIS Liaison Officer of Romania, delivering training to Ms. Arustamyan (Photo: Romania INIS Centre).

Ms. Hasmik Arustamyan, staff at the National INIS Centre of Armenia, received a one month comprehensive training on all aspects of INIS operations at the National INIS Centre of Romania, under the guidance of Mr. Cristu, the Romania INIS Liaison Officer. This included on the job training for input preparation and product utilisation, providing information services, identifying potential users as well as developing promotional and outreach activities. As a result, the capacity of the Armenia INIS Centre to support the national nuclear program with adequate information services has been enhanced and national input is now being received from the INIS Centre.

National INIS Seminar in Cairo

A National INIS Seminar was hosted by the Egyptian Atomic Energy Authority (EAEA) in Cairo on 6 March 2008. The Seminar also marked the completion of a national IAEA TC Project on *Upgrading the National Information and Documentation Centre of the EAEA* by inaugurating the Centre.

This event offered the opportunity to introduce the INIS and its products and services to the Egyptian nuclear, scientific and academic communities. Ms. Taghrid Atieh, Leader of the Capacity Building and Liaison Group at the INIS & NKM Section, presented INIS, highlighted the benefits it offers to users in Member States and pointed out past achievements of the project. She also gave an online demonstration of the INIS Online Database, and encouraged participants to make use of the vast pool of nuclear information that it offers. Other IAEA scientific and technical information resources, in particular the Nuclear Energy Knowledge Resources and NUCLEUS, the

IAEA's gateway to technical, scientific and regulatory information resources, were also emphasized in Ms. Atieh's presentation.

Seventy participants from 18 national institutions, universities and organizations attended the event, which was opened by Ms. Laila Fikry Fouad, EAEA's Vice-Chairperson for Training and Cooperation, and Mr. Mohamed Taha Hussein El-Kolaly, Vice-Chairperson for Research Projects. Staff members of the National Nuclear Information Centre, headed by Ms Fawzia Awad, INIS Liaison Officer for Egypt, gave an overview of the services available at the Centre.



(From left to right) Ms Taghrid Atieh, Ms Fawzia Awad, Professor Dr. Laila Fikry Fouad and Professor Dr. Mohamed Taha Hussein El-Kolaly addressing participants during the Seminar (Photo: IAEA).

Staff from National INIS Centre of Egypt received training at the IAEA

As part of the IAEA's TC project *Upgrading the National Information and Documentation Centre of the Egyptian Atomic Energy Authority*, Mr. Ahmed Ismail from the Egypt INIS Centre received a four week fellowship training at the INIS & NKM Section at the IAEA in Vienna.

The objective of this training was to enable decision makers and other staff at the national atomic energy authority in Egypt to have easy access to the country's specific documents electronically, and to enhance the preparation of national INIS NCL documents. It included digitizing some of the country's relevant documents and reports, related to TC projects and INIS NCL. It also included creating a repository database, scanning in and saving documents, applying OCR to the scanned documents, preparing INIS NCL documents and submitting files.

Contact: Ms. Taghrid Atieh

News from Nuclear Knowledge Management

Charting Knowledge Management Roadmap

Member States Recommend Areas of Possible Cooperation

More and more countries have stated their interest in adopting or growing their nuclear power capabilities. But as expansion plans are being drawn, many are experiencing a shared concern: Who will build the next round of plants while maintaining the safety of existing installations?

Preserving a country's nuclear knowledge base and fortifying the brainpower that could help bring about nuclear power's resurgence was the focus of the *Meeting of Senior Officials on Nuclear Knowledge Management: Cooperation for Development* which took place from 14-16 May 2008 at the IAEA. The three-day talks addressed the growing need for initiatives that may spur cooperation between Member States and the IAEA to capture, maintain, and share human knowledge in the application of nuclear sciences.

"To meet the challenges of the future, and particularly the nuclear power renaissance, nuclear knowledge management must become an integral part of today's nuclear activities at all levels," said Deputy Director General for Technical Cooperation, Ana Maria Cetto, in her opening remarks. "It is an essential component in all large nuclear projects; a key part of the corporate and institutional management of all organizations involved in research, development and utilization of nuclear energy and techniques; and the bedrock of national nuclear development plans and policies."



