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## Editorial

Recent months have seen activity in multinational initiatives at both a generic, global level and a specific national level. First, the IAEA has been active through the Multinational Approaches Expert Group (MNA), which reported in February. The group looked at the whole fuel cycle and Arius was involved in informing its deliberations on waste disposal. Our Topical article reports on the MNA Group's findings. At the national level, the specific proposals being advanced by the Russian Federation for storage of spent fuel will be considered at two meetings that will take place in Europe over the summer. The first, jointly sponsored by the US and Russian Academies of Science and supported by the IAEA, will take place in Vienna in June. The following month sees a major conference in Moscow on Multilateral Technical and Organisational Approaches to the Nuclear Fuel Cycle hosted by Rosatom, in cooperation with the IAEA. This meeting is specifically aimed at strengthening the non-proliferation regime. Arius has been invited to both these meetings, and will present both general papers on shared waste repositories and more specific input on legal aspects of multinational storage and disposal. As we have remarked before, we regard the involvement of the IAEA and other international agencies as an essential pre-requisite to the success, credibility and acceptability of any multinational initiative. Along with its safeguards and standard-setting work, this is surely the type of activity for which the Agency was set up and exists. Both meetings will be reported in our next Newsletter.

*Neil Chapman  
Baden*

## Arius Internal News

### *Assembly of Members, Switzerland*

The regular annual AoM took place in Baden on 25<sup>th</sup> February, with all eight Organisational Members being represented. The Management Executive was able to report on a successful year in 2004, with significant

progress being made in promoting the concept of shared multinational repositories.

Plans for the work programme in 2005 were presented, discussed and agreed. Arius forward plans include continued development of external relations with projects and programmes evaluating multinational options. Specific examples, already mentioned above, are the IAEA MNA initiative, the June joint IAEA and US and Russian National Academies workshop on the Russian spent fuel storage option and the IAEA-Rosatom meeting to discuss the same proposals, in July this year.

In addition, Arius will develop a follow-on proposal to take SAPIERR into the next stage of feasibility analysis for European shared storage and disposal options.

### *New Arius President: Hans Codée*



A highlight of the February AoM was the election of a new president of the Association. The inaugural President, Piero Risoluti of ENEA Italy, has served his two year term and chose to step down, due in large part to his heavy commitments at present as an Italian delegate to the IAEA. As successor to Piero, Arius is very fortunate to have gained Hans Codée (picture above), Director of the Dutch National Waste Agency, COVRA.

Hans Codée has many years of experience in leading COVRA; during his time in office, COVRA has implemented the HABOG facility in which all of the radioactive wastes from the Netherlands can be safely stored for a hundred years or more. Nevertheless, the Dutch policy also involves looking ahead to prepare for a final disposal solution. Extensive national studies have been done in the past on the massive salt domes in the country and disposal within the Netherlands or within a multinational framework are both options that are kept open.



Assembly of Members, Baden, Switzerland, February 25<sup>th</sup> 2005. From left to right: Gabor Buday (PURAM, Hungary), Valentin Stanchev (Kozloduy KPP, Bulgaria), Irena Mele (Arao, Slovenia), Alberto Orsnini (ENEA, Italy), Christine Boutellier (Arius), Neil Chapman (Arius), Jean-Marc Lavanchy (Colenco, Switzerland), Sylvia Mieth (Arius), Hans Codée (COVRA, Netherlands), Charles McCombie (Arius), Andrejs Dreimanis (RDC, Latvia), Hideki Kawamura (Obayashi Corporation, Japan)

### ***Arius increasingly recognized as leading organisation for multinational concepts***

It is gratifying to observe how, after its relatively short history, Arius is increasingly recognized across the world as the principal organisation focussing on multinational concepts for storage and disposal. This is reflected in our interactions with international bodies such as the IAEA, the EC and the World Nuclear Association (WNA).

At the IAEA, we were directly involved in production of the 2004 Teccod on multinational repositories and will help also with completion of a report on multinational storage. Charles McCombie, Executive Director of Arius, was also invited as an external expert to a meeting of the MNA Expert Group set up by the DDG and is recorded as such in the Group's important final report published in February. Yet another interaction occurred when Arius was responsible for the multinational cooperation aspects presented at the IAEA Technical Meeting in Ljubljana in 2004.

