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In this issue

As winter releases its grip on mind and body and spring ushers in renewal, the nuclear industry too is witnessing the green shoots of recovery. Seasons come and go and the feel-good factor is ephemeral, but the new spring in the nuclear community's step is not just the result of more sunshine or longer days. This time traditional optimism has been replaced by a sense of anticipation. The nuclear industry is growing in confidence, a confidence based on a tangible belief that the long-awaited revival is underway. The main catalyst has been the world's preoccupation with climate change. More and more citizens now recognise the contribution that CO_2-free nuclear energy makes to combating climate change. Politicians too are increasingly revisiting the nuclear option. With its environmental credentials leading the way, nuclear energy really is on the comeback trail.

Issue N°8 of ENS News catches the mood. It opens with a word from Bertrand Barré, President of ENS, on the subject of waste management. In an article entitled "*Making Progress on the Communications Front*," Andrew Teller examines how nuclear experts can get their message across more effectively to non-specialist audiences.

The ENS Events section focuses on two well-established conferences that took place recently: firstly, **PIME 2005** (Paris, 14-17 February) brought together nuclear communicators from across Europe - and beyond - to discuss key communications issues and challenges facing the nuclear industry; secondly, **RRFM 2005** (Budapest, 10-13 April) focused engineers and technicians' minds once again on the subject of reactor fuel management and in particular on key areas like how to improve the physical security of research reactor fuel. .

Next up is **ETRAP** (Education and Training in Radiological Protection), which will take place in Brussels from 23-25 November 2005. This international conference, the fruit of a joint collaboration between ENS and SCK+/CEN (Belgium's national centre for nuclear energy research), highlights the importance of specialised education and training in radiological protection for those who work in the nuclear and medical industries.

The Member Societies and Corporate Members section features the latest news on the energy situation in two of the new Member States, Poland and Lithuania. This is followed by another report from the Young Generation Nuclear associations.

Finally, the spring issue finishes with a round-up of news from around the world, including the proposed construction of nuclear plants in China by the French, the accession of Bulgaria and Romania to the EU, the latest on Kozloduy and the UK's recent decision to reconsider nuclear energy in light of its contribution to combating climate change.

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Peter Haug
Secretary General

Andrew Teller
Editor-in-Chief

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http://www.euronuclear.org/e-news/e-news-8/presidents-contribution.htm

ENS NEWS

ENS President's contributions

High Level Wastes

Bertrand Barré, President European Nuclear Society

February 2005

1. Achilles' heel ?

All the citizen of Europe, with the unique exception of Austria, would at least keep the nuclear option open if they were convinced that nuclear waste can be safely managed. That was according to a EUROBAROMETER survey of November 2002, but I doubt the results would differ today in our EU25. And for the man-in-the-street, nuclear waste means High Level Wastes, or a mixture of High Level and Long Lived radioactive wastes when the two streams are actually segregated. I will refer to both under the acronym HLW.

The lack of industrial implementation of a disposal method for HLW constitutes undoubtedly nuclear industry's Achilles heel. In the whole world, only one disposal

site is in operation, the Waste Isolation Pilot Plant WIPP near Carlsbad, New Mexico, but it is devoted to alpha-contaminated wastes issued from the US Defense programs, and its military nature played a significant role in its local acceptance. We all know that the process is more painful for the Yucca Mountain civilian project. As far as nuclear power HLW are concerned, Finland is the most advanced country, having democratically decided upon a disposal method - the geologic disposal of encapsulated spent nuclear fuel assemblies, selected a site, and began work in Olkiluoto. Many others, including France, are in the throes of the decision process.

2. And we thought it was simple…

In the 60s and early 70s, HLW was not a public issue and the nuclear community was confident: disposal of spent fuel or HLW issued from its reprocessing would be by deep geological disposal after proper conditioning. It was just a matter of selecting the proper geological stratum combined with the proper packaging, and there was no urgency to it because the volumes concerned were trivial[1] and, anyway, it was better to let the waste cool down for a few decades before putting it underground. A number of underground labs were implemented in Canada, Switzerland, Belgium and Sweden, to name a few.

It was rather late in the game, when exploratory drillings were actually taking place, that it appeared the issue was much more sensitive than anticipated by the scientific and technical community and that populations which were willing – with a various degree of enthusiasm - to accept the location of a nuclear power plant nearby, opposed very strongly the siting of a HLW disposal facility in their backyard. An when we thought the issues to elucidate and settle were corrosion rates, complexation with humic acids, migration factors, rock porosity and how it was affected by the heat generated by the waste packages, depth of the water table, geological modifications over hundreds of thousands of years and so on, the real issues were commercial on the one hand and ethical, almost metaphysical, on the other hand :

- Will my farm products suffer on the market from having grown near a radioactive “dump”?
- Will Mankind have polluted Mother Earth on the Day of Reckoning?

In France, where we almost rediscovered in the late 80s the meaning of the word *jacquerie*[2], another issue was clearly raised:

- How can you (you, scientific or industrial people) be presumptuous enough to pretend there is only one solution to the HLW problem?

3. Focus on France

The French case is interesting because, contrary to some other countries, the HLW issue erupted in a context where nuclear power as a whole was reasonably accepted by the public. By the end of the 80s, with very few exceptions like Plogoff, power plants had met good local acceptance and the same could be said for the Low Level disposal site being built in Soulaines by ANDRA, then an autonomous branch of the CEA. Furthermore, since 1990, the N4 plants have been put on line in Chooz and Civaux; so have Soulaines and the Marcoule MOX fabrication plant MELOX, without controversy, and the recent decision to build a 3rd generation EPR in Flamanville has met little public opposition. When Superphénix was terminated by the government in 1997, it was certainly not to answer any vast public outcry! But the HLW issue remains today a special case.

Following the troubles, sometimes violent, on the locations where ANDRA was drilling, Prime Minister Michel Rocard decreed a moratorium on any attempt of HLW disposal. Representative Christian Bataille was missioned to crisscross France to shed some light on the issue. The result of this mission was a Law enacted by the French Parliament on December 30th 1991. The "Bataille" law extended for 15 years the moratorium on actual disposal, 15 years to be devoted to R&D along three so-called *axes*:

- Partitioning and Transmutation
- Geologic Disposal, through studies in underground laboratories
- Long term storage.

The French Parliament will revisit the issue before the end of 2006. As a matter of fact, all the R&D teams have almost completed their reports and the OPECST, the French Parliamentary Office for science and technology assessment, is holding its hearings on the results of these studies while the special blue ribbon panel CNE, appointed under the Law, is busy preparing its synthesis.

4. A personal view on the technical State-of-the-Art

4.1 Interim Storage

The first fact to underline is that HLW *are actually managed* today. They are not orphaned, nor are they disseminated in the environment. They are accounted for and gathered under surveillance in licensed interim storage facilities. Spent fuel assemblies are in storage pools at the plant sites, in dry storage, or in centralized underwater storage facilities, waiting for reprocessing. Vitrified wastes and long lived medium activity wastes are in dedicated dry storage facilities. Wherever they are, HLW occasion today no nuisance whatsoever to anybody.

Quite frankly, they may be *too well* managed: if they are safe in their interim storage facilities for 30 or 40 years, why not simply leave them there a few decades more? Why rush to disposal - at a significant political cost - when there is no actual urgency? Because! Because if we believe nuclear power has a future, if we believe it will be necessary to develop it further if we want to solve our energy–environment dilemma, if we want to increase our energy production while reducing our greenhouse gases emissions, then we cannot be content with interim solutions.

Disposal is an ethical obligation. But which disposal?

Source : ANDRA

As the official assessments are still in preparation phase, allow me to offer you my own personal evalution, as one individual expert among many others: this is not an official statement of ENS or any other organisation I may belong to.

4.2 P&T

Based on results obtained mainly by the CEA teams with significant contributions from JRC's Transuranians Institute, partitioning is now proven on the laboratory scale. Its extrapolation to pilot scale could be started if so decided. Of course, partitioning makes only sense if we know how to manage the diverse waste streams this opearation would generate! For example, separating americium today would be pointless since we know we won't transmute it in LWRs.

Because of the untimely demise of Superphénix and the longer than expected revamping of Phénix, transmutation still relies mostly on the Superfact experiments carried out in Phénix in a European framework in the mid 80s. We know its works. It works better in fast neutrons reactors, but even in FBRs, transmutation ratios are never 100%. Any significant results would involve a series of recycling.

My own reservations about P&T is that it would add complexity to the spent fuel reprocessing-recycle for a quite questionable benefit in terms of human health, balancing actual additional operational doses today against hypothetical reduced public doses in the far future. I do believe, though, in long lived waste minimization, but not as a sophisticated add-on to our existing systems: rather as a part of the design specifications of generation 4 systems. The transition period between generation 3 and 4 might be a special case. Let me explain why:

The recycling in LWRs of the plutonium issued from spent MOX fuel is not very attractive, but spent MOX is a good way of storing plutonium before it is needed for future fast breeders. When time comes to extract this plutonium to constitute the FBR initial inventory, one might want to separate the minor actinides - that can be transmuted such plants, in order not to increase above the current accepted level the amount of minor actinides to be vitrified.

4.3 Long-term Storage

Long term Storage is not a matter for science or even R&D: it is a matter of engineering, it could be decided and implemented today. As a matter of fact, the Vitrified Waste storage buildings of La Hague or Rokkasho are very good examples

of such facilities, as are many dry spent fuel storage facilities around the world. Can they be qualified as “very long-term”? May be not, but, at worst, three successive 60-year facilities is equivalent to a single 180-year facility… as long as you guarantee retrievability of the packages, which is the basis of “storage” versus “disposal”.

Sub-surface storage may be preferred to surface facilities in order to increase the physical protection: there again, it is purely a matter of engineering.

The only problem I find with long term storage is of ethical nature: I would find distateful to simply leave the legacy to my grandchildren, even if it is done cleanly and safely.

4.4 Geological Disposal

More and more, there is a kind of international consensus in favour of the disposal of HWL in a facility built in a stable underground geological stratum located at medium depth, around 500 meters. I will not discuss the respective merits of cristalline or sedimentary strata: I may have my preferences, but I am convinced that in every case one can find the right conditioning and packaging to fit the specific requirements of a given geologic medium, as long as this medium has proven to be reasonnably stable over geologic periods. The high integrity copper container design adopted in Sweden and Finland for disposal in granite is a good example of such a fit. This disposal should remain reversible at least for a significant period.