Deputy Director General and Head of the Department of Nuclear Energy Mr. Sokolov closing the Meeting of senior officials on Nuclear Knowledge Management (Photo: D. Calma/IAEA).

Key recommendations for IAEA activities in this field included:

- playing a leading role in harmonizing curricula in nuclear education and training programmes, as part of its activities in raising awareness of the importance of building and maintaining nuclear knowledge and competence;
- providing a forum for Member States to exchange NKM best practices and also foster robust national and regional education networks;
- making it a priority to assist Member States in assessing their own NKM performance; and
- expanding its collaborative, Internet-based learning platforms to meet the needs of Member States.

In addition to these recommendations, participants also proposed possible IAEA roles in maintaining Member State nuclear knowledge competency. In an open discussion, officials remarked that the IAEA could lead education and training programmes, assist developing countries to establish nuclear engineering programmes, and set regulatory benchmarks for university training programmes in the nuclear sciences. The

IAEA was receptive to all input from meeting participants and committed to investigate these recommendations further.

Among the meeting's participants were senior officials representing IAEA Member States from Eastern Europe, the Commonwealth of Independent States, along with representatives from Asia, Africa and Latin America. The meeting was made possible through collaboration by the IAEA's Departments of Technical Cooperation and Nuclear Energy.

Contact: Mr. Yanko Yanev

Challenges in Education and Human Resources Development in the Nuclear Field

Over the past years, the IAEA has been working with universities to address the need to respond to future workforce demands and to ensure adequate quantity and quality of nuclear education. The IAEA's activities focus in particular on curricula, networking between universities and the development of internet platforms for nuclear education. University networks supported include the World Nuclear University (WNU), the European Nuclear Education Network (ENEN), the Asian Network for Education in Nuclear Technology (ANENT) and other national and regional initiatives.

From 17-20 June 2008, 21 representatives from educational institutions and research organizations from Argentina, the European Commission, Hungary, India, Italy, Lithuania, Malaysia, Montenegro, Vietnam, Poland, the Russian Federation, Slovakia, Spain and the UK met in Pavia, Italy to exchange their views on the role of nuclear higher education in building a national infrastructure for nuclear power and non-power applications. Discussions were held on policies and strategies in nuclear education, human resources and knowledge transfer to the next generation of nuclear professionals, the role of universities in preserving and managing nuclear knowledge, best practices and perspectives in nuclear education, networking in education and training and the role of the IAEA in supporting human resources development, including nuclear education.

The workshop developed recommendations on nuclear education strategic issues, approaches and methods as well as on the IAEA's role in assisting Member States. Specifically, it was suggested that the IAEA should support the development of policies and strategies in nuclear education and foster strong regional or inter-regional nuclear education networks. Furthermore, it should continue to facilitate the harmonization of curricula in nuclear education and training programs as well as promote the awareness and use of nuclear facilities and engineering and training simulators as effective tools to enhance education, research, and to maintain capability. Lastly, it was recommended that the IAEA analyse and share information to facilitate nuclear education development as well as that it continue to provide specific consultancy services (assist visits) to address emergent problems and long term issues related to nuclear education.

A new IAEA report on *Status of and Good Practices in Nuclear Education* is being developed and will be finalized in 2009.

The Technical Meeting on *Status of Education and Human Resources Development in the Nuclear Field*, held in Pavia, Italy, was organised in cooperation with the

Institute of Advanced Studies – IUSS, University of Pavia, Italy.

Contact: Mr. Andrey Kosilov

NKM Participates in the First European Conference on Nuclear Education and Training

NKM participated in the *International Conference on Nuclear Engineering Science and Technology - Education and Training (NESTet 2008)*, the first European conference dedicated to Nuclear Education and Training. Hosted by the European Nuclear Society (ENS), the conference took place from 4-8 May 2008 in Budapest, Hungary. The side event on *Managing Nuclear Knowledge (MNK)* provided an important forum for discussions on nuclear education and training, as well as presenting relevant IAEA publications and results and discussing best practices in selected areas.