In the coming months, further involvement in IAEA sponsored activities are scheduled. The Agency is helping with the organisation of a joint workshop between the USA and Russian Academies of Science, to be held in Vienna in June. Neil Chapman, the Programme Director of Arius, has been invited by the NAS to talk on European attitudes towards Russian proposals for hosting international storage and disposal facilities. From the IAEA itself, Christina Boutellier, Legal Secretary of Arius, has been invited to make a presentation on legal aspects of

multinational and regional concepts. In addition, Arius will be sending a technical expert as part of the study group invited by the RAS to visit the potential site at Krasnokamensk in Siberia. The IAEA is also co-sponsor of a Rosatom major conference on international storage and disposal, to take place in mid-July in Moscow. Arius has received an invitation from Rosatom to participate in this meeting and a paper has been prepared.

The good cooperation of Arius with the EC is best exemplified by the currently running SAPIERR project. The present status of this important pilot project on European regional repositories and the intentions of Arius to prepare a follow-on study are described elsewhere in this Newsletter.

The involvement of Arius with the WNA is reflected not only in our Membership of the London based organisation and its working group on waste management but also by our participation in a new WNA initiative. Recently the WNA launched a major initiative when it founded the World Nuclear University (WNU). The first summer Institute of the WNU will take place in the USA in July. A 6 week course on all aspects of nuclear technology will be attended by 73 WNU fellows from around the world. The waste management aspects will be lectured on by Charles McCombie of Arius.

On top of these opportunities to present concepts for multinational projects to a wide range of relevant organisations and individuals, Arius also receives so many invitations to deliver talks or papers to international audiences that it is necessary to select

the most useful venues and also to involve where possible our members in presentations. This summer, individual Arius members, Ian McKinley and Christina Necheva will present Arius based papers in, respectively, Singapore and Bulgaria. Charles McCombie is an invited keynote speaker at the major Nuclear Power Asia Pacific Conference in Hong Kong and both he and Neil Chapman are involved as speakers, chairman and organisers in the ICEM Conference to be held in Glasgow in September.

Naturally, these promotional activities, together with specific project work as exemplified by the SAPIERR study, put a heavy strain on the available resources at Arius. The growing trend to involvement of individual members and the hoped-for continuation of growth in numbers of organisational Members will, however, help to maintain and strengthen yet further the profile of Arius as a recognized global leader in the area of facilitating multinational cooperation.

### **SAPIERR status**

SAPIERR is currently in the middle of Work Package 2, which involves analysis of the data gathered so far to make a first set of observations on feasibility issues for a shared, regional European repository. In many ways, this is the major element of the project as it is where the first quantitative implications of a European shared storage and disposal scheme can be defined.

The work is evaluating the nature and scale of shared repositories for HLW/SF with and without co-disposal of LL-ILW. This will be presented in terms of design options, size, transport and siting implications, and economics. It is already clear from the preliminary findings that the project will identify considerable savings of European resources.

A date has now been fixed for the final SAPIERR workshop, which will be an open meeting where the project results will be presented to the European community. We hope that many of our readers will be able to attend this important meeting. The venue is Brussels, 9<sup>th</sup> November 2005 (more details in the next Newsletter and on the SAPIERR website: <http://www.sapierr.net>).

Arius and the SAPIERR partners will also be preparing a follow-on proposal for the EC to be submitted this October. The current SAPIERR project has only been able to evaluate a relatively restricted number of issues and in only a superficial manner. There are many, already well-identified topics, that will need to be looked into in much more detail if adequate information is to feed into decisions on the principle of European shared solutions.

## **International News**

### **Brussels Workshop on "Nuclear Waste: Facts and Choices"**

On 28<sup>th</sup> February 2005, around 200 participants, including Members of the European Parliament, European Commission officials, technical experts,

researchers, consultants and representatives of the electricity industry and the nuclear power sector attended a workshop on Nuclear Waste: Facts and Choices, organised jointly by the European Commission, EURELECTRIC and Foratom. The objective was to assess the new challenges in the light of changing circumstances, with input by experts on nuclear operation and radioactive waste management, and also from local municipalities.

Following introduction by Energy Commissioner Andris Piebalgs and the Commission's Director for nuclear power, Christian Waeterloos, a number of speakers described the current situation concerning radioactive wastes in Europe. The first of these was Bertrand Barré, President of the European Nuclear Society, who reminded the delegates that public opinion in most EU Member States favours operation of existing nuclear power plants, but management of the wastes remains a contentious issue. He argued that nuclear waste is being well and safely managed in interim storages, but that we need to move towards geological disposal in order to keep the nuclear power option open. Even in France, where the population is most positive about nuclear power, there is little or no acceptance for having a waste disposal built in the local community. He pointed out that waste disposal was seen in the 1960s as a "purely scientific issue" but by the 1980s had become "a difficult social issue".

