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**NUCLEAR ENERGY AGENCY
NUCLEAR SCIENCE COMMITTEE**

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Working Party on Nuclear Criticality Safety (WPNCS)

SUMMARY RECORD OF THE SEVENTH MEETING

**17 October 2003
Tokyo, Japan**

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Seventh Meeting of the Working Party on Nuclear Criticality Safety

17 October, 2003
Mitsubishi Research Institute
Tokyo, Japan

SUMMARY RECORD

1. Introduction

Twenty-four participants attended the seventh meeting of the Working Party on Nuclear Criticality Safety (see the list of participants in Annex 1). The chairman, Blair Briggs, opened the meeting and welcomed the participants. He thanked Susumu Mitake and Osamu Sato, the local hosts, for their efforts in the preparation of the meeting and their assistance to the participants with travel and accommodation arrangements.

Apologies of absence were received from several WPNCS members. John Wagner replaced Mike Westfall, Anne Barreau attended the meeting in the place of Alain Santamarina, Greg O'Connor replaced Jim Stewart and Tom McLaughlin replaced Rick Anderson. Finally, Blair Briggs welcomed Bill Danker, the new IAEA representative.

2. Approval of the summary record of the previous meeting

The summary record of the previous meeting was approved without modification.

3. Nuclear Criticality Safety National Programmes

Report from Belgium

Peter Baeten presented the status of the REBUS experimental program carried out in SCK.CEN Mol in Belgium. The participating countries are Belgium, France, Germany, Japan and the USA. The aim of the is to establish a benchmark for the validation of reactivity loss with burnup. Experiments were completed for reference configurations using fresh fuel and for irradiated UOX fuel at 54 GWd/t average burnup. Other experiments are planned with irradiated MOX fuels at 20 GWd/t burnup. The programme includes reactivity measurements and fuel characterisation using non-destructive and destructive techniques. A more detailed presentation of the programme can be found in the proceedings of the ICNC'2003 conference.

Report from the Czech Republic

Lida Markova presented criticality safety activities in the Czech Republic. In the last decade, NRI performed experiments to study storage configurations. A proposal is under consideration by the Czech Ministry of Trade and Industry to support contributing these experiments to the ICSBEP project. Other activities include the study of burnup credit implementation in the VVER-400 storage pools.

Report from France

Patrick Cousinou presented a summary of on-going theoretical and experimental activities in France in the area of criticality safety. The development and the validation of the CRISTAL package carried out through a co-operative agreement between CEA, COGEMA and IRSN is an important part of the French criticality programme. During the year 2002, improvements were made to the Monte-Carlo code MORET (perturbation algorithms and loosely coupled systems) and to the density law formula for the calculation of atom densities for uranium and plutonium nitrate solutions. Further developments are being carried out this year including burnup credit methodology (see the presentation by Anne Barreau below), bias estimation and post-processing interfaces. The validation database of CRISTAL includes more than 1000 experiments mainly originating from the ICSBEP handbook. The experimental programmes being carried out in the Valduc facility or planned in 2004 include experiments to support the validation of burnup credit during the dissolution of spent fuel and experiments with high Pu-241 and Am-241 contents. Experiments involving structural materials (Fe, Cu, Ti, Mo, Ta, C, Pb and organic materials) are planned in 2005. Further experimental projects were described, including low-moderated MOX arrays and temperature coefficient measurements for diluted plutonium solutions.

Patrick Cousinou also mentioned the work on critical parameters of actinides jointly performed with the UK (Serco Assurance and DfT) and Sweden (EMS). Furthermore, he informed the participants that the mishandling of assemblies in the Dampierre reactor during maintenance operations triggered extensive criticality-safety investigations in which criticality codes and methods were applied for the first time to reactor configurations. Finally, a review of the criteria for the use of criticality alarm systems was recently carried out in France and a more detailed presentation will be given at the ICNC2003. Patrick Cousinou ended his presentation by highlighting an important French participation in the ICNC'2003 conference and showed the corresponding list of papers.