The rationale for going underground is to provide an additional barrier to the eventual dissemination of the radioactive species as well as to protect the facility against intrusions and other agressions, be they voluntary or involuntary. Opinion polls and studies tell us that the general public is usually wary of the underground, often associated with seisms or infernal powers… but experience tells us that – as long as you avoid risk-prone areas – geology is vastly more stable and “smooth” that the history of human societies! Disposed of at depth, in a proper conditioning and packaging, radioactive species can only manage to reach the surface through a series of very slow mechanisms (corrosion, leaching, diffusion, migration) giving radioactive decay ample time to play its cleansing role. Radioactive wastes are not biodegradable, as some antinuclear pamphlets rightfully state, but they are indeed “*chrono*degradable”!

In France, for instance, we have choosen to reprocess our spent fuel both to recover the recyclable materials and to condition the final HLW under a physico-chemical form especially stable and corrosion resitent. Physico-mathematical models qualified on experiments of accelerated corrosion and globaly validated on several “natural analogues” have convinced us that even immersed bare in pure water, the HLW glass blocks would lose only 0.1% of their mass in 10 000 years. Even if you neglect the packaging, the retention capability of the engineered barrier and, further on, of the geologic media will further delay the migration of the species very slowly released by the glass matrix. All international modelling round robins conclude that, when they finaly reach the biosphere, the most mobile surviving species exhibit a radio-toxicity the level of which lies orders of magnitude below those considered acceptable by the present regulations. That is to say: if we choose the geological disposal, we impose upon our inheritors, as far as we can figure, no nuisance we would not accept upon ourselves. This is for me the definition of an ethically as well as technically acceptable solution.

Saying that it appears today a good solution is not the same as pretending it is and will remain the best ever. That is why a minimal amount of *reversibility* is needed. But if you look carefully into it, the degree of reversibilty to insure is not something to decide today. The decision will have to be taken when it is time to close the disposal, i.e. in one century at least, assuming we – or rather our successors – decide to operate it till saturation. This decision will be taken based upon all the additional knowledge accumulated during those hundred years, not only about the site itself, its behaviour and its environment, but also about eventual alternative management processes which are not mature or even available today. And even if, when time comes, it is decided to close the site "irreversibly", thousands of years will elapse before irreversibility actually takes place. For centuries after a "leaktight" closure, it will be possible to retrieve the packages, but only through a complex and costly mining operation.

5. Conclusion

Let me conclude on a note of optimism. In the 60s, disposal appeared to be a simple scientific issue. In the 80s, we learned painfully that it was a difficult social issue. But a lot has happened since 1990. The WIPP has been put to operation; Yucca Mountain has made progresses even though the road is still long before it is licensed. Finland has made its choices, both technical and political, and Sweden appears to be close behind. Alternatives to geologic disposal have been scrutinized and assessed anew within comprehensive and multinational R&D programs. I really believe that in a few decades, geologic disposal will be routine. And if, with time, we design a better mousetrap, a better way to dispose of HLW, we, or our successors shall gladly implement it.

Therefore, since the title of this Workshop is Fact and choices, let me summarize my choices for HLW management (and once again let me emphasize the "my"):

- We can and should dispose of pat, present and committed HLW with our best available techniques (our grand children may dispose of their waste differently)
- There is no technical reason to delay the decision to create a geologic disposal site for HLW. As there is no hurry to put hot glasses underground, we should begin with IL-LL-W (Intermediate level Long lived waste)
- The "reversibility" issue is moot.

- We must keep studying other options (P&T) in the frame of the 4th generation, and not wait for the results before implementing the solution for today.

[1] Even in France, where three quaters of the electricity is generated by nuclear plants, conditioned HLW amount to ~100 grams per capita and per annum, while highly toxic non-radioactive wastes total 100 kg/cap/a.

[2] Peasants' uprising, in reference to an historical episode during the 100 year Anglo-French War (1258).

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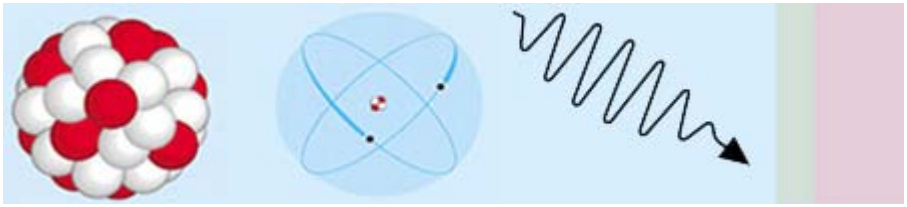
http://www.euronuclear.org/e-news/e-news-8/listening.htm



Tapping Unusual Quarters: a personal view by Andrew Teller, ENS society manager

Making progress on the communication front

Attending PIME[1] (the last issue took place last February in Paris) is always a thought- provoking experience. One cannot say that there is a palpable build-up of knowledge from one year to the next: communication is not a hard science, but is surely is a skill that can be improved. And one definitely came away with the feeling that nuclear communicators are improving theirs. The participants exchanged as usual their most noteworthy experiences, leading to the emergence of best practices. Among many valuable presentations, I would like to mention "Measuring what cannot be seen: how to gauge your corporate reputation" by **Susan P. Brissette**, from Bruce Power, Canada. While everybody was focussing on positive results, she devised a clever way of taking account of the negative ones that have been avoided (for more information on this: link). Not so long ago, the nuclear industry was still grappling with the hard fact that facts and figures were not enough to sway public opinion. These days are clearly gone. The industry has become much more professional in the way it deals with public issues and is putting in all the efforts necessary to understand the psychological phenomena at play.

A noteworthy example of this trend towards professionalism is an investigation launched by **Philippe d'Iribarne**, a reputed French social scientist. He applied on a large scale the techniques developed for consumer behaviour research to assess how opinions on nuclear energy are formed in the general public. The results of this investigation are due to be published in May this year. One can expect that its results will enable nuclear communicators to fine-tune their messages further. There will be more on this in the autumn issue of this e-Bulletin.

The drive towards ensuring better public acceptance is not confined to

communicators. The task of the latter will be made easier if those at the source of potential bones of contention, i.e. the engineers, develop greater awareness of the consequences of their activities. This concern is now taken care of in books aimed at engineers. "Making Technology Work – Applications in Energy and the Environment[2]" is to be commended for filling a clear gap in the curriculum of engineering schools. The authors, both professors at the Massachusetts Institute of Technology, draw on their personal experience to put energy-related projects into their proper context, which means that they go far beyond the technical aspects. The book succeeds in happily merging three lines of enquiry. It provides a wealth of technical information on the various energy sources; it highlights the societal dimension of their implementation and it provides the econometric tools needed to assess their cost-effectiveness. I would warmly recommend it to anybody interested in energy issues.

Still on the communication front, it is interesting to note that experiencing difficulties is not specific to the nuclear sector. Faithful to my habit of listening to unusual quarters, I tried to find out from the Internet how the communicators in the environmentalist circles were faring. In many instances, their problems mirror those of the nuclear sector. For all the successes they have scored, green communicators feel there is no room for complacency. Pollution is not decreasing as much as intended; energy is higher than they would like. Raising awareness relative to environmental matters was relatively easy, but explaining more complex concepts, such as sustainability, appears to be much more challenging. They fret about the increasing energy needs of developing countries. They also feel a need to make their messages clearer and to listen more to their partners, such as educators, broadcasters and journalists. Their pragmatic, result-oriented approach is to be noted, even if it cannot be copied. Their main goal is avowedly to change people's behaviour. Having observed that imparting the relevant information is not enough to change attitudes and that a change in attitude does not necessarily result in a change of behaviour, many green movements have opted for legislative action in order to have their goals enforced. If you ever wondered why the Green parties were so active in the European Parliament, now you know.

1 Should you need a reminder, PIME stands for Public Information Material Exchange.

2 by John M. Deutch and Richard K. Lester, Cambridge University Press, Cambridge 2004, 272 p.

http://www.euronuclear.org/e-news/e-news-8/pime2005.htm

ENS EVENTS

PIME time in Paris

Paris, capital city of Europe's largest nuclear power producing nation, played host this month (from 13 - 17 February) to PIME 2005 - the largest conference in the world especially dedicated to nuclear communications. Around 200 nuclear communicators from 32 countries congregated at the "Maison de la Chimie" to take part in this annual event, which is now in its seventeenth year. PIME (Public Information Materials Exchange) was organised by the European Nuclear Society (ENS) in co-operation with the IAEA and the programme was based on morning plenary sessions, afternoon workshops and panel discussions. Among the participants were representatives of nuclear power generators, energy suppliers, waste management companies, members of national nuclear societies and fora, senior EU officials and members of the global research community.

PIME is not just a conference. It is a unique forum for nuclear communicators to discuss major topics facing the nuclear community, to share ideas on future communications strategies and for learning how to communicate more effectively. PIME also provides the ideal opportunity for fellow professionals to network, exchange news and views and share best practices for communicating on issues that arouse great public interest and sensitivity and sometimes fuel controversy.

Happy Pimers

The conference kicked off with an opening address from Bertrand Barré, President of ENS and Scientific Communications Advisor to the Chairman of AREVA, in which he welcomed participants to Paris, focused on the programme and reiterated the objectives of the conference.

The morning plenary sessions focused on some of the key challenges facing nuclear communicators today. Among the highlights were a presentation of a recent AREVA advertising campaign, a BBC "If..." series documentary that illustrated how the power of TV can carry an emotional, high-impact message to a broad public, an IAEA session on crisis communications and a roundtable discussion on the dialogue between nuclear energy and society. In other sessions, delegates presented facts and

figures, including the results of recent opinion polls in their respective countries.

During the afternoon workshops, the emphasis was on interactive dialogue, analysis of practical examples and identifying potential solutions. Among the subjects discussed were communicating with local stakeholders, identifying best practices, leading the debate on waste management and improving nuclear operators' public image. Workshop moderators then had to summarise for delegates the findings and recommendations that emerged from each workshop.

ENS President Bertrand Barré hands over the PIME Award to Katalin Kulacsy, Hungarian YGN

On the final day of the conference, the first ever PIME Award for Communications Excellence was presented to the Young Generation Nuclear network in Hungary, in recognition of its dynamic communications and proactive lobbying during Hungary's largest cultural festival. This was followed by a two-part session devoted to the current and future challenges facing the French nuclear industry. The host country's sessions included a panel discussion on waste management involving experts from AREVA, CEA, ANDRA and EDF. Other presentations highlighted the challenges of communicating on the EPR project and how presenting the case for future technologies can pay dividends.

PIME 2005 concluded with an IAEA-sponsored closed session on best practices in communications that focused on handling the media and communicating in times of crisis. The next day, around twenty delegates visited the CEA's nuclear research centre at Saclay, near Paris.

A number of recurring themes and preoccupations regularly surfaced during PIME. One was the need to dispel public misconceptions with regard to the safety of storing radioactive waste. This is still perceived as a stumbling block to increasing public acceptance of nuclear energy as an economically viable

Young Generation Workshop with Kim Dahlbacka and Boris Sucic

and clean source of energy. Another was the importance of tailor-making communications to suit the specific needs of specific audiences, such as public authorities and local communities. Every communications tool and medium available must be used to maximise the communications pay-off.