Following on from this, after the individual presentations, participants in a panel debate looked at the question of whether waste management is a technical or political issue. The panel agreed that radwaste management is a national responsibility but did not directly address the question of how this responsibility can be met by all countries without the implementation of shared facilities. However, the Commission representatives stressed that, as the waste had to remain safe for "tens of thousands of years", the public must be convinced that everybody in Europe has the same high level of safety standards for disposal. Therefore, it was argued that having separate national standards is not sensible. In reply, other delegates argued that IAEA standards, developed through a long and rigorous process, already provide a sort of harmonisation in the sense that international best practice has been established.

### **Increased interest in new nuclear plants implies increased effort on back-end solutions**

Driven by a range of factors, including high oil and gas prices and increasing acknowledgement of the reality of global warming, more countries are turning to the nuclear option for production of electricity.

The most dynamic nuclear power developments are in Asia, with China in particular having very ambitious plans. In April, the Indonesian Atomic and Nuclear Energy Agency reported that the government had approved the construction of the country's first nuclear power plant, in Java.

In South America, the Chilean Commission of Nuclear Power is urging preparedness for evaluating the

nuclear power option. In Australia, last month the federal Science Minister backed calls for a debate on nuclear power, demanding a “reality check” on the double standards of nuclear power critics. In March, the deputy Environment Minister of Poland declared himself in favour of nuclear power, saying that he saw no alternative.

Elsewhere in Europe, Finland and France have decided to build new reactors, as has Bulgaria. In other countries where the support for nuclear had dropped or disappeared – for example the UK, Sweden, Germany and Italy – the potential benefits of reviving nuclear are again being openly discussed. Even more striking is the fact that various countries that have not, as yet, used nuclear power are examining the feasibility of its introduction.

The views of high ranking officials from a large number of countries were presented at an international Ministerial Conference on *Nuclear Power for the 21st Century* held in Paris on 21st-22nd March. The benefits of nuclear power were pointed out in the published final statement, together with a list of conditions needed for nuclear power to thrive.

As might be expected, these conditions included solutions for the safe management of spent fuel and radioactive wastes. In the context of Arius’s work, this consensus, re-iterated at a time when new, small nuclear programmes are being considered, should reinforce our efforts to ensure that safe solutions are available to all. This strengthens the arguments for regional and international cooperation to implement safe waste management facilities that will be available to all waste producers at a cost that can also be borne by small programmes.

### **Russia agrees to take back Iranian spent fuel**

Russia will take back spent fuel from the Bushehr nuclear power plant that is due to begin operation next year. The recent agreements also provide for the supply of fuel for the plant.

### **Lithuania keeps its options open**

A recently completed study in collaboration with SKB, Sweden, identified potentially suitable areas of Lithuania for the construction of a deep geological repository for spent fuel from the Ignalina NPP. However, there are no plans to proceed with this solution at present and Lithuania is retaining the option of involvement in a shared repository solution.

### **EU waste directive still on the agenda**

The new Energy Commissioner for the European Union, Andris Piebalgs, from Latvia, intends to push forward with the stalled nuclear directives (see Newsletter 8). Speaking in France, he said that new legislation will be proposed this year, along with the possibility of launching a joint undertaking (see Newsletter 9). He wanted to see more public involvement in HLW disposal programmes and once again reiterated the point that the possibility of

European regional repositories, still foreseen in the directive, would not oblige any Member State to accept wastes from another. From the Arius viewpoint, we are pleased to see this point being driven home. Regional repositories are an essential adjunct to national repositories and the existence of a regional programme will not impose any burdens whatsoever on purely national programmes.

## **Topical Article**

### **Final Report of the MNA Expert Group of the IAEA**

#### ***The MNA Group was an explicit initiative of the Director General***

As reported in the previous Newsletters, the Multinational Approaches Expert Group (MNA) was set up by Director General ElBaradei of the IAEA in order to advise the Agency on how multinational initiatives could help enhance global nuclear security. The Group was chaired by Bruno Pellaud, ex-DDG for Safeguards, and included senior representatives from 26 countries. The group held 4 meetings, each a week long, within its year of operation and presented its final recommendations to the DG on 22<sup>nd</sup> February 2005. The topics covered by the Group included all aspects of the nuclear fuel cycle, with most emphasis on the especially sensitive technologies such as uranium enrichment and fuel reprocessing. The topics of greatest relevance for Arius - storage and disposal of spent fuel and radioactive wastes - were also prominent, however. In fact, the external support provided by Arius through the appearance before the Group of the Executive Director is acknowledged in the report.