Anne Barreau's presentation focused on developments carried out at Cadarache in the framework of the CRISTAL project. These include the development of recommended calculation options for the Sn module of CRISTAL and the validation of the reference pointwise Monte-Carlo route. In addition, Anne Barreau described the development of a burnup credit methodology within CRISTAL through the coupling with the depletion codes DARWIN and CESAR and the validation work associated with inventory calculations. As a feedback from these validation studies, penalty factors are applied to fission product and actinides number densities. Furthermore, bounding depletion conditions were derived from sensitivity studies and are implemented in this methodology.

Report from Germany

Bernhart Gmal presented an overview of criticality-safety activities in Germany. He informed the WPNCS participants that although there is no official and co-ordinated programme on criticality safety in Germany, there are a number of activities in this area within the industry and the regulatory body. These activities are summarised below.

Rules and Standards

Due to the policy of the Federal Government to minimise transports of spent fuel, efforts are on-going to build new on-site storage facilities and to increase the pool storage capacities e. g. by using burnup credit in criticality safety design. To support these efforts and to provide a reliable base for the licensing procedures, several rules and standards were issued or are in preparation:

- Guidelines for dry storage of spent fuel in casks were provided by the advisory commission RSK of the federal government and published April 2002.
- A revision of the safety rule KTA 3602 concerning storage and handling of LWR fuel assemblies in Nuclear Power Plants (NPPs) was performed by a working group over more than four years.

Burnup credit and partially Boron credit were included. A preliminary version (green print) of the new rule was released recently.

- An industrial standard DIN 25471 for burnup credit in spent fuel storage pools of NPPs, which was released in September 2000, is currently being reviewed. A second standard DIN 25712 for burnup credit application for transport and storage casks is under preparation. The aim of these standards is not prescriptive but to address all items that must be considered in BUC application and to give a guideline to the applicant.

The control of fuel burnup by measurement is required for the application of BUC in transport casks. However, for spent fuel storage pools at the NPPs independent double checking of reactor records and locks from the loading machine are accepted as measures against miss-loading of fuel assemblies.

Criticality calculations and data

For final disposal, generic criticality analyses are being performed by GRS for different host rock materials, namely for clay, salt and crystalline rock. These studies are part of a programme where selected long-term safety problems of a repository are investigated with the aim of comparing different geologic formations for suitability as a repository. The long-term scenarios for criticality analysis are predetermined by geo-chemistries. Recent results were presented at the ICNC 03.

Within a project funded by the federal government, the German Criticality Safety Handbook is being reviewed and partially updated. Some older data were recalculated by using modern calculation tool (SCALE 4.4, MCNP4) and new data included: UO₂ water systems with 5 – 8 % enrichment, UO₂F₂ water mixtures with 5 and 6 % enrichment, UO₂ with 5 and 6 % enrichment and moisture content of 2 and 5 wt% water. For Uranyl-nitrate solution comparative calculations between the new French isopiestic density law and the older density relation of ARH-600 are planned. The release of a new electronic version of the Handbook is planned for 2004. So far only a German language version is available.

Further improvements of the 3-d depletion code system KENOEST were implemented. The users are now able to treat hexagonal lattices and use a full-scale 3-D representation of control rods for burnup calculations.

Criticality safety applications in nuclear facilities

A limited BUC (up to 10 MWd/t HM) has been used for transport and wet storage configurations. Efforts are underway to increase the limit of burnup. The enrichment plant Gronau of URENCO submitted an application to increase the enrichment up to 6 wt.% for internal handling operations. The licensing authority asked TUEV Rheinland Cologne for an independent assessment.

Other activities on fuel cycle safety

The advisory commission RSK safety issued requirements for long-term intermediate storage of low and medium active waste. The construction of the vitrification facility VEK Karlsruhe for liquid high-level waste from LWR fuel reprocessing is on-going.

The National Waste Management Plan for radioactive waste is under development. It is expected to receive waste from operating NPPs as well as from decommissioning NPPs and fuel cycle installations, research facilities, medical and industrial applications. A compilation of data and information for all radioactive waste sources was completed and is currently under revision.