A first for PIME this year was the almost permanent presence of senior officials from the European Commission, who actually participated in a number of sessions and workshops. This underlines the progress that the nuclear industry has made in networking with European experts and policy-makers and in engaging them in constructive debate.

Pime speakers

As Pimers left the conference centre and returned home, the prevailing mood was one of guarded optimism, with many delegates confirming that the tide of public opinion is - slowly but surely - turning in nuclear energy's favour. As the vital role that it plays in combating climate change and helping solve the energy supply problem becomes more recognised, a more favourable climate for communicating is created. The nuclear industry must make the most of this opportunity and ensure that it gets its key messages across more effectively.

Presentations are not available on the PIME Website, but a CD will besend to the PIME 2005 Participants.

Gala Dinner

Next year, the PIME bandwagon moves on to Vienna, from 12 - 16 February 2006. Note it down in your diary.

http://www.euronuclear.org/e-news/e-news-8/RRFM2005.htm

ENS EVENTS

RRFM 2005

From 10-13 April, around 200 engineers and research reactor operators from 29 countries across 4 continents congregated in Budapest for the ninth annual RRFM (Research Reactor and Fuel Management) conference. Most attendees were from Europe, but a large delegation of Americans were also present at this specialised conference. They were primarily interested in the transportation and storage of spent fuel.

The RRFM 2005 agenda centred around 4 main sessions. At the end of the conference, Paul Gubel, the Programme Committee Chairman summarised the main messages of the 4 sessions as follows:

Session 1 *(International Topics)* confirmed that research reactors will still be needed for a long time, whether it be for testing materials for innovative power reactors or for the production of radio-isotopes. The replacement of ageing research reactors must, therefore, be envisaged. At the same time, the risk of highly-enriched fuel being diverted for malicious purposes must be countered. Measures such as the Nuclear Threat Initiative are being implemented for this purpose.

Session 2 (*Fuel development, qualification, fabrication and licensing*) provided an update on the status of development of high-density UMo fuels. The swelling problems previously encountered gave rise to a number of applied R&D programmes in several countries, including France, the Russian Federation and the USA. The objective is to have a UMo fuel licensed by 2010.

Session 3 (*Reactor operation, fuel safety, core conversion*) highlighted the difficulty of reactor conversion. There are still 105 research reactors to be converted by 2014.

Session 4 (*Spent fuel management, back-end options, transportation*) heard the announcement that the US take-back programme would be extended by 10 years. Other topics presented during this session included the definition of optimal reprocessing parameters, the confirmation that research reactor fuel can be reprocessed, the characterisation of corrosion behaviour and the experience gained by various countries relative to storage and final disposal."

Among the many quality presentations we would like to single out the one entitled "*Out of pile French research programme on the U-Mo/Al system: first results,*" by a team of 10 researchers from the CEA, the University of Rennes (France) and AREVA.

Several inventions by H. Bonnet, Head of the Belgian Institute for Radio Elements, are also worthy of note. Bonnet drew the attention of participants to the threat to the continuity of supply of radio-isotopes that the current conversion programme, coupled with the gradual phasing out of ageing high flux reactors, poses.

Next year, RRFM will take place in the Bulgarian capital, Sofia, from 23-26 April.

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http://www.euronuclear.org/e-news/e-news-8/etrap.htm

ENS EVENTS

ETRAP 2005

The Belgian Nuclear Research Centre (SCK-CEN) and the Belgian Federal Agency for Nuclear Control are jointly organising the third international conference on **E**ducation and **T**raining in **R**adiological **P**rotection (**ETRAP2005**), with ENS acting as conference secretariat. An expected 120 radiation protection education professionals will gather at the historic Metropole Hotel in Brussels to discuss the latest developments in their field.

ETRAP2005 aims to reinforce the networking between organisations and individuals involved in education and training in radiological protection, providing a much needed platform for a comprehensive and transdisciplinary approach at both national and international level. Leading international organisations support the conference and have accepted to be part of the scientific programme: the European Commission, IAEA, IRPA and NEA/OECD. In addition, there has been an enthusiastic response to the Call for Papers.

The programme, to be confirmed in the beginning of June, will include presentations on the following topics:

- Certification and accreditation, recognition and harmonisation of requirements;
- Education and training needs in the industrial and medical sector;
- Expertise and knowledge management and on-the-job training;
- Course materials, demo-installations and e-learning;
- Quality assurance, safety culture and transdisciplinarity.

Educational material on radiological protection (courses, books, software applications, …) will be displayed in the poster and coffee break room during the conference.

For further information: http://www.etrap.net or etrap2005@euronuclear.org.

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http://www.euronuclear.org/e-news/e-news-8/ENC-2005.htm

ENS EVENTS

ENC 2005

Dear Colleagues and Friends,

I have great pleasure in inviting you to participate to **ENC 2005** in Versailles, the latest - but by no means the last - in a series of ENC events. This conference will be devoted to the scientific and technical aspects of nuclear energy that support the most advanced industrial applications, in what really appears to be the dawn of a new nuclear era.

ENC is “the” European nuclear event not to be missed. Although it prides itself in being European, it is not limited to any geographical or political area: energy is really a planetary topic, and I am sure this conference will attract experts from all over the

world.

There is no need to emphasize the attractiveness of the venue: Versailles speaks for itself. Being genuinely convinced that nuclear power and renewables share the same ambition, namely to supply the Earth with ample energy without endangering its climate, I find it very fitting that this nuclear Congress be held under the aegis of the "Sun King" Louis the XIV! And, indeed, the Palais des Congrès is just a few meters away from the Versailles Palace. It is 20 to 30 minutes away from Paris by rail. I am sure many of you will take the time to visit Paris, enjoy its monuments and get a taste of French cuisine.

Moving from French to International "cuisine", our Programme Committee has cooked for you a very comprehensive and tasty menu, which addresses all the current nuclear issues and provide much food for thought…

Take part in ENC 2005: your presence and your contribution will make it a memorable event for the World Nuclear Community.

Bertrand BARRE, Chairman of ENC 2005
President, European Nuclear Society

http://www.sfen.fr/enc2005/

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http://www.euronuclear.org/e-news/e-news-8/newsfrompoland.htm

MEMBER SOCIETIES

Stanislaw Latek
National Atomic Energy Agency
NUCLEAR NEWS FROM POLAND

History

In spite of the fact that electricity production in Poland was traditionally based on the huge Polish hard coal mining, the Polish government in early seventies decided to introduce nuclear power to domestic electricity balance. In 1972 the site for the first nuclear power plant was selected, and by 1984 eight different localities were examined for the next two nuclear power stations.

In 1974 an agreement on co-operation in the field of nuclear power was signed between Poland (at that time the Polish People's Republic) and the Soviet Union. For the first Polish nuclear power plant four VVER-440/213 units based almost entirely on Soviet supplies were chosen, and cooperation of that plant with already existing water-pumping station on Zarnowiec Lake on the Baltic Sea, was predicted. The final Decision to start construction of the first plant in Zarnowiec was taken by the Council of Ministers in January 1982, and was followed by the construction contract

between Polish and Soviet governments signed in April 1983; the construction works started in 1984.

In December 1981 a martial law was imposed in Poland and the society was deprived of any possibility to express its opinion. Furthermore, especially in those years, Soviet technology was perceived as being technically not reliable, playing a role of economical and political pressure on satellite states. I n 1986 the Chernobyl catastrophe not only confirmed that opinion, but also resulted in a worldwide increase of a strong anti-nuclear attitude. When in 1989 Poland regained her independence, the continuation of construction of Zarnowiec power plant became an issue strongly criticised from both economic and political points of view. The new Polish government consulted on the subject some independent nongovernmental groups as well as foreign organizations. On their advice and facing vigorous anti-nuclear demonstrations, on 4 September 1990 the government, in spite of well advanced stage of the project and money already spent, decided to interrupt construction of the Zarnowiec NPP that is to phase out the nuclear energy programme in Poland. Nevertheless, the Parliamentary Resolution of 9 November 1990, in which that decision was approved, stated at the same time that nuclear energy had to be developed in Poland after 2005, requiring that "future Polish nuclear power plants met the European safety standards and operated reactors of the newest generation"

Present situation

Poland, being a country with population of over 38,5 million and a medium scale economy, is consuming electrical energy at the level of less than 3800 KWh per capita.

In the last two years Poland has experienced a significant economic growth, the GDP increasing by about 3.8 percent in 2003 and 5.4 percent in 2004. According to recent analyses in the forthcoming years the economic growth rate in Poland will remain rather high (4- 5%). Continuation of economic prosperity requires a substantial increase of electricity generation in the next decades.
Coal is still a major energy source in Poland, including electricity generation sector, but many coal burning power plants have been operated for over 30 years, thus they soon will have to be modernized or decommissioned.

Every five years a document on the national energy strategy for the next twenty years is prepared, broadly discussed and then approved by the Polish government. Those documents take into account different scenarios for the national economy growth in the period under consideration. All such analyses before 2000 incorporated among the electricity sources also nuclear power plants. However, the last strategy paper of 2000 did not predict a nuclear option for Poland before the year 2020.

Very recently the situation has changed In the energy strategy document for the years 2005- 2025, which has been approved on 4 January 2005 the Polish government has confirmed its intention to have the country's first nuclear power plant in operation by 2021 or 2022.

Long-term forecast

The document "Energy policy up to 2025", which was accepted by Poland's Council of Ministers was based on the long-term forecast for fuel and energy demand The forecast for national energy demand by 2025 has been prepared in four following

variants (the demographic macroeconomic, ecological and methodological conditions and assumptions were taken into account):

- Treaty Variant, which takes into account the provisions of the Accession Treaty concerning the energy sector, i.e. achieving 7.5% index for electricity consumption from renewable sources by 2010, achieving 5.75% index for bio-fuels share in total gasoline and fuel oil sales by 2010, and restricting the total emissions from large combustion facilities to the values established in the Treaty;

- Basic Coal Variant, differing from the Treaty variant by the fact that the requirement concerning the restriction of emissions from large combustion facilities is replaced by the implementation of the National Emission Reduction Plan (KPRE), which allows the postponement until 2020 of the deadline for compliance with emission requirements established in the Accession Treaty for 2012. In this variant the hard coal supply restrictions are not assumed, and no presumption is made for the domestic and imported coal shares;

- Basic Gas Variant, differing from the Basic Coal variant only by the fact that the hard coal supplies for electricity generation will be kept on present level, and the necessary additional quantities of electricity in this variant will be generated basing primarily on
  natural gas as the fuel;

- Effectiveness Variant, which fulfils the same ecological criteria as the Basic variants, but assumes achievement of additional power industry effectiveness in the areas of electricity generation, transmission and distribution, and also its consumption, as a result of pro-active state policies.