The MNA report can be downloaded from the internet<sup>1</sup> and is well worth reading in its entirety. In this Newsletter item, we have selected those passages that are of most direct relevance to the work of Arius. These sections are directly related to earlier statements from the DG in which he has emphasised the need to consider the merits of multinational approaches to the management and disposal of spent nuclear fuel and radioactive waste. He has pointed out that not all countries have appropriate conditions for geologic disposal – and that, for many countries with small nuclear programmes for electricity generation or for research, the financial and human resource investments required for research, construction and operation of a geologic disposal facility are not available. Accordingly, the DG had already concluded that considerable economic, safety, security and non-proliferation advantages may therefore accrue from international cooperation on the construction and operation of international nuclear spent fuel and waste repositories.

<sup>1</sup>[www.iaea.org/Publications/Documents/Infcircs/2005/infcirc640.pdf](http://www.iaea.org/Publications/Documents/Infcircs/2005/infcirc640.pdf)

To give an unbiased view of the conclusions of the MNA Group, the remainder of this article is composed of extracts quoted directly from the Executive Summary of the published report.

### **The background to the study**

The decades long nuclear non-proliferation effort is under threat: from regional arms races; from actions by non-nuclear weapon States (NNWS) that have been found to be in fundamental breach of, or in non-compliance with their safeguards agreement, and which have not taken full corrective measures; from the incomplete manner in which export controls required by the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) have been applied; from burgeoning and alarmingly well organised nuclear supply networks; and from the increasing risk of acquisition of nuclear or other radioactive materials by terrorist and other non-State entities.

A different significant factor is that the civilian nuclear industry appears to be poised for worldwide expansion. Rapidly growing global demand for electricity, the uncertainty of supply and price of natural gas, soaring prices for oil, concerns about air pollution and the immense challenge of lowering greenhouse gas emissions, are all forcing a fresh look at nuclear power. As the technical and organisational foundations of nuclear safety improve, there is increasing confidence in the safety of nuclear power plants. In light of existing, new and reawakened interest in many regions of the world, the prospect of new nuclear power stations on a large scale is therefore real. A greater number of States will consider developing their own fuel cycle facilities and nuclear know-how, and will seek assurances of supply in materials, services and technologies.

### **The task and the approach chosen by the MNA Group**

The mandate of the Expert Group was three-fold:

- To identify and provide an analysis of issues and options relevant to multilateral approaches to the front and back ends of the nuclear fuel cycle;
- To provide an overview of the policy, legal, security, economic, institutional and technological incentives and disincentives for cooperation in multilateral arrangements for the front and back ends of the nuclear fuel cycle; and
- To provide a brief review of the historical and current experiences and analyses relating to multilateral fuel cycle arrangements relevant to the work of the expert group.

Two primary deciding factors dominate all assessments of multilateral nuclear approaches, namely “**Assurance of non-proliferation**” and “**Assurance of supply and services**”. Both are recognised overall objectives for governments and for the NPT community. In practice, each of these two objectives can seldom be achieved fully on its own. History has shown that it is even more difficult to find

an optimum arrangement that will satisfy both objectives at the same time. As a matter of fact, multilateral approaches could be a way to satisfy both objectives.

The “Assurance of supply” value of a multilateral arrangement is measured by the associated incentives, such as the guarantees provided by suppliers, governments and international organisations; the economic benefits that would be gained by countries participating in multilateral arrangements, and the better political and public acceptance for such nuclear projects. One of the most critical steps is to devise effective mechanisms for assurances of supply of material and services, which are commercially competitive, free of monopolies and free of political constraints. Effective assurances of supply would have to include back-up sources of supply in the event that an MNA supplier is unable to provide the required material or services.

Whether for uranium enrichment, spent fuel reprocessing, or spent fuel disposal and storage, **multilateral options** span the entire field between existing market mechanisms and a complete co-ownership of fuel cycle facilities. The following pattern reflects this diversity:

- **Type I:** Assurances of services not involving ownership of facilities.
- **Type II:** Conversion of existing national facilities to multinational facilities.
- **Type III:** Construction of new joint facilities.

On the basis of this pattern, the Group reviewed the pros and cons associated with each type and option. Pros and cons were defined relative to a “non-MNA choice”, namely that of a national facility under current safeguards.