Currently large activities are directed to the national report of Germany for the “Joint convention on the safety of the management of radioactive wastes and on the safety of the management of spent fuel elements”, which is conducted by the IAEA.

Report from Hungary

Gabor Hordosy presented a paper entitled “Criticality Safety Activities in KFKI Atomic Energy Research Institute, Budapest, Hungary”. The presentation covered code validation activities to support the licensing of VVER fuels with increased pitch size and enrichment with the inclusion of gadolinium as burnable absorber. The implications of these changes on fuel transport and storage was reviewed. In particular, it was noted that these changes will lead to a decrease of the storage capacity. The use of burnup credit can help to solve the criticality issues while maintaining the storage capacity.

Report from Japan

As a general introduction, Yoshinori Miyoshi informed the participants of an ongoing process to merge JAERI and JNC as part of a more global effort aiming at restructuring and reforming the state’s structures. There is also an on-going debate in Japan to decide whether the JCO site should be destroyed or, the opposite, preserved as a memorial.

Yoshinori Miyoshi then presented an overview of the activities of the Japanese nuclear society in the area of standards. A general criticality safety standard was completed and others are under preparation including a standard on burnup implementation. A criticality handbook to support the criticality analysis of the Rokkasho-Mura reprocessing plant was finalised. The second version of the criticality handbook was published three years ago and a third version is expected to be published in three years. The MVP Monte-Carlo code and the JENDL-3.3 library will be used in this update, which will also benefit from the feedback of the critical experiments performed in NUCEF.

Experimental activities in the NUCEF facility were presented. On-going programmes at STACY include a study of interacting units, the effect of shielding and reflection from structural materials and the criticality of heterogeneous systems. The experimental programme with plutonium fuel was postponed due to budget constraints. Experiments with fission products are planned to support the implementation of a burnup credit methodology with fission products.

On transient issues, experiments were performed after the JCO accident to study the effect of heat removal on the phenomenology of the accident. The experiment used a mock-up of the JCO precipitation tank and a simulation of the power profile for long lasting accident (20 hours) was studied.

In reply to a question Yoshinori Miyoshi said that the criticality standards are open publications.

Report from South Korea

Hae Ryong Hwang presented an overview of radioactive waste management in Korea. He informed the participants that Korea is planning to start operating a low and intermediate level waste facility in 2008 with an initial capacity of 100,000 drums and a final capacity of 800,000 drums. The facility will be located on Wido Island. It is also planned to operate a spent fuel interim storage facility by 2016 with an initial capacity of 2000 tons and a final capacity of 20,000 tons. The Korean government also supports an R&D programme for the development of a dry storage technology. Burnup credit is not included at this stage.

Mikey Brady Raap asked whether the site for the low and intermediate level waste facility was the same as the one announced in the past for high level waste and later cancelled. Hae Ryong Hwang replied that it was a different site.

Report from Sweden

Dennis Mennerdahl first presented an overview of the nuclear fuel cycle in Sweden (fabrication plant, reactors, spent fuel storage and transport). He informed the meeting that gadolinium credit is applied in the storage pools of BWR reactors and in the CLAB storage facility.

Concerning calculation tools, KTH (Stockholm) has developed the Monte-Carlo code MCB that includes new libraries and features for depletion calculations. The development of a criticality excursion system based on MCNP and finite element codes for heat and mechanical coupling is also underway in FOI (Defence Research Institute). An MCNP users' group is also active in Sweden.

Dennis Mennerdahl mentioned the study on actinides sponsored by the European Commission (see the report by P. Cousinou). The study highlighted the need for inter-comparison studies using modern nuclear data files for the calculation of these media where experimental data are scarce.

Finally, Dennis Mennerdahl described his participation in different international forums such as the IAEA Transport Regulations, the International Standards Organisation (ISO) and nuclear criticality safety division of the American Nuclear Society and different expert groups of the WPNCS.