In each variant the cost performance of the domestic fuel and power industry sector has been optimized within the assumed ecological restrictions.

In any of the variants the maximal net import of electricity could not exceed 10TWh, i.e. the quantity corresponding to the present net export level. In some cases also some serious restrictions of social nature may appear.

In the period included in the forecast, the demand for electric energy will increase with the average annual rate close to 3 percent, with the increments in all variants relatively smaller in the first 10-year period and relatively larger in the second one.

Up to 2025 the national energy consumption is expected to rise by 48-55 percent for the final energy, and by 80-93 percent for electric energy.

In all variants the introduction of nuclear power program is foreseen after 2020; this is justified by the need to diversify primary energy sources and the need to restrict the greenhouse gases and sulfur dioxide emissions to the atmosphere. Prognostic calculations indicate that the nuclear power program should be started in the last five years of the period under consideration.

Commissioning of the first nuclear power plant before 2020 is deemed to be impossible, as the estimated duration of investment process in a country practically deprived of any experience in this area is 10 years, plus 5 years for public campaign preceding the investment, to secure the acceptance of nuclear power program.

The document adds:" At the assumed GDP volume increase and foreseen energy demand increase it has been assumed that by 2025 year Poland would be much closer to the energy-consuming standards attained in highly developed countries."

Comments, reactions and opinions

Jacek Piechota
Secretary of State in the Ministry of Economy and Labour

Mr Jacek Piechota - Minister of Economy and Labour : “I would like to turn your attention to the fact that the decisions concerning the investment will be taken not by the government. For the investor to be willing to invest in such project, appropriate economic, legal and regulatory conditions have to be created. According to EU directive, market directive, which is being introduced by the energy act debated presently in the Parliament, only in the situation when we know that in 10 years (approximate process's duration time up to the commissioning of a new plant), i.e. by 2010, if no investor for such project willing to realize it at his own risk will appear, the government may use the only instrument allowed in the market directive the incentive in the form of public assistance directed at such investor. Thus circa 2010, if there would be no changes in the technology, no changes in the development works, the future government at that time will have to make a decision on this issue: if no investor will turn up - than announce a competitive tender on the EU territory, offering specific economic incentives for investor willing to invest in the area of nuclear power industry.

We are talking of the power industry in 2020; we are talking of the power plant, which would start to be operated within the system then. In fact we have 5 years for public debate on this issue, 5 years for deliberations. We Recognize that Poland faces rigid environmental challenges. All forecast indicate that such need will appear, thus we should start the discussion sooner rather than later. We have 5 years to discuss this issue”.

Dr Zbigniew Karaczun
activist of Polish Ecological Club

Mr Zbigniew Karaczun –activist of Polish Ecological Club:”[This policy] means the centralization of power industry and strengthening power lobby. And all this in behalf of nuclear physicists trained for Zarnowiec [nuclear power plant], who now are looking for job. This project has been authored by people associated with power industry.

I think that Western consortia are interested in this. I mean, in selling the technology.

I think that many Western companies are lobbying for this. More and more Western countries renounce nuclear power, so their market is closing down. They look for other outlets. They may press obsolete technologies upon us. Because our contribution to this project consists of pouring out concrete for foundations. All the rest will be imported. Nuclear energy programme in Poland is against national economy interests.
Our greatest problem at present is creation of new jobs. And nuclear power plant Construction means the export of jobs to foreign countries. Technology that will be used would be a foreign one. Meanwhile we have energy surplus; we have energy supply Security. We haven't touched renewable energy. Wind, solar. Anyhow at present I see no argument in favor of developing nuclear power industry.

Dr Tadeusz Wójcik
Honorary President of Polish Nuclear Society

Mr Tadeusz Wojcik – Honorary member of Polish Nuclear Society (exception from interview):

Why do we need a nuclear power plant again?
We would not need it if our goal were to pacify public mood. But the diversification of energy sources is necessary. Like the restriction of carbon dioxide and sulfur compounds emissions.

Do you think that our government's decision will result in Green Party formation?
Such party may appear in our country.

As efficient as the one in Germany?
If Green Party members would prove that Poland will remain secure with respect to energy supplies, especially these of natural gas, and people would not pay more for electricity then they probably will be successful. But in my opinion they will not prove that. They didn't do that in 15 countries of the old EU, where the nuclear power share in all electric energy generated is close to 34 percent.

Can we afford nuclear power?
In market economy power plant construction is not financed by the government. It is financed by energy utilities.

How much will it cost us?
Environmental activists, who stopped the construction of Zarnowiec nuclear power plant, did not worry about losing $1.5 billion. In this region of Europe ours is the only country to halt the construction and stop the maintenance works on all which already has been build.

So we really can't do without this plant?
If a technology free from harmful substance emissions were invented, than people would not decide to choose nuclear power. In my opinion, for the time being, nuclear power is the most advantageous solution enabling the closure of energy balance.

In the governmental document no details have been given of the type or number of units that might be under consideration. Also no indications as to the plant's siting have been disclosed. Nevertheless the government's decision already caused protests of some communities which in the 1970s have been considered as the Polish NPP site. One of the tabloid dailies printed a picture of the residents of one of the villages in Pomorze (northern part of Poland), who protest against the possible NPP construction in their neighborhood.

Polish ecologists agaist nuclear energy

Almost 60 percent of Polish population support the trend to gradual reduction of coal use in electricity generation. Opposite view has been expressed by one in five respondents, with only one in 20 decisively opposed to the idea of reducing coal use for electric energy generation.

Polish ecologists agaist nuclear energy

Clear majority of all respondents (77 percent) agrees with the opinion that carbon dioxide emissions are responsible for climate change and that in this view one should restrict the use of raw energy materials emitting CO_2. Over 10 percent disagree with this opinion.

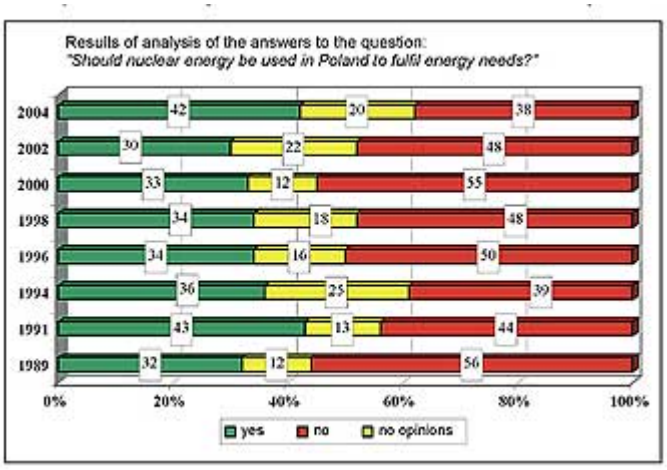
The use of nuclear power to meet the national energy demand is presently supported by 42 percent of the population, with 38 percent rejecting such nuclear power application and one-fifth unable to give an opinion on this matter.

"Forks against atoms"

Nuclear power acceptance for meeting national energy needs is higher for men (47%) than for women (36%), for the people with secondary or higher education level (49% and 47% respectively) and for younger people up to the age of 39 (48% to 52% approval).

It is worthwhile to note that in last 10 years the nuclear power program was approved by 30-35% of the respondents, with 40-50% being against nuclear energy use for meeting national energy needs in Poland.

Public attitudes towards nuclear energy
(some results of poll done between 22.11 and 3.12.2004



http://www.euronuclear.org/e-news/e-news-8/newsfromlithuinia.htm

MEMBER SOCIETIES

LITHUANIA MADE A STEP OUT FROM NUCLEAR BUSINESS. WHAT WILL BE THE NEXT STEP?

Jonas Gylys, Chairman of LNEA
Stanislovas Ziedelis, Secretary General of LNEA

Lithuania is a relatively small country with only 3.5 million inhabitants. At present, Lithuania is a state with powerful energy industry and low energy consumption. Up to end of 2004 our energy plants could produce three times more electricity than it is necessary for our internal needs. Installed electricity generating capacities were more than 6.2 GW. Since 1990 the total power demand decreased to less than 2GW and the total electricity consumption decreased to less than 8.3 TWh. At the same time, Lithuania has one of the last places in Europe according to electricity consumption per capita: in 2002 it was around 2900 kWh of electrical energy on average per capita. During the last few years the economy of Lithuania had been growing very fast: in 2002 gross national product grew up 6.8%, and in 2003 – 9.0%.

The energy sector of Lithuania is strongly based on the nuclear energy. From 60% to more than 86 % of electricity each year is produced by our single nuclear power plant – Ignalina NPP with its two RBMK-1500 type reactors (see Fig. 1). Comparing the share of nuclear in total energy production it becomes apparent, that Lithuania and France are the two countries in the world where this parameter is close to 80 percent. Comparison of the share of different kinds of primary energy sources used in Lithuania for different branches of economy also shows high importance of nuclear fuel: it covers about one third (32 – 37%) of the whole consumption volume alongside with oil (31 - 33%) and natural gas (30 - 31%).

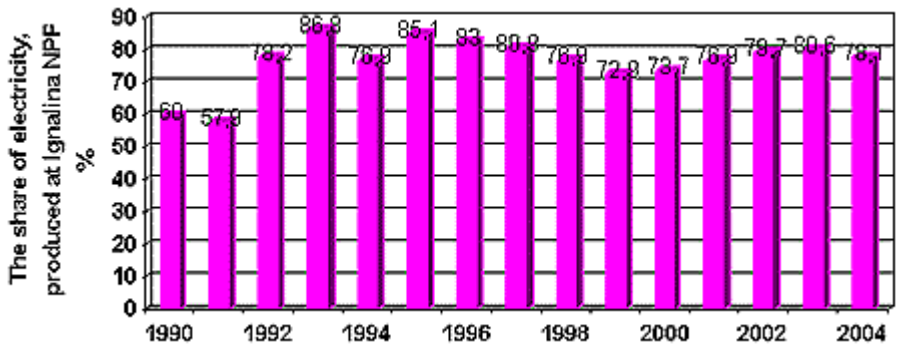


Fig. 1. The share of electricity produced at Ignalina NPP in total electric energy production of Lithuania

Thirteen RBMK reactors are being operated in Russia and in Lithuania at the present moment. The RBMK-1500 reactor of Ignalina NPP is the most advanced version of the channel type reactor design series of the former Soviet Union. Only two reactors of this type were built and both of them at the Ignalina site. The designed power of the RBMK-1500 reactor (1500 MW electrical, 4800 MW thermal) is the biggest in the world for a single unit. The first unit of INPP was put into operation by the end of

1983 and the second unit – in 1987. The designed life time of RBMK reactors is 30 years. After the Chernobyl accident the maximum allowed power of each reactor at INPP was reduced to 1350 MW (electrical) or 4200 MW (thermal). Since its commissioning the initial RBMK-1500 design of Ignalina NPP was substantially improved, and several specific features of modern reactor design were implemented. More than 200 million US dollars of western countries support were spent for these purposes. The Safety Analysis Reports for both units and the Reviews of these reports prepared by international teams according to all Western safety requirements have shown that the safety level of Ignalina NPP is very similar to the western type NPPs of the same age.

