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Organisation de Coopération et de Développement Economiques
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English - Or. English

**NUCLEAR ENERGY AGENCY
NUCLEAR SCIENCE COMMITTEE**

**NEA/NSC/DOC(2006)9
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**UNCERTAINTY ANALYSIS IN MODELLING
UAM-2006 WORKSHOP**

**28-29 a.m. April 2006
Pisa, Italy**

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English - Or. English

NUCLEAR SCIENCE COMMITTEE

**Uncertainty Analysis in Modelling
UAM-2006 Workshop**

Pisa, Italy
28-29 a.m. April 2006

Hosted by the
University of Pisa, Italy

PROPOSED PROGRAMME

Uncertainty Analysis in Modelling UAM-2006 Workshop

(Pisa, Italy, 28-29 a.m. April 2006)

Sponsorship

This workshop is held under the aegis of the OECD/NEA Nuclear Science Committee in co-ordination with the Committee on Safety of Nuclear Installations (CSNI).

In order to facilitate discussion on this subject of common interest, this workshop is held in conjunction with the following other meetings: the 4th Workshop of the OECD/DOE/CEA VVER-1000 Coolant Transient Benchmark (V1000CT-4), scheduled for 24-25 April 2006, the 3rd Workshop for the OECD/NRC benchmark based on the NUPEC BWR Full-size Fine-mesh Bundle Tests (BFBT-3), scheduled for 26-27 April 2006, and the 2006 Atomic Energy Research (AER) "VVER Reactor Safety Analysis" Working Group D Meeting (held in parallel with the BFBT-3 Workshop).

Background and Purpose of the Workshop

In recent years there has been an increasing demand from nuclear research, industry, safety and regulation for best estimate predictions to be provided with their confidence bounds. Consequently an "in-depth" discussion on "Uncertainty Analysis in Modelling" was organised at the June 2005 NSC meeting, with three presentations covering relevant topics. In addition, discussions were held at the Avignon M&C and the Washington ANS meetings, which led to a proposal for launching an Expert Group on "Uncertainty Analysis in Modelling". This group would be related - but distinct from - the ongoing expert group on "LWR Transients and Stability Benchmarks". At its December 2005 Bureau meeting, the OECD/NEA Nuclear Science Committee (NSC) endorsed holding a workshop with the aim of defining future actions and a programme of work. It was proposed that the group should have the following mandate:

1. To elaborate a state-of-the-art report on current status and needs of uncertainty analysis in modelling, including design and safety applications, with emphasis on multi-physics (coupled) and multi-scale simulations.
2. To identify the opportunities for international co-operation in this area that would benefit from coordination by the NEA/NSC
3. To draw a roadmap for the development and validation of the methods and codes required for uncertainty analysis in design and safety applications, including the benchmarks adequate to meet those ends, the schedule and organization of its realization

This expert group would be part of the Working Party on Reactor Systems (WPRS). The results of the workshop shall be presented at the June 2006 NSC meeting together with the proposed programme of work for endorsement.

Scope and Technical Content of the Workshop

The main scope covers uncertainty (and sensitivity) analysis in best estimate modelling for design and operation of nuclear reactor systems, including methods that can be used for safety evaluations. The following topics are proposed for the workshop:

- 1) The current uncertainty (and sensitivity) analysis methods
 - a) Main characteristics of the methods and implementations
 - b) Range of applicability and examples of applications
 - c) Issues and limitations of current methods

- 2) Needs for improvement in current and/or for new advanced U&S analysis methods
 - a) Identify the improvements in current U&S methods and the R&D efforts needed
 - b) Identify the new advanced methods for U&S and the R&D efforts needed
 - c) Evaluate the previous alternatives and set priorities.
- 3) Integration of methods deriving from previous R&D efforts within NSC and CSNI scopes, proposals
 - a) Level or stage of the required R&D efforts: scientific (NSC), qualification for safety applications (CSNI).
 - b) Proposals of co-ordination and actions for the NSC and CSNI: scope and time-schedule.

Participation

Participation is restricted to experts (research laboratories, safety authorities, regulatory agencies, utilities, owners' groups, vendors, etc.) from OECD member countries endorsed by delegates of the Nuclear Science Committee (information about members are provided as Annex). The meeting is open to experts from other countries according to established rules of OECD. Participation of these experts will be arranged by the NEA Secretariat including participants of the AER Groups and the Russian Federation.