Report from the UK

Jim Gulliford presented an overview of criticality-safety activities in the UK. He informed the participants that although the UK does not have a formal National programme, activities in criticality are discussed and, where appropriate, co-ordinated through the UK Working Party on Criticality (WPC). The list below summarises some current activities.

- 1) Code development
 - Productivity tools, post processing tools, parameterisation & k-eff search (takes advantage of continued increase in computing speed).
- 2) Handbook data
 - recent challenge by the UK regulator over use of old handbook data
 - verification of a selection of commonly used curves (using above tools with MONK/JEF2.2) being undertaken
 - WPC is considering proposal for an electronic form of handbook
- 3) Training & professional development
 - WPC (UK Working Party on Criticality) initiative to create structured national programme of professional development
 - December 2003 1st workshop on Defence-in-depth
- 4) Waste Treatment and Site Remediation:
 - avoidance of overly conservative assumptions for low risk material
 - development of methodologies which take some account of 'real' configurations of waste, rather than very conservative hypothetical scenarios
 - ALARP (balance of risks, e.g. radiological vs. criticality)
 - Issues associated with long term surface storage (e.g. changes in waste matrix with time, reduced levels of operator surveillance)
- 5) Disposal (use of kinetics models in consequence studies)
 - On-going research programme by Nirex looking at physics of criticality excursions in a repository.

- 6) Application of DBA to criticality
 - Essentially an alternative way of assessing defence in depth
 - Replacing double contingency in some areas
 - Associated with move towards integrated safety assessments
 - Previously more commonly associated with Reactor and Radiological safety assessment.
- 7) Participation in international activities
 - Co-ordinated through the WPC
 - OECD-NEA WPNCS, ICNC, ANS, IAEA, ISO

Reports from the United States of America

Ed Fujita's presentation covered analytical methods and nuclear data activities related to nuclear criticality-safety. In FY 2003, the effort devoted to code development has been rather modest and has mainly concerned the support of US contribution to the Expert Group on Source Convergence Analyses. The rest of the effort in this area concerns the maintenance and assistance to users. Future works will address areas such as the development of Graphical Users' Interfaces for Monte-Carlo codes, the implementation of statistical methods for source convergence and options for the calculation of spectral indices used in the ICSBEP classification. In the area of nuclear data, a new committee (Nuclear Data Advisory Group) was set-up to co-ordinate differential and integral measurements needs. Sensitivity and uncertainty analysis methods using covariance data have been identified as important elements for the justification of these needs. The U. S. Nuclear Criticality Safety Program will be participating in NEA/WPEC and CSWEG meetings to create a new High Priority Request List (HPRL) – address new and priorities of nuclear criticality safety.

Tom McLaughlin informed the meeting that he will co-ordinate the US participation to the Expert Group on Criticality Excursion Analysis. He also mentioned training activities in the area of criticality-safety. More general information on the DOE Nuclear Criticality Safety Program is available on the web site <http://ncsp.llnl.gov>. The knowledge preservation effort in the area of criticality-safety is fairly complete in the USA (e.g. scanning of logbooks, interviews with pioneers...). He encouraged other countries to perform similar initiatives.

John Wagner presented an overview of AROBCAD (Applicable Ranges of Bounding Curves and Data). AROBCAD will be part of SCALE-5, which will be released in December 2003. A co-operative effort between laboratories in the USA and Russia in the area of sensitivity/uncertainty will take place in the framework of the ISTC project 815. In addition, ORNL is expecting to issue the Generalised Linear Least Squares Method (GLLSM) as a tool independent from SCALE. This tool will permit a more comprehensive consolidation of uncertainty information from differential cross-section and integral experiments data into a global/adjusted covariance file for cross section use in nuclear criticality safety evaluations.

Carl Withee presented a summary of criticality-safety activities at the US NRC. Revision 2 of the interim staff guidance on the implementation of burnup credit, which covers PWR fuels and an actinide-only burnup strategy, was issued in September 2002. Efforts are on going to extend the range of application to cover other fuels and include fission products. The shortage of open experimental data for validation is an obstacle.