During the Lithuania's accession process into the EU, one of the main EU requirements to the energy sector of Lithuania was to close both reactors of Ignalina NPP. This requirement of the EU authorities was not changed during the accession negotiations despite all explanations made by experts on the differences between Ignalina and Chernobyl reactors, numerous safety improvement measures implemented, positive results of safety studies and assessments. Realization of this requirement started in December 31, 2004, when the 1st reactor of Ignalina NPP was shut down (see Fig.2). Installed electricity-generating capacities in Lithuanian energy system decreased to 4.9GW.

Fig.2. The 1st Unit of Ignalina NPP. Its reactor will no longer produce electricity.

Ignalina NPP and energy sector of Lithuania were prepared to this event. The decommissioning program of unit 1 and other relevant measures have been elaborated, safety analysis reports for operating single unit 2 were prepared and reviewed. The arrangements implemented should guarantee safe and effective operation of the unit 2 of Ignalina NPP without serious hurt to utilities. However, the end of 2009 foresees the shutdown of the 2nd reactor.

The main possible consequences of premature total closure of Ignalina NPP can be classified into several groups, but majority of them are negative.

1. The consequences to energy sector are essential. Decreasing of total electricity-generating capacities together with growing economy, energy consumption and power demand can cause the negative power balance and energy shortage. Depending on the rate of economy growth, such situation can occur in 2015 – 2020 or even in 2010 at the case of very fast economy growth (see Fig.3).

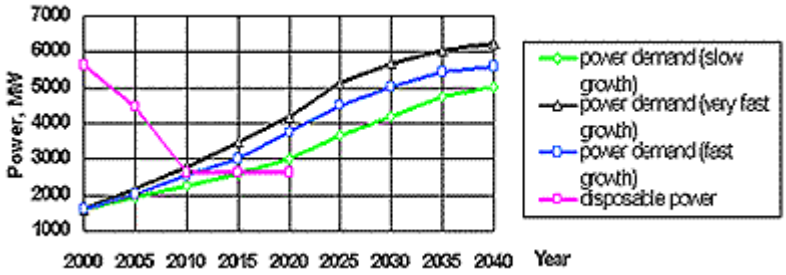


Fig.3. Forecast for power generation capacity and power demand growth for slow, fast and very fast economy growth scenarios, respectively

2. Negative impact to macroeconomics of Lithuania. Depending on the rate of growth of energy needs, closure of Ignalina NPP will cause the state payments deficit about 300 – 400 millions EURO.

3. Impact to environment. The portion of electricity generated by Ignalina NPP will be replaced mainly by electricity produced at gas-fired power plants, and this will significantly increase the CO_2 emissions. Lithuania signed the Kyoto Protocol and undertook obligations to reduce the green house gas emissions by 8% at 2008 – 2012 in respect to level of 1990. Another obligation - not to exceed 5.2 mln tones of CO_2 emissions per year. The existing Lithuanian thermal power plants, operating on full power mode, will produce around 5.0 mln tones of CO_2 per year. Despite the increasing usage of renewable sources of energy, pursuance of this obligations without nuclear seems to be not realistic.

4. Social consequences. Since the Ignalina NPP is a single nuclear power plant in Lithuania, the major part of its personnel after its closure will become unemployed with limited possibilities for changing speciality and residence.

5. Reliability of energy supply. Both natural gas and oil for thermal power plants are imported to Lithuania from a single source, which is Russia (via Belarus). After closure of Ignalina NPP and taking into account the EU prohibition for burning heavy oil with sulphur content more than 1% in power industry, the main primary energy source for Lithuania's energy sector will be a natural gas, and its share will be up to 80%. Such level of dependence on the prices and reliability of supply from single source seems to be potentially dangerous. The above-mentioned problem is analysed in the report of the Centre of Strategical Investigations of Lithuania. It is stated in this document, "Lithuania's dependence on the import of energy sources from Russia can be evaluated as real threat not only for economy, but also for national security and political independence".

6. Impact to education and knowledge. Popularity of nuclear engineering sciences and numbers of students studying these sciences are decreasing, and lack of motivation to work in the nuclear energy sector is observable. Current trends lead to gradual degradation of nuclear knowledge system of Lithuania.

Trying to find an optimal solution for future development of Lithuania's energy sector, the several feasibility studies of new nuclear power plant were performed. The results obtained from these studies show at what conditions construction of a new nuclear plant is economically reasonable. It is demonstrated that new nuclear power plant is competitive and even more favourable option in respect to combined

cycle gas turbine power plant, if price of natural gas during period 2005 – 2020 will increase more than 20% in respect to nowadays price level.

Like in other countries, some Lithuanian people would like to use cheap electricity, generated only from renewable sources. However, in the nearest future it is impossible: reasonable solution of the above mentioned problems and limitation of growth of prices of electricity is possible only using all technological options of energy generation, including nuclear. In Lithuanian newspapers and on TV are sometimes published articles and reports about threats, related with storage of spent nuclear fuel and radioactive waste, and other well-known anti-nukes' arguments. Despite this tendentious information, initiated by gas and oil lobby, the public opinion remains positive in regard to nuclear: majority of Lithuanian people has nothing against new, modern and safe western type nuclear power plant, if it will produce cheaper electricity.

The Lithuanian National Energy Strategy (2002) affirms that in the future Lithuania can remain a nuclear state. This approach was confirmed in the last year by the Government of Lithuania approving "The Government Program for period 2004-2008". It is planned in this program:

- "...to strive for remaining of Lithuania a state having nuclear power plant";
- "...to attract investments for construction of new nuclear power reactors".

Taking into account these declarations of Government it is possible to expect, that the next step of Lithuania in the area of future energy supply will be towards continuation of nuclear energy usage, and this step will express the decision about construction of new nuclear power plant.

http://www.euronuclear.org/e-news/e-news-8/siemens.htm

ENS CORPORATE MEMBERS

Five Years Experience With External Laundry Service For Alpha-Contaminated Protective Clothing In The Decommissioning Project Siemens PG, Formerly Siemens Fuel Rod Facility-Hanau, Germany

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This paper has been condensed from its original version to meet publication requirements. The full document is available upon request from the authors.

I. INTRODUCTION

Off-site decontamination of protective clothing is new in Europe. In the past, facilities established their own on-site laundries and decontaminated their own protective clothing. But, operating a laundry within an operating nuclear facility brings with it a number of complicated problems, including staffing, variable workloads, wastewater, and as a support priority it is often not handled as well as it could be.
For the past five years, the former Siemens fuel rod fabrication facility in Hanau, Germany, has been using the services of an off-site laundry service provider (LSP) for cleaning radioactively contaminated protective clothing. This paper discusses the decision making process

II. LOCATION OF THE LAUNDRY AND OBTAINING APPROVALS

The LSP is located in Coevorden, The Netherlands. Centrally located, it is able to service many European nuclear facilities while minimizing transport distances. Coevorden offers a friendly regulatory environment and reliable, educated employees.
The LSP has a broad scope nuclear materials license, meaning it can accept almost any radionuclide providing the quantities do not exceed license limits. The framework for transport of radioactive materials is defined in European ADR regulations, German GGVS (Gefahrengutverordnung Strasse), and laws governing health physics in each European country where the LSP provides services. Permits are obtained in each country through which a shipment passes as required.
Waste is generated as sludge from the wastewater processing system and drying lint. Dutch regulators consider laundering as a value added process taking place in the

Netherlands. Therefore waste is generated in the Netherlands in accordance with the Dutch Nuclear Power Act and transported off site to the COVRA – the Netherlands' radioactive waste disposal site.
Key factors for going off-site were cost and the fact that the company shut down its fuel fabrication facility which involved decommissioning the on-site laundry.

III. PROCESS FLOW DESCRIPTION

Customers are provided clean, folded, and sorted clothing in the LSP's special transport container (see Fig. 1). The containers are on wheels and can be delivered directly to the point of use, eliminating extra handling.


Fig. 1: Transport container with filled bag

Bags containing dirty laundry are sealed and then placed into the open top of the lined LSP's containers. When a container is full, the liner is sealed and the container is checked for radioactivity in preparation for return to the LSP.
Transport is accomplished on vehicles that are capable of carrying 20 containers. Shipments are made in compliance with IAEA rules and any local requirements. During five years of shipping offsite, no problems were encountered with laundry transports.
Upon arrival at the LSP radioactivity levels are checked to ensure no container exceeds license limits. The LSP uses a special plastic scintillator detector to monitor incoming containers (see Fig.2). The monitor alarms if radiation levels are exceeded.


Fig. 2 Container entrance monitor

A crane lifts the sling bag out of the container to a downdraft sorting table. The table rotates and workers stationed around the perimeter sort items into like types. Integrated ventilation systems avoid any need for worker respiratory protection.
The laundry is placed into 250 kg capacity washing machines. These industrial washers generate considerably more agitation and "fall" than smaller washers in use at nuclear facilities. Washing large loads improves economy and is one reason why the LSP is able to do laundry at less cost. After washing, laundry is dried in industrial dryers sized to match washing capacity.
Clean clothing is placed on an Automatic Laundry Monitor ("ALM"). The LSP has designed world-class belt-driven gas flow proportional ALMs capable of detecting very low levels of alpha and beta-gamma contamination (see Fig. 3). Each ALM has 88 individual detectors arranged to fully monitor every square centimetre of an item.

This gives Siemens confidence that 100% of the clothing is being directly measured for radioactivity in a repeatable and reliable manner that outperforms human inspection method.
Finally, clean laundry is sorted and packed by item, size and color and packed into the transport containers for return to the customer.

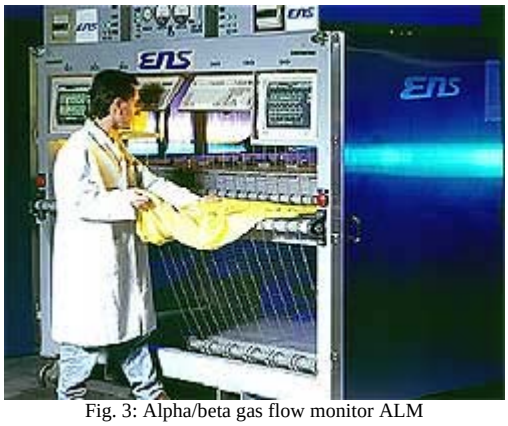

Fig. 3: Alpha/beta gas flow monitor ALM

IV. NUMBER OF SHIPMENT AND AMOUNTS OF LAUNDRY AND RADIOACTIVE MATERIALS

The quantities processed in one calendar year are as follows:

- 24 Total Shipments
- 2,1 E8 Bq Total Activity
- 6 Bq/g Specific Activity
- 24,463 kg Laundered Clothing
- 27,211 Coveralls
- 15,277 Gloves
- 57,181 Overshoes
- 318 Containers Of Soiled Laundry

Fig.4: Transport container with clean coveralls

The LSP is periodically audited by Siemens and others. Audits confirm that the off-site laundry is operating according to its design specification, procedures, and governmental requirements.