### **Spent fuel disposal**

At present there is no international market for spent fuel disposal services, as all undertakings are strictly national. The final disposal of spent fuel is thus a candidate for multilateral approaches. It offers major economic benefits and substantial non-proliferation benefits, although it presents legal, political and public acceptance challenges in many countries. The Agency should continue its efforts in that direction by working on all the underlying factors, and by assuming political leadership to encourage such undertakings.

The final disposal of spent fuel (and radioactive waste as well) in shared repositories must be looked at as only one element of a broader strategy of parallel options. National solutions will remain a first priority in many countries. This is the only approach for States with many nuclear power plants in operation or in past operation. For others with smaller civilian nuclear programmes, a dual-track approach is needed in which both national and international solutions are pursued. Small countries should keep options open

(national, regional or international), be it only to maintain a minimum national technical competence necessary to act in an international context.

### Spent fuel storage

Storage facilities for spent fuel are in operation and are being built in several countries. There is no international market for services in this area, except for the readiness of the Russian Federation to receive Russian-supplied fuel, and with a possible offer to do so for other spent fuel. The storage of spent fuel is also a candidate for multilateral approaches, primarily at the regional level. Storage of special nuclear materials in a few safe and secure facilities would enhance safeguards and physical protection. The IAEA should continue investigations in that field and encourage such undertakings. Various countries with state-of-the-art storage facilities in operation should step forward and accept spent fuel from others for interim storage.

### Combined option: fuel-leasing/fuel take-back

In this model, the leasing State provides the fuel through an arrangement with its own nuclear fuel "vendors". At the time the government of the leasing State issues an export license to its fuel "vendor" corporation to send fresh fuel to a client reactor, that government would also announce its plan for the management of that fuel once discharged. Without a specific spent fuel management scheme by the leasing State, the lease deal will of course not take place. The leased fuel once removed from the reactor and cooled down, could either be returned to its country of origin which owns title to it, or, through an IAEA-brokered deal could be sent to a third party State or to a multinational or a regional fuel cycle centre located elsewhere for storage and ultimate disposal.

The weak part in the arrangement outlined above is the willingness, indeed the political capability, of the leasing State to take-back the spent fuel it has provided under the lease contract. It could well be politically difficult for any State to accept spent fuel not coming from its own reactors (that is, reactors producing electricity for the direct benefit of its own citizens). Yet, to make any lease-take-back deal credible, an ironclad guarantee of spent fuel removal from the country where it was used must be provided, otherwise the entire arrangement is moot. In this respect, States with suitable disposal sites, and with grave concerns about proliferation risks, ought to be proactive in putting forward solutions. Of course, commitment of client States to forego enrichment and reprocessing would make such undertakings politically more tolerable.

As an alternative, the IAEA could broker the creation of multinational or regional spent fuel storage facilities, where spent fuel owned by leasing States and burned elsewhere could be sent. The IAEA could thus become an active participant in regional spent fuel storage facilities, or third party spent fuel disposal schemes, thereby making lease-take-back fuel supply arrangements more credible propositions.

### Conclusions of the Expert Group

The potential benefits of MNAs for the non-proliferation regime are both symbolic and practical. As a confidence-building measure, multilateral approaches can provide enhanced assurance to the partners and to the international community that the most sensitive parts of the civilian nuclear fuel cycle are less vulnerable to misuse for weapon purposes. Joint facilities with multinational staff put all MNA participants under a greater degree of scrutiny from peers and partners and may also constitute an obstacle against a breakout by the host partner. They also reduce the number of sites where sensitive facilities are operated, thereby curbing proliferation risks, and diminishing the number of locations subject to potential thefts of sensitive material.

Moreover, these approaches can even help in creating a better acceptance for the continued use of nuclear power and for nuclear applications, and enhance the prospects for the safe and environmentally sound storage and disposal of spent nuclear fuel and radioactive waste.

As far as assurances of supply are concerned, multilateral approaches could also provide the benefits of cost-effectiveness and economies of scale for whole regions, for smaller countries or for those with limited resources. Similar benefits have been derived in the context of other technology sectors, such as aviation and aerospace. However, the case to be made in favour of MNAs is not entirely straightforward. States with differing levels of technology, different degrees of institutionalisation, economic development and resources and competing political considerations may not all reach the same conclusions as to the benefits, convenience and desirability of MNAs. Some might argue that multilateral approaches point to the loss or limitation of State sovereignty and independent ownership and control of a key technology sector, leaving unfairly the commercial benefits of these technologies to just a few countries. Others might argue that multilateral approaches could lead to further dissemination of, or loss of control over, sensitive nuclear technologies, and result in higher proliferation risks.