The regulation for fuel fabrication facility was changed in 2000 to require integrated safety analysis. Implementation issues include the application in criticality of the double contingency and defense-in-depth principles. In addition, the US requirements for transportation of radioactive materials are being updated to implement the IAEA regulations.

Finally, Carl Withee highlighted two application areas where experimental data are needed. They are uranium systems with enrichment ranging from 5 wt% to 10 wt% and MOX powders.

The presentation of national programmes took an important part of the meeting. For a better scheduling of next meetings, the chairman asked the participants to send their reports prior to the meeting and to limit their presentation to 15 minutes (including time for questions). A reminder will be sent to the participants in the course of the preparation of forthcoming meetings.

4. Provision of technical basis for other international activities

- ISO standards (C. Hopper)

John Wagner presented a paper entitled “Perceptions of relations among OECD, IAEA and ISO for nuclear criticality safety” on behalf of Calvin Hooper. After recalling the overall scope and the membership of the three organisations he described his view on how the three organisations should interface with each other to avoid duplication and overlap of activities. In the area of criticality-safety, he sees the role of the three organisations as follows:

The OECD/NEA Working Party on Nuclear Criticality Safety provides an international consensus on technical/theoretical bases to be used for regulations and standards.

The ISO uses these technical bases and provides a consensus on standard practices.

The IAEA reviews the implementation of these standards in different countries and provides information on operational experience.

He concluded by highlighting some ISO activities that could interface with the WPNCS.

- IAEA (W. Danker)

Bill Danker presented the IAEA activities in spent fuel management. A number of consultancy meetings were organised in 2002 and 2003 on different aspects of the interim storage of spent fuel including economics, operation experience, and institutional aspects. An international conference on the storage of spent fuel from power reactors was organised in June 2002. One hundred and twenty five participants attended this conference. The subject will remain a priority programme in the IAEA activities.

The implementation of burn-up credit is an important issue in spent fuel management as it provides a tool for extending storage capacities. The proceedings of the technical meeting organised in Madrid in 2002 will be issued in the coming days. A consultancy meeting will be organised in 2004 which will lead to a technical meeting in 2005 entitled “Advances in applications of burnup credit to reduce the number of transports and increase storage capacity”. Meeting participants will receive a copy of the proceedings. Further details about the IAEA activities on spent fuel management can be found at: www.iaea.org/worldatom/Programmes/Nuclear_Energy/NEFW/nfcms_b3.html.

5. Reports from the Expert Groups

- Burnup Credit

Mikey Brady Raap presented the status report of the Expert Group on Burnup Credit. The Expert Group published two analysis reports of Phases IV-A and IV-B in May 2003 along with a CD-ROM containing all the reports produced to date. During the last meeting of the Expert Group, an in-depth analysis of Phase II-C was presented. It is intended to complete the report in 2004. A proposal for a new benchmark (Phase II-D) on the effect of absorbers on burn-up credit was discussed and modified during this meeting. The final specifications will be available by the end of November 2003. The group has discussed the outline of a report to be produced which will summarise the lessons learned from the activities of the Expert Group. Responsibilities were also defined for the write-up of each section. The summary report is expected to be published in 2005.

- Source Convergence

Roger Blomquist presented a summary of the activities of the Expert Group on Source Convergence Analyses. The analysis reports of the four benchmarks are currently fairly complete and most of them were reviewed. It was decided to integrate the four reports into a single publication, which will be issued by the end of 2003. A bibliography on the subject will be assembled. In the coming year, the activity will focus on the investigation of differences in the Monte-Carlo algorithms that could explain the differences in source convergence performances noticed during the benchmark exercises. In parallel, efforts will be made at LANL and IRSN to implement genuine statistical methods for the detection and suppression of unconverged generations. It is expected that these algorithms will be implemented next year, which would allow them to be thoroughly tested in 2004 and 2005.