V. COSTS

In addition to logistical considerations Siemens wanted to provide laundry service at the lowest possible cost. Siemens evaluated four different LSP offerings.
The LSP offers lease clothing and disposable clothing. A key factor was that Siemens already owned sufficient protective clothing inventory. Figure 5 depicts the savings attributed to having the LSP launder the existing clothing inventory.

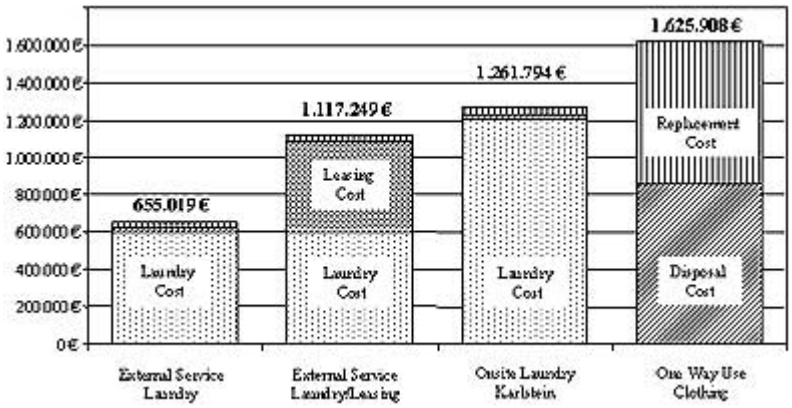

Fig. 5: Cost comparison

VI. SYNOPSIS

The Siemens project demonstrates that off-site laundry service offers a number of advantages to managing an on-site laundry. The LSP is better equipped to do the job with high-volume throughput using efficient, high-performance equipment. Outsourcing eliminates the need to hire permanent and peak-need temporary laundry workers. Off-site service eliminates management of laundry wastewater and other health physics tasks – daily radiation checks, air sampling, etc., that are part of operating a laundry.
The LSP worked together with Siemens to ensure service was satisfactory and the LSP was willing to help whenever problems arose. There have been no problems with transporting radioactive material during the course of the project. In summary, the process has saved Siemens money while providing laundry service better than Siemens could have done on its own.

http://www.euronuclear.org/e-news/e-news-8/yg.htm

MEMBER SOCIETIES

THE PROSPECTS FOR YOUNG NUCLEAR SPECIALISTS IN THE NEW EUROPE - WORKSHOP ON PIME CONFERENCE AND COMMUNICATION OF YOUNG NUCLEAR SPECIALISTS IN HUNGARY - WINNER OF FIRST PIME AWARD FOR COMMUNICATION EXCELLENCE

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ABSTRACT

In fast changing Europe European Young Generation Network (YGN) organised workshop “The prospects for young nuclear specialists in the new Europe” at ENS PIME 2005 conference in Paris. Purpose of the workshop was to reveal employment possibilities for young nuclear specialists and nuclear energy prospects in new Europe. On the workshop four young and four senior nuclear specialists from different organisations and different countries present their view on possibilities for professional career in nuclear field. Year 2005 is known as International year of Physics but also as tenth anniversary of European Young Generation Network. Nevertheless year 2005 in YGN world will be also remembered because of the fact that first PIME award for communication excellence was won by Hungarian YGN for their presentation about communication of young nuclear specialists in Hungary.

1. Introduction

In year 2005, International year of Physics, European Nuclear Society Young Generation Network is celebrating its tenth anniversary. With the aim to emphasise this important anniversary ENS YGN has been preparing many activities throughout the year. The first action was organisation of YGN workshop on the topic “The prospects for young nuclear specialists in the new Europe” at international conference ENS PIME 2005 in Paris. Since May 1st 2004, European Union has 25 member states. European market is now much bigger and more nuclear specialists have arrived on the market. The aim of workshop on PIME was to help young nuclear specialists to find the answer on the question: **What kind of future, young nuclear specialists can expect for themselves in this fast growing and fast changing Europe?** To get answer on this and similar questions four young and four

senior nuclear specialists from different organisations and different countries were invited to present their views on this topic. Independently from this workshop two members of Hungarian YGN registered their paper on another workshop on PIME 2005 conference. They wanted to present the way how young nuclear specialists communicate in Hungary.

2. YGN Workshop

The first part of the YGN workshop was dealing with knowledge transfer from experienced nuclear specialist toward young generation.

First speaker was Miss. Marta Ferrari from International Atomic Energy Agency (IAEA) who presented her view on the topic: "Towards knowledge-based economies: How research institutes can play a role." According to this presentation new environment for researchers offers new challenges and opportunities. They can no longer assume that enough financial support will come from the state subsidy. However, this can be an opportunity if less legislative constraints mean that other, greater sources of funds become available. The need to go out in the market and compete for funds is making the old stereotype of the scientist closed in his laboratory outdated. A closer relationship with stakeholders and end-users is again a mixed blessing. It could bring ideas and stimuli to the research but it requires scientists, especially the ones that have managerial responsibilities, to develop new skills to be able to understand clients' needs and to market their product and service. Among these skills, communication is probably the most important. The IAEA, through its Technical Cooperation programme, assists the nuclear RDIs in its Member States to build human and technical capacities to contribute to the well-being of their countries. It will continue to provide education and training to ensure that scientists are well equipped to face the new challenges of the knowledge economy.

Second speaker was Mr. Sami Tulonen from FORATOM with presentation named "Comeback of nuclear energy in the European Union." The outlook for the European Union in next 25 years is that the energy demand will rise for 19% between year 2000 and 2030. Rising dependency on oil, natural gas and coal supply is not desirable solution. Europe will face with the risk of security of supply and huge negative environmental impacts which will be the result of nuclear phase-out in several member states, insufficient growth of renewables and replacement of a significant part of nuclear generation by fossil fuels. According to Mr. Tulonen this outlook is politically, economically and environmentally unacceptable! There are many positive political indicators which will support nuclear comeback. Nuclear phase-out policy in several Member States will be reversed. Nuclear energy outlook for EU-27 by the end of the 2004-2009 legislative period probably will be:

- 15 nuclear Member States, and,
- 4 Member States (Lithuania, Estonia, Latvia and Poland) will most likely be building, or planning to build, nuclear reactors.

"Nuclear Power Plants May Well be Dinosaurs" were title of the presentation of Dr. Philipp Hänggi from Swissnuclear. His conclusions were:

- The Nuclear industry needs to hurry to be prepared in time for a comeback.
- Synergies between the old and the young generation are more important than

ever.

- New ideas and a lot of energy are necessary to trigger a chain reaction of motivation within the young specialists.

- The Young Generation Network is ready to engage in the future!

The last speaker in first part of the workshop was Prof. Mihály Makai from Hungarian Atomic Energy Research Institute (KFKI) with the presentation "To whom belongs the future?" Professor Makai state it that the future belongs to the youth, but there will be a sharp competition among Asia, America, and Europe. In the energy sector, Europe may face a crisis. Young people must be encouraged to face the challenge and to resolve emerging problems with support from senior generation.

In the second part of the workshop four young nuclear specialists presented their view on the proposed topic. First presenter was Mrs. Isabelle Philippe from French YGN with the presentation "The prospects for young nuclear specialists in the new Europe". Mrs. Phillipe emphasised the importance of communication between young nuclear specialists which is according to her view the most important factor for new bridges in new Europe.

Dr. Marko Giacomelli from Slovenian YGN had a presentation about nuclear careers in Slovenia, EU new member state. Dr. Giacomelli informed the audience that Young Generation Network of Slovenian Nuclear Society organised round table with the question: What is the prospect for nuclear career in Slovenia? The title “Nuclear Career” aimed at students or young graduates in various study fields. Purpose of the round table was an investigation of prospects of education, employment, and research in Slovenia and European countries. The representatives from state administration, education, industry, and a Slovenian liaison with the IAEA offered different aspects on professional career in the field of nuclear energy. On the round table was determined that there is a lack of young professionals, which is a consequence of a general decrease of interest in technical sciences combined with traditionally negative opinion on nuclear energy. It was noted that these professions are also on the priority list for state budget funding in the near future. As Slovenia is now member of EU, mobility across Europe will become easier, therefore additional number of scientists and engineers may employ themselves abroad. For those who really take up a challenge of further education or training outside his/her own country, at least comparable conditions to the ones abroad should be offered when coming back in order to prevent a brain drain from Slovenia.

Dr. Enrico Mainardi from Italian YGN presented his view on role of nuclear association and young generation in the energy and nuclear debate in Italy. A reconsideration of the nuclear option in Italy can be beneficial together with an effective discussion performed by expert. Italian nuclear association can therefore play an important role promoting the peaceful applications of nuclear technologies. In the energy debate nuclear power can provide a more balanced energy mix and it can decrease the energy dependence from abroad.

Mr. Martin Luthander from Swedish YGN presented International Youth Nuclear Congress (IYNC), the world biggest Young Generation Network activity. Martin Luthander is also the General Co-Chair of IYNC 2006 which will be held in Sweden and Finland.

3. Conclusions from the YGN Workshop

The workshop was well attended and audience participated actively in panel discussion. Young nuclear specialists got important answers from seniors. The organisation of this workshop required good cooperation between generations and showed clear route for future cooperation. ENS-YGN proofed that it is well organised and we take our mission very seriously.

The most encouraged facts are:

- There is future for nuclear specialists in New Europe. Still, there are big differences between countries and some young nuclear specialist will have to look for their jobs abroad.
- There are especially positive indicators in new member states, because the majority of them are so called 'nuclear countries'.
- On the young generation is to find challenges in nuclear field.
- There are many positive political indicators which support nuclear comeback. (Sami Tulonen)
- Nuclear Power Plants may well be Dinosaurs! Kids love dinosaurs! Dinosaurs dominated the world for over 150 Mio. years. (Philipp Hänggi)

Science is not independent from what happens in politics, economy and society. Trends in economics and in society change what is expected of science and how it is organised. Eventually, these changes alter the way scientists work and how they interact and communicate with society.