Many themes were addressed at the MNK session, including: how to facilitate sustainable Education and Training in the expectation of a Nuclear Renaissance, the Asian Network for Nuclear Education and Human Resource Development or The Role of Higher Education in Supporting Nuclear Knowledge Transfer to the Next Generation.

NESTet was hosted by the European Nuclear Society (ENS) under the auspices of the IAEA, the American Nuclear Society (ANS), the European Nuclear Education Network (ENEN) and the Hungarian Nuclear Society (MNT). It attracted over 130 participants from 29 countries including 20 European countries as well as delegates from Africa (South Africa), Asia (Japan, the Republic of Korea and Vietnam), the Middle East (Israel, United Arab Emirates), South America (Argentina) and the USA.



Participants at the NESTet Conference in Budapest, Hungary in May 2008 (Photo: IAEA).

Contact: Ms. Keiko Hanamitsu

ANS Utility Working Conference

NKM participated in the American Nuclear Society's (ANS) 2008 Utility Working Conference & Vendor Technology Expo themed *Knowledge Transfer: The Key to Continuing Operations Excellence*.

Knowledge transfer was analysed from several different perspectives, including those of the regulator, the industry, the international community and the educator. Parallel sessions on Engineering, Executive, Nuclear Knowledge Management, Operations, Oversight/QA, Performance Improvement Regulatory Relations and Risk Management were also held.

The conference disseminated information on good practices in education and training, knowledge preservation techniques, knowledge management systems and integrating knowledge management into management systems, which is also one of the main objectives of IAEA for the upcoming years. Furthermore, participants had the opportunity to learn more about the IAEA *Global Nuclear Power Plant Survey Linking Knowledge Management Practices to Organizational Performance*, which is being distributed this year to all Nuclear Power Plant operating organizations.



Mr. Pasztory at the 2008 Utility Working Conference in Florida (Photo: IAEA).

500 managers and technical specialists from the nuclear power industry attended this conference which took place from the 3rd to the 6th of August, 2008 in Amelia Island, Florida.

Contact: Mr. Zoltan Pasztory

Back to School with Nuclear Knowledge Management

A major international event in nuclear education and training, the *School of Nuclear Knowledge Management*, took place from the 1-5 September 2008 in Trieste, Italy. The IAEA-facilitated, one-week seminar brought to-

gether dozens of participants from developing countries and covered all facets of knowledge management in nuclear facilities.



Participants of the 2008 School of Nuclear Knowledge Management (Photo: IAEA).

The coursework introduced participants to the basics of nuclear knowledge management, along with helping to develop policies to retain nuclear knowledge, manage informational resources, and manage human resources with a view to enhancing knowledge capture and transfer.

The school's one week of courses featured a renowned international team of lecturers, and the curriculum has been in constant development over the past half-decade. During the week, students participated in working sessions, discussions, case studies, and poster sessions.

"Most of the workshops that the IAEA typically organizes for nuclear knowledge management are for sharing experiences between participants of an equal experience level," said Andrey Kosilov, one of the course directors for the workshop and a consultant for the IAEA's Nuclear Knowledge Management Unit. "But the idea of this school is different. We are bringing together young professionals who are not yet active in the area and giving them knowledge and practical guidance on how they can



The ICTP in Trieste, Italy, host of the 2008 School of Nuclear Knowledge Management (Photo: Massimo Silvano).

begin nuclear knowledge management programmes in their own organizations."

"All the information and knowledge obtained within this well organised event will be useful to implement in my home country", says Yuldashev Husan from the Institute of Nuclear Physics in Tashkent, Uzbekistan, who was one of 38 participants from 22 countries to attend this training.

The school was held at the Abdus Salam International Centre for Theoretical Physics (ICTP), a consortium of staff scientists and international experts who take on a wide range of research activities. It is jointly organized by the IAEA, the ICTP, the World Nuclear Association, and the Central European Initiative. The European Commission donated some funds to the school. It is in its fifth year of operation, having begun its annual coursework in 2004.

Contact: Mr. Andrey Kosilov

Technical Meeting on the Asian Network for Education in Nuclear Technology (ANENT)

Twenty-seven participants from 15 Member States, the IAEA, and collaborating members attended the *Technical Meeting on the Asian Network for Education in Nuclear Technology (ANENT)*, hosted by the China Institute of Atomic Energy (CIAE) on 25-28 November 2008 in Beijing, China.