- Criticality Excursions

Francis Barbry reported on the status of the Expert Group on Criticality Excursions Analyses. The scope of the expert Group was broadened by including an activity on the comparison of simple models used in safety evaluation and emergency planning. It is intended to investigate the scenarios of past accidents to derive data for such comparisons. The evaluation of criticality excursion programmes according to the format designed by Blair Briggs would require extensive effort. Although the objective is still maintained, a two-step process was defined for the production of evaluated experiments according to the standard defined by Blair Briggs. In the first step, experiments will be described according to a simplified format defined as the union of the specifications supplied by Valduc and JAERI. This first phase would highlight the most important experiments, which need to be evaluated. The second step is an evaluation process similar to the ICSBEP methodology where the uncertainties are determined and their effect evaluated.

Concerning the status of the code inter-comparison activity, three contributions were submitted from Japan. Two other cases describing very slow reactivity ramps will be added next year. Country representatives were asked to encourage contributions from their countries. Jim Gulliford, Tom McLaughlin and Bernhart Gmal agreed to stimulate interest in the UK, USA and Germany. A list of available codes and their features will be compiled through a questionnaire defined by the Expert Group.

- International Criticality Safety Benchmark Evaluation Program

Blair Briggs presented the status of the ICSBEP Project. A new edition of the handbook was published in September 2003. Three hundred and fifty evaluations are described in this edition, which represent three thousand and seventy critical and sub-critical configurations. The growth of the handbook between 1995 and 2003 was shown as well as the list of participating countries. The September and October issues of Nuclear Science and Engineering featured the work of the ICSBEP Project. The plans for next year include the addition of new evaluations (between 25 to 30), the description of pilot evaluations for criticality alarm and fundamental physics benchmarks and improvements to DICE. Efforts to expand the ICSBEP were made by issuing invitations to Brazil, China, South Africa and Poland. All four countries agreed, in principle, to participate.

- Experimental needs

Patrick Cousinou presented the status of the Expert Group on Experimental Needs. The web page designed for the expression of needs was never used and no information was received from Rick Anderson concerning the compilation of needs assembled for the US/DOE. Blair Briggs informed the participants that the web site (<http://ncsp.llnl.gov>) of the DOE Nuclear Criticality Safety Program should contain this information and in principle it is possible to link to this web site. Tom Mclaughlin agreed to provide the secretariat with the precise web site address.

John Wagner presented the status of international interest in MOX experiments on behalf of Mike Westfall. A short paper distributed to the participants summarised the expression of needs in France, the United States and Russia. In France, the interest is in experiments with MOX fuel utilising recycled LWR plutonium with a minimum of 12wt% Pu-240 in the plutonium. In the USA and Russia, the interest is in MOX fuel utilising weapon-grade plutonium (the content of Pu-240 is about 4%). In the three countries, the lack of experiments is recognised for configurations with intermediate energy spectra. France and Russia have the capability to perform such experiments while it is not clear whether the USA does. The discussion that followed the presentation showed that the current interest is on the technical level but there is no clear indication whether the experiments would be supported in any of these countries from the programmatic point of view. It was thus decided to write a letter of recommendation to the Nuclear Science Committee stressing the technical need and soliciting the Committee's support for the promotion of international co-operation to perform such experiments. Patrick Cousinou informed the participants that IRSN has produced a design of an experimental programme to address this need. A paper will be presented at the ICNC'2003 conference and a brochure was distributed to the participants. It was agreed to append this brochure to the letter to be addressed to the NSC. The letter will be drafted by the chairman and circulated to WPNCS members for comments before its submission to NSC.

- Minimum Critical Values

Wolf Weber presented a progress report on the compilation and comparison of minimum critical data for a set of uranium and plutonium media. Large deviations are found between the data submitted by the participants and efforts are being made to understand the origin of these discrepancies. A paper presenting the status of the analysis of the results was submitted to the ICNC'2003 conference. Wolf Weber proposed the following time schedule for the assembly and publication of the final report:

November 2003 - January 2004: Assembly of the report.

February 2003 - March 2004: Peer-review

April 2004: Publication of the report

The proposal was accepted. For the continuation of this activity beyond the publication of the aforementioned report, the Expert Group on Minimum Critical Values needs to submit to the WPNCS for approval of a detailed programme of work including the intended deliverables and corresponding time schedules.