Economic trends usually manifest in a few developed countries and then spread around the world. After WWII, economic doctrine preached a big role for the government but by the 1980s the economic mainstream demanded primacy for the private sector, with less government direction and funding. More recently, the trend is to a compromise solution in which government is seen as a regulator and a provider of limited services through public agencies that it funds and public and private enterprises that it supervises. The concept of the Public Private Partnership has emerged.

Another influential change during the last 20 years is that, following the example of countries like Finland, more countries pursue growth by converting their productive system into a knowledge economy. The creation and use of knowledge is not necessarily focused on high-technology sectors. All industries need technology to be competitive. Small and medium size enterprises are considered a major source of growth.

4. PIME award for communication excellence – Hungarian YGN

The vital role that communicators play in promoting nuclear energy is sometimes taken for granted...but not by ENS and PIME! The inaugural PIME Communications Award, which was presented at PIME 2005 in Paris, is meant to help ensure that the best communications efforts get the visibility and credit they deserve. ENS-YGN is very proud of Hungarian Young Generation Network who got the first PIME Award for Communication Excellence for their outstanding, unconventional, bold and

effective communications campaign at the Island Festival in Budapest. This Hungarian YGN activity deserves special attention and the summary is presented below.

The Island Festival is an increasingly popular international cultural festival held each year in Budapest. It attracts several hundred thousands of mostly young people, who may choose from concerts, ballets, operas, motion and dance theatre performances, exhibitions, sports events, etc. Over 100 non-governmental organisations are present and provide services during the Festival, including several green organisations.

Year 2004 was the sixth consecutive year where Hungarian YGN took part in the programmes of the Island Festival, and the most successful so far. In the Nuclear Tent standing in the so called Civil Village they received visitors with three different-level questionnaires in Hungarian, English and German. Talking about their answers they could exchange views and give up-to-date information concerning interesting and current topics about nuclear energy and technology. Each year, the Festival is a unique opportunity to address young people on their own ground, in a colloquial, however, technically accurate way.

Figure 1. Atmosphere on Island Festival in Budapest

In the course of the Festival, Hungarian YGN also had the opportunity to address the public via the media, namely, they gave several interviews and participated in discussions organised by different radio stations. On one of the stages Attila Aszódi, ministerial commissioner then and former president of the Young Generation Network in Hungary, gave a clear and interesting presentation about the incident occurred in April 2003 at Paks NPP and about the steps taken to remedy the situation.

A video has been made in order to present the atmosphere of the Festival and the activity in the Nuclear Tent.

The activity of the Hungarian YGN has been appreciated several times even on an international level, by members of ENS-YGN. So far, however, this remained a verbal appreciation only. PIME 2005 and the credit of the PIME Communications Award brought about a turning point in this situation, presenting the Hungarian and ENS-YGN efforts to the entire international nuclear community.

5. Conclusions

The new environment for young nuclear specialists offers new challenges and opportunities. ENS – YGN clearly showed its presence and in near future it can be expected that YGN will be even more active and more aggressive with its aim to provide a space for young nuclear specialists.

Figure 2. Award ceremony at PIME 2005

6. References

[1] Papers and presentations from YGN workshop on International conference ENS PIME 2005, Paris, France;
[2] K. Kulacsy, T. Plazmadi "How young nuclear specialists in Hungary communicate.", International conference ENS PIME 2005, Paris, France;

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http://www.euronuclear.org/e-news/e-news-8/FP7.htm

EUROPEAN INSTITUTIONS

FP7

As expected, the European Commission released on 6 April its Proposals for Decisions regarding the 7th Framework Programme (**FP7**). The plural is justified by the fact that there are two decisions: one of the European Parliament and of the Council on Community (i.e. non nuclear) Research and one of the Council alone on Euratom Research. The Community part of **FP7** will be synchronised with the period to which the EU general budget will apply (2007-2013). The period applicable to the EURATOM part remains 4 year long (i.e. 2007-2001) as was the case before, for the time being at least. The table below highlights the budget differences between **FP6** and **FP7**. In order to make the comparison meaningful, the non-EURATOM entries of **FP7** have been adjusted to a 4-year period, assuming that the corresponding outlays will be spread evenly.

	FP6 (Billion €)	FP7 (Billion €)	FP7/FP6 ratio
Total budget	17.500	51.913	2.966
Community	16.270	48.810	3.000
Euratom	1.230	3.103	2.523
Fusion	0.750	2.167	2.889
Fission	0.190	0.395	2.079
Joint Research Centre	0.290	0.541	1.866

Depending on whether you are optimistic or pessimistic, you can either rejoice at the net increase of the fission R&D budget or regret that this increase is lower than for the other thematic domains. Anyway, at this stage it is only a proposal. The overall EU budget (the so-called financial perspectives) is far from being agreed and the MEPs who disapprove of nuclear energy will not fail to try to decrease the EURATOM budget whatever it may be. As they say in English, “from the cup to the lip, there’s many a slip”.

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http://www.euronuclear.org/e-news/e-news-8/news-from-bulgaria.htm

EUROPEAN INSTITUTIONS

News from Bulgaria

On 13 April, during the Plenary session in Strasbourg, the European Parliament approved the accession of Bulgaria and Romania to the EU in 2007. After a heated debate, the Parliament voted 522-70 in favour of MEP Geoffrey van Orden's report on Bulgaria's application for membership of the EU (69 abstentions), and 497-93 in favour of MEP Pierre Moscovici's report on Romania's application (71 abstentions).

One notable success for the nuclear industry was the adoption of Article 33 of the van Orden report, in which the Parliament congratulates Bulgaria on the steps it has taken to ensure a high level of safety at the Kozloduy nuclear power plant. The Council's Atomic Questions Group has also published a very favourable report on nuclear safety levels in Bulgaria and acknowledges the contribution that Bulgaria makes to maintaining energy supplies and achieving Kyoto Protocol targets in the region. Bulgaria covers 60% of the power deficit in south east Europe and is the main electricity exporter to the area, having exported around 5.8 billion Kwh in 2004. According to Bulgaria's main power exporter, NETC, exports in 2005 are expected to reach close to 7 billion Kwh. At the end of April, a referendum was held on proposed plans to build a 2000 megawatts nuclear power plant by 2011.

At the same time, the Parliament expressed its concern that once units 3 and 4 at Kozloduy shut down, at the end of 2006, a considerable decrease in the region's generating capacity is likely to occur by 2010-2012. This could lead to crippling power blackouts across the region. The Parliament urged Council to view the agreed plant closure programme more flexibly until new generation capacity comes on stream in Bulgaria.

http://www.euronuclear.org/e-news/e-news-8/ministerial-conf-paris.htm

ENS WORLD NEWS

International Ministerial Conference in Paris

On 21 & 22 March, ministers and government officials from 74 countries and experts representing 10 international organisations attended an International Ministerial Conference, in Paris, entitled "**Nuclear Power for the 21st Century**." This high-level conference was organised by the IAEA and hosted by the French government in collaboration with the OECD and the OECD Nuclear Energy Agency.

Delegations from across the globe, including the USA, China, Saudi Arabia, Brazil and Korea, gathered in the French capital to examine the future role of nuclear in meeting the energy needs of the world. Delegations presented their views on the current and future role of nuclear power within the context of their national energy strategy.

Among the keynote presentations were those given by the French Industry minister and President of the conference, Patrick Devedjian; Donald Johnston, Secretary General of the OECD; and Mohammed El Baradei, Director General of the IAEA.

Messrs Devedjian and El Baradei, accompanied by NEA Director General, Echavarri, gave a press conference to the massed ranks of journalists.

At the end of the conference, the IAEA released a Declaration. In it they highlighted how a vast majority of participants believe that nuclear power can make a major contribution to meeting the energy needs and supporting global development in the 21st Century, provided that the highest levels of safety are observed at nuclear plants and during the management of spent fuel and radioactive waste. The Declaration also stressed how the IAEA has an essential role to play in furthering the use of nuclear energy for peaceful purposes and that the OECD/NEA provides invaluable objective analysis and expertise on a range of nuclear issues.

http://www.euronuclear.org/e-news/e-news-8/nea.htm

ENS WORLD NEWS

NEA Publication

The OECD Nuclear Energy Agency (NEA) and the International Energy Agency (IEA) recently published the latest of its "Projected Costs of Generating Electricity" studies. While the cost estimates highlighted are not intended as a substitute for the detailed economic analysis that investors need to carry out on an country-by-country basis, the study provides a very useful point of reference for economists and energy policy-makers.

This study, the seventh of its kind since 1983, has been published at a particularly opportune moment, with energy at the top of the political agenda in many countries. It was carried out by an ad hoc group of officially appointed national experts in 19 OECD member countries and 3 non-member countries. Their main brief was to calculate the estimated generation costs of electricity produced by 130 power plants, including coal-fired, gas-fired, nuclear, hydro, solar and wind plants. The technologies analysed are either those used today or those considered by the participating countries to be likely candidates for commissioning by 2010-2015. Thirteen of the plants in question were nuclear plants.

The calculations are based on the same reference methodology used in the six previous studies, i.e. the "levelised lifetime cost" approach. The main costs analysed were the "overnight construction cost" (which is defined as the total cost for building the plant as if it were all paid in one go), the "operational and maintenance costs" and the "levelised costs."

For the 13 nuclear plants included in the study, the overnight construction cost varied between $1000 and $2000 per kWe, which is the same as the estimated cost for most wind plants. This compares with between $1000 and $1,500 per kWe for most coal-fired plants. After analysing the cost ratios for different types of power plants the study concludes that nuclear is cheaper than coal by 10% or more in 7 countries and cheaper than gas by 10% in nine countries.

Among the wealth of data provided is a comparative analysis of the cost ratios for coal, gas and nuclear at discount rates of 5% and 10%. Ten countries (Canada, the Czech Republic, France, Germany, Japan, the Republic of Korea, South Africa, Slovakia, Turkey and the US) submitted data for coal and gas power plants. Ten countries (Canada, the Czech Republic, Finland, France, Germany, Japan, the Republic of Korea, Romania, Slovakia and the US) provided data for coal and nuclear power plants. Finally, 10 countries (Canada, the Czech Republic, France, Germany, Japan, the Republic of Korea, the Netherlands, Slovakia, Switzerland and the US) provided data for gas and nuclear power plants. At the 5% discount rate nuclear is 10% (or more) cheaper than coal in 7 out of 10 countries, and 10% (or

more) cheaper than gas in 9 out of the ten countries.

At the 10% discount rate, nuclear is more than 10% cheaper than coal in Canada, the Czech Republic, France, Slovakia and in two pants in Germany. In Canada, the Czech Republic, France, Germany, the Netherlands, Slovakia, the Republic of Korea and in two plants in Switzerland nuclear is more than 10% cheaper than gas.

The study shows that there is no clear-cut winner among alternative generation sources. However, nuclear is very competitive because of its decreasing fuel cycle costs and low operation and maintenance costs.