The meeting focused on several key objectives, including reviewing 2007-2008 ANENT activities, addressing emerging challenges or proposals for future coordinated actions and planning 2008-2009 activities.

The approved Action Plan for 2009 includes an ANENT meeting to be held in November 2009 in the United Arab Emirates, an E-training course on energy planning "MESSAGE", fellowships and scientific visits as well as Regional Training Courses to be held throughout the year.



Opening Session of the ANENT technical meeting in November 2008 (Photo: IAEA).

During the meeting, Mr. Fan Sheng of CIAE, China was selected as the ANENT Chairperson for 2008-2009; to be followed by the representative of the United Arab Emirates. Participants recognized the successful implementation of last year's plan and highlighted the increased number of ANENT members and collaborating members. Nevertheless, country reports demonstrated the need for further development of nuclear education in the region.

Contact: Ms. Keiko Hanamitsu

Assisting Kazakhstan in NKM



Participants of the IAEA NKM Workshop in Kazakhstan in October 2008 (Photo: IAEA).

The IAEA Technical Cooperation Department launched in January 2007 the project KAZ0003 *Nuclear Knowledge Management and Preservation in Kazakhstan*. As part of this project, a pilot project in the National Nuclear Centre is planned. An IAEA expert mission, providing advice and assistance on Nuclear Knowledge Management and helping define future needs for Kazakhstan Nuclear Organisations, took place in October 2008. It helped participants understand Knowledge Management methodology and techniques. As stated by one of the participants, "We now know we have to deal with these. We can use the expert's experience. We know in which direction we have to go!"

IAEA staff as well as national experts from the Institute of Nuclear Physics in Almaty, from the Institute of Atomic Energy and from the Atomic Energy Committee of the Republic of Kazakhstan (KAEC) participated in the IAEA assist mission. More information about Nuclear Knowledge Management assist missions can be found in the IAEA-TECDOC-1586 *Planning and Execution of Knowledge Management Assist Missions for Nuclear Organizations*, published in November 2008.

Contact: Mr. Zoltan Pasztory

Assisting Ukraine in Nuclear Knowledge Management



Mr. Pasztory and other experts during the Assist Visit to the Zaporizhye Nuclear Power Plant in July 2008 (Photo: IAEA).

Under the Technical Cooperation (TC) Project *Improvement of the Training System for the Nuclear Power Plant Maintenance Personnel (UKR0009)*, an Assist Visit to the Zaporizhye Nuclear Power Plant in Energodar, Ukraine took place from the 30th of June to the 4th of July 2008.

During the assist visit, IAEA and international experts from Canada, the Czech Republic, Hungary and the USA introduced Nuclear Knowledge Management through presentations and workshops. Participants assessed their

own Nuclear Knowledge Management Practices and developed an action plan for the Zaporizhye Nuclear Power Plant based on the self assessment tools provided by the experts and available in IAEA-*TECDOC-1586*.

Although the Zaporizhye Nuclear Power Plant has had good results in the training of personnel and has established good practices which they share with other Member States through IAEA meetings and conferences, the assist mission reinforced the importance of integrating missing elements of NKM into their Management System. A new IAEA TC Project *Nuclear Knowledge Management of the NPP Personnel in Ukraine (UKR0010)*, will be launched in 2009 and will use the experiences gained and lessons learnt in the *UKR0009* project.



Zaporizhye Nuclear Power Plant in Energodar, Ukraine (Photo: IAEA).

Contact: Mr. Zoltan Pasztory

Recent Publications

Web Harvesting for Nuclear Knowledge Preservation



IAEA Nuclear Energy Series No. NG-T-6.6, May 2008

This publication provides general information and examples based upon experience in a variety of Member States on web harvesting in the context of knowledge preservation in the nuclear field, contemporary activities in the domain of web harvesting, document archiving and internet access technology in order to obtain a contemporary technology overview. Several aspects of possible web harvesting methodologies are presented in some detail in this publication, which can also serve as a basis to establish future cooperation.