In order to maintain momentum, the Group recommends that attention be given - by the IAEA Member States, by the IAEA itself, by the nuclear industry and by other nuclear organisations - to multilateral nuclear approaches in general and to the **five approaches** suggested below.

### Five suggested approaches

The objective of increasing non-proliferation assurances associated with the civilian nuclear fuel cycle, while preserving assurances of supply and services around the world could be achieved through a set of gradually introduced multilateral nuclear approaches (MNA):

1. Reinforcing **existing commercial market mechanisms** on a case-by-case basis through long-term contracts and transparent suppliers'

arrangements with government backing. Examples would be: fuel leasing and fuel take-back offers, commercial offers to store and dispose of spent fuel, as well as commercial fuel banks.

2. Developing and implementing **international supply guarantees** with IAEA participation. Different models should be investigated, notably with the **IAEA as guarantor** of service supplies, e.g. as administrator of a fuel bank.

3. Promoting voluntary conversion of **existing facilities to MNAs**, and pursuing them as **confidence-building measures**, with the participation of NPT non-nuclear weapon States and nuclear-weapon States, and non-NPT States.

4. Creating, through voluntary agreements and contracts, **multinational, and in particular regional, MNAs for new facilities** based on joint ownership, drawing rights or co-management for front-end and back-end nuclear facilities, such as uranium enrichment; fuel reprocessing; disposal and storage of spent fuel (and combinations thereof). Integrated nuclear power parks would also serve this objective.

5. The scenario of a further expansion of nuclear energy around the world might call for the development of a **nuclear fuel cycle with stronger multilateral arrangements** – by region or by continent - **and for broader cooperation**, involving the IAEA and the international community.

## Upcoming Conferences

This section of the newsletter highlights upcoming conferences that are specifically relevant to Arius activities and objectives. Those at which Arius is attending or presenting papers are indicated.

### June

20<sup>th</sup> – 24<sup>th</sup>: Asia Oceania Geosciences Society Conference, Singapore  
*(Arius paper)*

1<sup>st</sup> – 2<sup>nd</sup> : US-Russian National Academies workshop on multinational solutions for spent fuel, IAEA, Vienna  
*(Arius paper)*

### July

12<sup>th</sup> – 15<sup>th</sup>: Nuclear Power Asia Pacific 2005, Hong Kong  
*(Arius Paper)*

12<sup>th</sup> – 15<sup>th</sup>: Multilateral Technical and Organisational Approaches to the Nuclear Fuel Cycle: strengthening the non-proliferation regime, Moscow.  
*(Arius paper)*

13<sup>th</sup> – 17<sup>th</sup>: NUSEC – Nuclear Energy and Security, Salzburg, Austria

### September

4<sup>th</sup> – 8<sup>th</sup>: Tenth ASME ICEM International Conference On Environmental Remediation And Radioactive Waste Management , Glasgow, Scotland

### *(Arius paper)*

8<sup>th</sup> – 10<sup>th</sup>: WNA Symposium London, UK

12<sup>th</sup> – 15<sup>th</sup>: MRS 2005: 29<sup>th</sup> Symposium of the Scientific Basis for Nuclear Waste Management, Mol, Belgium

18<sup>th</sup> – 23<sup>rd</sup>: Migration '05: 10<sup>th</sup> International Conference on Chemistry and Migration Behaviour of Actinides and Fission products in the Geosphere, Avignon, France

*The following two meetings, originally planned for September 2005 have been postponed to spring 2006*

24<sup>th</sup> – 25<sup>th</sup>: Geological Challenges in Radioactive Waste Isolation: 4<sup>th</sup> Worldwide Review, Berkeley, USA.

### *(Arius paper)*

25<sup>th</sup> – 30<sup>th</sup>: International High-level Radioactive Waste Management Conference, Las Vegas, Nevada  
*(Arius paper)*

### October

3<sup>rd</sup> – 7<sup>th</sup>: Safety of Radioactive Waste Disposal, IAEA Conference, Tokyo, Japan

9<sup>th</sup> – 13<sup>th</sup>: GLOBAL 2005, Tsukuba, Japan

### November

7<sup>th</sup> – 8<sup>th</sup>: EUROSAFE 2005, Brussels, Belgium

### October 2006

15<sup>th</sup> – 20<sup>th</sup>: 15<sup>th</sup> Pacific Basin Nuclear Conference, Sydney, Australia