6. Feedback from the Nuclear Science Committee meeting

Ali Nouri presented the feedback from the June 2003 meeting of the Nuclear Science Committee where a progress report on the activities of the Working Party was presented by the secretariat together with a proposal to renew the working methods. The Nuclear Science Committee agreed with the main ideas and asked the Working Party to prepare a renewed mandate for discussion at the NSC bureau meeting in December 2003. Blair Briggs will present the new mandate at this meeting. Expert group chairs were asked to provide input for the elaboration of the new mandate, which will be circulated among WPNCS members for comments.

Ali Nouri also informed the participants that a new activity on the technical and economical implications of very high burnup LWR fuel had been launched. The study will be performed over the next 2-year period and will include a study on the consequences of exceeding the 5wt% uranium enrichment on the existing fuel cycle.

7. Structure of the Working Party and discussion of the new mandate

Expert Group chairpersons were asked to present the plans for the future. Patrick Cousinou agreed to dissolve the Expert Group on Experimental Needs while keeping the subject for discussion at the Working Party meeting. The continuation of the Expert Group on Minimum Critical Values will depend on the progress made for the publication of the final report next year. If needed, proposals for the extension of the work will be submitted for the approval of the Working Party. The three other expert groups (Burnup Credit, Criticality Excursion Analyses and Source Convergence Analyses) and the ICSBEP Project have well defined programmes of work for the next 3-year period.

8. ICNC'2007 preparation (date, venue, review of papers...)

The next International Conference on Nuclear Criticality Safety, ICNC'2007, will be held in Russia. Blair Briggs asked the Working Party members for their opinions about the introduction of a peer-reviewing process for the full papers. Several opinions were expressed without reaching a firm conclusion. A sub-group will be formed to study this question in more detail and to come-up with a recommendation at the next meeting. Mikey Brady Raap will co-ordinate the sub-group, which will be composed of herself, John Wagner, Jim Gulliford, Patrick Cousinou and Yoshinori Miyoshi.

9. Date and place of the next meeting

Lida Markova made a proposal to hold the forthcoming WPNCS meeting in Prague in the beginning of September 2004. The proposal was accepted. Lida Markova and the secretariat will study the details of the organisation and will inform the participants about the final choice of date and venue. The tentative date is 1-3 September 2004.

Annex 1

List of Participants

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Annex2

List of actions

General and recurrent items

action wpncs-2003-001: WPNCS members to send their country report to the secretariat prior to the meeting and limit their presentation to 15 minutes.

action wpncs-2003-002: Tom McLaughlin and WPNCS members to write guidelines for the preparation of ICNC conferences (selection of the host country, preparation of the program...). This action was decided following various consultations during the ICNC'2003 conference which was held the week after the October 2003 meeting of the WPNCS .

action wpncs-2003-003: Mikey Brady-Raap to co-ordinate a sub-group (Wagner, Gulliford, Cousinou, Miyoshi) which will make a recommendation on the feasibility of peer-reviewing ICNC full papers and possibly publish the papers (or a selection of them) in a journal.

action wpncs-2003-004: Expert Group chairs to provide input (deliverables and associated time schedule) to the WPNCS chairman and secretariat for the new mandate of the WPNCS (**November 14, 2003**).

Experimental needs

action wpncs-2003-005: Secretariat to provide a link to the DOE list of experimental needs (somewhere in the NCSP home page <http://ncsp.llnl.gov>)

action wpncs-2003-006: Chairman and Secretariat to draft a letter of recommendation to the Nuclear Science Committee concerning the needs for MOX experiments, to circulate it among WPNCS members for comments and send it to NSC by Mid-November 2003.

Minimum critical values

action wpncs-2003-007: The time schedule for the production of the report compiling minimum critical data is the following:

November 2003 - January 2004: Assembly of the report.

February 2003 - March 2004: Peer-review

April 2004: Publication of the report