Planning and Execution of Knowledge Management Assist Missions for Nuclear Organisations



IAEA-TECDOC-1586, November 2008

As a result of the widening knowledge gap in the nuclear industry and related organizations, the IAEA is developing a series of

guidance documents on knowledge management. This publication represents one such activity and provides general guidance as to the nature of the knowledge management mission and the means by which its goals are to be achieved and executed.

Fast Reactor Knowledge Preservation System: Taxonomy and Basic Requirements



IAEA Nuclear Energy Series No. NG-T-6.3, December 2008

As part of an initiative to preserve knowledge in the area of fast reactors, the purpose of this publication is to develop a taxonomy of the Fast Reactor Knowledge Preservation System (FRKPS) that will facilitate the preservation of the world's knowledge base in this area, and to identify basic requirements of this taxonomy on the basis of experience gained.

New Members of the Team

Ms. Bruna Lecossois, *Information Officer*



Ms. Lecossois joined the Capacity Building and Liaison Group in the INIS & NKM Section in July 2008 as an Information Officer. She is responsible for raising awareness of the benefits of INIS, and assisting Member States in promoting and marketing its products and services. She has an advanced degree in Communications and an MBA from George Washington University, USA. Before joining the IAEA, Ms. Lecossois worked for the past seven years at the World Bank where she was responsible for strategic communications and outreach for several country focused initiatives.

Mr. Zbigniew Majewski, *Leader, Systems Development and Support*



Mr. Majewski has joined the INIS and NKM Section in May 2008 as the Systems Development and Support Group Leader and is responsible for managing systems development and other IT services for the section and for users of INIS & NKM products. He is a systems development project manager and software engineer with a long record of professional experience in both the private sector and international organizations, including the UN Secretariat in New York. He has worked at the IAEA for over 10 years, managing and participating as an application architect in software development projects mostly in the area of document management. Mr. Majewski is a certified PMI Project Manager and a PRINCE2 Registered Practitioner.

Mr Madiba Saïdy, *Knowledge Management Specialist*



Mr. Saïdy joined the NKM Unit of the INIS & NKM Section in December 2008 from the World Nuclear University (WNU), where his research focus was the application of surface analytical methods to elucidate the corrosion and materials science of diverse reactor components. As a Knowledge Management Specialist within NKM, he will contribute subject-matter knowledge to the development of guidance and best practice documents on knowledge management; facilitate the implementation of this guidance in Member States, as well as the formulation of rationales, priorities, objectives, outcomes and performance indicators for the subject area, and review performance. Mr. Saïdy has a Doctorate in Chemistry, with specialization in Surface Science, from the University of British Columbia, Vancouver, Canada.

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2009 Meetings

Meeting Title	Date	Location	Country	Scientific Secretary
Technical Meeting on the Status and Trends in Nuclear Education	4-8 May 2009	IAEA, Vienna	Austria	M. Saidy A. Kosilov
Technical Meeting on National Approaches and Strategies for Nuclear Knowledge Management	15-19 June 2009	IAEA, Vienna	Austria	Z. Pasztory M. Saidy
School of Nuclear Knowledge Management	28 Sep. - 2 Oct. 2009	ICTP, Trieste	Italy	M. Saidy A. Kosilov
Technical Meeting on Archiving of Web-based Nuclear Information – NuArch Project	5-9 October 2009	IAEA, Vienna	Austria	Y. Yanev A. Pryakhin
Technical Meeting on Web-based Nuclear Power Industry Handbook	12-16 October 2009	IAEA, Vienna	Austria	A. Pryakhin
12th INIS/ETDE Joint Technical Committee Meeting	19-20 October 2009	IAEA, Vienna	Austria	D. Savic
Technical Meeting on the Asian Network for Education in Nuclear Technology (ANENT)	9-13 November 2009	TBD	TBD	Y. Yanev K. Hanamitsu
INIS Training Seminar	23-27 Nov. 2009	IAEA, Vienna	Austria	T. Atieh
Technical Meeting on Process Oriented Knowledge Management for NPPs in Operation and Construction Phases	November 2009	TBD	TBD	Z. Pasztory M. Saidy
Technical Meeting on the Development of Curricula in Nuclear Science and Technology	7-11 December 2009	IAEA, Vienna	Austria	Y. Yanev M. Saidy