Clearly, decision-makers and potential investors will need to take other factors into consideration too before assessing overall cost. Security of energy supply, for example, remains a major concern for most governments and private investors.

It is likely to influence future governments' energy investment policies. Similarly, environmental policy is playing an increasingly important role. This will probably influence fossil fuel prices and force investors to act accordingly. Both economically and environmentally, nuclear scores well and offers a cost-effective option.

The study concludes by saying that "...on a global scale there is room and opportunity for all efficient generating technology."

The study, which includes an appendix with comparative country statements, can be ordered online at http://www.iaea.org.

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http://www.euronuclear.org/e-news/e-news-8/nucnet-news.htm

ENS WORLD NEWS

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NUCNET NEWS

THE WORLD'S NUCLEAR NEWS AGENCY
11 April 2005 / News N°xx / 05 / B

Bodman Reaffirms US Commitment To Nuclear Energy

The United States is committed to ensuring nuclear power's viability as a significant part of the country's future energy mix and will invest 500 million US dollars (USD) over the next six years to support licensing the construction of at least two or three new plants, energy secretary Samuel Bodman has said.

Speaking at an international security conference at Chantilly in Virginia on 5th April 2005, Mr Bodman said nuclear power was the only method under current technology to reliably produce large amounts of electricity without emitting any pollution or greenhouse gases. “In a time of rising energy costs and growing demand, nuclear power is integral to a balanced energy portfolio.”

He said today’s nuclear power plants are operating more safely, efficiently and economically than any time in history. “But despite nuclear energy’s advantages, the United States has not begun construction of a new nuclear power plant since the 1970s.”

The reasons for this are high siting and construction costs, and political opposition – which drives the costs even higher. But, said Mr Bodman, a study conducted at the University of Chicago concluded that once the additional start-up costs of building new plants are absorbed, nuclear power could become cost-competitive with electricity produced by coal and natural gas. “And as prices for fossil fuels rise – and we seek further progress reducing emissions – nuclear energy becomes even more attractive.”

As a sign of the US commitment to nuclear, Mr Bodman pointed to the government’s Nuclear Power 2010 programme, which promotes partnerships between government and industry to licence new plants and develop advanced reactor designs [see News No. 222, 25th June 2002]. And he said the US would invest more than USD 500 million to support licensing the construction of at least two or three new plants.

Mr Bodman also highlighted the Generation IV International Forum, which brings together 11 member nations to develop the next generation of nuclear energy systems [see News in Brief No. 27, 4th March 2005]. “These future nuclear technologies will use fuel – and fuel cycles – that are significantly different from those of today.”

“The need for expanding nuclear energy production is clear,” said Mr Bodman. “The International Energy Agency predicts that global demand for energy will rise by about 60% over the next 25 years, and that two-thirds of the increase will come from developing nations. Countries like China already have begun building emission-free nuclear plants to help meet future energy needs.”

But with broader use of nuclear power comes greater responsibility, said Mr Bodman, adding the nuclear energy sector’s top priority must always be safety and security.

In March 2005, president George Bush said the US must promote safe, clean nuclear power and start building nuclear power plants again [see News No. 48, 10th March 2005]. “America hasn't ordered a nuclear power plant since the 1970s, and it's time to start building again,” he said.

Source: US Department of Energy
Editor: David Dalton

THE WORLD'S NUCLEAR NEWS AGENCY
20 April 2005 / News N°73 /05 / B

Australian Minister Calls For 'Mature' Debate About Nuclear Power

An Australian government minister has called for the country to consider using nuclear as "the most obvious power source" for the generation of electricity and water desalination.

Brendan Nelson, the federal minister for education, science and training, said: "The government has no plans whatsoever (to introduce nuclear power), but do we not at least owe it to our future to maturely canvass all our options?"

Mr Nelson's remarks about nuclear were part of a wide-ranging speech he delivered in Sydney on 18th April 2005. He said the government had invested 1.8 billion Australian dollars (AUD) in its climate change strategy and said a further billion dollars "is leveraged from the private sector in low emission technologies, photovoltaics and renewable energies".

He said: "We are part of the nuclear cycle. About a third of the world's uranium is at Olympic Dam in South Australia. As Australia's science minister, I have had to deal with the crippling parochialism of the South Australian (state) government refusing to allow the safe storage of low level waste at Woomera*... Now it is making arrangements to store its own low and medium-level waste in South Australia.

"Simultaneously the same government enthusiastically eyes the economic potential of its massive uranium deposits. Australia already accounts for 19% of global uranium production earning us AUD 427 million in 2002-2003.

"Nuclear power generates 16% of the world's electricity… In doing so the complete nuclear process emits two to six grams of carbon equivalent per kilowatt hour (kWh). Coal, oil and natural gas emit 100 to 360 grams of carbon per kWh. The nuclear power that today generates 16% of the world's electricity avoids 600 million tonnes of carbon emissions annually. In plain language that's 8% of current global greenhouse gas emissions.

"Some people seem happy to tuck themselves into bed at night comfortable in the knowledge that we earn money from exporting uranium and that it generates power in an environmentally friendly way. But they will then man the barricades if any by-products are to be shipped and stored, let alone be even considered a future fuel source here at home.

"It is not only in electric production that nuclear energy offers potential for Australia. It could also be used to fuel water desalination on a large scale."
**The federal government announced in July 2004 that it was dropping plans for a national low-level waste repository near Woomera in the state of South Australia [see also News No. 231, 17th July 2003]. Although Australia has no nuclear power plants, it is building a replacement research reactor that is scheduled to start operating in 2006 [see News No. 16, 24th January 2005].*

Source: Brendan Nelson
Editor: John Shepherd

THE WORLD'S NUCLEAR NEWS AGENCY
22 April 2005 / Feature N°6 /05 / B

Indonesia Looks For Support To Achieve Nuclear Ambition

The prospect of launching nuclear power in Indonesia is back on the political agenda and the government is asking the international community to help it achieve that goal.

Recent incorrect reports claimed the Indonesian government had approved the start of construction of at least one reactor unit on the island of Java and was preparing to draw up tenders. But a senior representative of Indonesia's permanent mission to the International Atomic Energy Agency (IAEA) in Vienna confirmed to NucNet this week that no such decision has been made.

However, Indonesia is moving with vigour to promote a domestic debate about nuclear power and to seek international expertise and assistance as it maps out its plans for a nuclear future.

The government has declared that the building of a nuclear power plant to feed electricity to the Java-Bali grid is "techno-economically feasible" and that a unit could be fully operational by 2016. This announcement was based on the conclusions of an Indonesian study, supported by the IAEA, which confirmed that nuclear was needed to help reduce the use of oil and to form part of a wider energy mix including gas, coal and renewables.

The country also supports the inclusion of nuclear power in clean development mechanisms (CDM) under the Kyoto protocol. Indonesia points out that for developing countries that cannot afford the initial high investment associated with nuclear new-build, CDM offers the chance of capital and technology transfers in exchange for greenhouse gas (GHG) emission credits.

Indonesia is not subject to emission limitations under the Kyoto protocol, but has acknowledged its "full support to any efforts in promoting nuclear power to be included as a CDM option".

Although momentum for nuclear's cause in Indonesia is increasing, the issue has been under consideration for some time. Parliament approved an atomic energy law in 1997 that permitted the eventual launch of a nuclear construction programme [see News No. 100, 26th February 1997]. The government established an independent nuclear regulatory agency in 1998 and several proposed nuclear plant sites have been identified on Java. Statistical information that would eventually be required for licensing has also been kept up to date.

The country's nuclear research facilities and universities support research and development, education, and training to ensure that skilled workers will be available to support a domestic nuclear power programme when the time comes. In 2001, the Polytechnic Institute of Nuclear Technology opened in the capital Jakarta, as an offshoot of an existing nuclear technology academy.

Ensuring that the public accepts the use of nuclear will be crucial to the success of the programme. Indonesia is reaching out for guidance from countries with particular experience in overcoming initial public hostility to nuclear projects. Indonesia's ambassador to the IAEA, Mr Samodra Sriwidjaja told an international ministerial conference in Paris in March 2005 that he hoped the IAEA would conduct further research and studies to "assure public confidence concerning the increasing use of nuclear energy as part of the energy mix".

Indonesia Looks For Support To Achieve Nuclear Ambition

Indonesia's preparations to start a domestic nuclear power programme have already included talks with a number of potential partners. There have been discussions with South Korea over a proposed construction of a nuclear-powered desalination plant. South Korea has also been involved in talks about the eventual licensing of a proposed SMART (System Integrated Modular Advanced Reactor) on the island of Madura, off the cost of Java, by 2015.

Russia also sees the potential of helping Indonesia achieve its nuclear energy ambitions. The Russian Federal Atomic Energy Agency has a specific legal mandate to negotiate with a number of countries, including Indonesia, to "accelerate" nuclear cooperation [see News No. 169, 30th August 2004].

Indonesia also knows it will need expert support for research on nuclear construction, nuclear safety technology, international regulatory requirements and waste management.

Mr Samodra Sriwidjaja also told the March 2005 Paris conference that Indonesia had played an "active role" in the Non-Proliferation Treaty review as well as other efforts to "strengthen implementation of the non-proliferation regime" [see also Feature No. 3, 16th March 2005]. However, he said that "non-proliferation control arrangements on nuclear materials and technology should be transparent" and that there should be no "restrictions on access to material, equipment and technology for peaceful purposes required by developing countries for their continued development".
Indonesia says nuclear power is of vital importance to its long-term development. The country's energy ministry also wants investors to support further prospecting for oil to offset a predicted fall in oil production to 476 million barrels a year between 2006 and 2010 from the 502 million barrels a year produced between 2001 and 2005.

As well as using domestic coal in the national energy mix, coal's export value is also important. According to Indonesia's Central Bureau of Statistics, coal was the main component of the near 80% growth in non-oil and gas exports in the first two months of 2005. Sales were driven by the world's search for cheaper alternatives to increasingly expensive oil. More than 105 million tonnes of coal was exported in 2004 compared to just over 89 million tonnes in 2003.
Mr Samodra Sriwidjaja said the oil and gas industries continued to be Indonesia's main source of revenue, but added: "This situation creates one of the most important issues of security of energy supply that needs to be addressed appropriately.

"The introduction of a nuclear power programme would not only serve as a solution to the rising demands for electricity, but is also expected to help save and prolong fossil energy for other purposes, as well as (contributing to) global efforts to reduce global warming.

"We share the expectation of developing countries that the role of nuclear power in the 21st century shall not only be for generating electricity, but also for other peaceful purposes, such as hydrogen production and desalination."

Source: Various
Editor: John Shepher

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http://www.euronuclear.org/e-news/e-news-8/member-societies.htm

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