Organization and Programme Committee

A Programme Committee was nominated for organising the workshop, to arrange the sessions, draw up the final programme and appoint session Chairs, etc. Its members are:

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Proposed Programme

The proposed structure of the programme was drawn up by the Programme Committee and is enclosed as Annex 1. A more detailed agenda will be provided before the meeting, including the titles of specific presentations.

Language of the Workshop

The official language of the workshop is English.

Proceedings

A summary with conclusions and recommendations of the workshop will be published by the OECD/NEA after the meeting and will be prepared by the programme committee and the session Chairs. The main results of the meeting and proposals for future activities will be presented to the NSC at the June 2006 meeting. Copies of presentations will be distributed free of charge to all participants after the meeting on CD-ROM.

Workshop Location

Grand Hotel Duomo
Via S.Maria, 94
56126 Pisa Italy

Tel: +39 050 561 894
Fax: +39 050 560 418
<http://www.grandhotelduomo.it/>

Local Arrangements

The organisers propose accommodation at the Grand Hotel Duomo, where the workshop will take place. Registration form for the series of workshops and accommodation can be found as Annex 2.

Transportation

The Pisa airport is located at about 5 km from the centre of Pisa. The centre can be reached either by bus or by taxi.

Annex 1

**Uncertainty Analysis in Modelling
(UAM-2006)**

Pisa, Italy
28-(29 am) April 2006

Hosted by: University of Pisa

PROPOSED PROGRAMME

Opening Session (Chair: J. Aragonés)

- Introduction and Welcome
- Objective of the meeting

Session 1 – The Current Uncertainty (and Sensitivity) Analysis Methods

Chair: F. D’Auria

- i) Main Characteristics of the Methods and Implementations
- ii) Range of Applicability and Examples of Applications
- iii) Issues and Limitations of Current Methods

Session 2 – Needs for Improvements in Current and/or for New Advanced U&S Analysis Methods

Chair: D. G. Cacuci

- i) Identify the Improvements in Current U&S Methods and the R&D Efforts needed
- ii) Identify the New Advanced Methods for U&S and the R&D Efforts needed
- iii) Evaluate the Previous Alternatives and set Priorities.

Session 3 – Integration of Methods Deriving from Previous R&D Efforts within NSC and CSNI Scopes, Proposals

Chair: K.N. Ivanov

- i) Level or stage of the required R&D efforts: scientific (NSC), qualification for safety applications (CSNI).
- ii) Proposals of co-ordination and actions for the NSC and CSNI: scope and time-schedule.
- iii) Available Tools in the Public Domain

Closing Session (Chair: J. Aragonés)

- Conclusions and Report to NSC
- Closing remarks

Annex 2

**NUCLEAR SCIENCE COMMITTEE
and
COMMITTEE ON THE SAFETY OF NUCLEAR INSTALLATIONS**

**Host Organization
University of Pisa, Italy**

24-29 April 2006

PARTICIPATION AND HOTEL REGISTRATION FORM

Even if you attend more than one of the following workshops (V1000CT4, BFBT3, AER-GD-2006, UAM-2006), please send only one form, as soon as possible, and in any case not later than 31 March, 2006, both to:

Yulia D'Angelo

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e-mail: sartori@nea.fr

If you attend the **AER Group D** meeting, please send a copy also to Pertti Siltanen
Pertti.Siltanen@fortum.com ; Fax: +358 1045 33403.

Name:

Company or organization:

Address:

E-mail:

Tel:

Fax:

Please fill in the following table:

Workshop / Date / Contact Person	Attendance / Presentations / Comments - Requests
Fourth V1000CT Workshop (VVER-1000 Coolant Transients) – (V1000-4) 24 – 25 April Contact person at UNIPI: Alessandro Del Nevo Phone: +39 050 2210 360 Fax: +39 050 2210 384 E-mail: a.delnevo@ing.unipi.it	<i>Will you attend V1000CT-4?</i>
	<i>If so, will you be giving a presentation?</i>
	<i>Please specify titles, authors, and sessions for the presentation(s)</i>
	<i>I shall not attend but send me the summary. (Yes – No)</i>
OECD/NRC Benchmark based on NUPEC BWR - Full-size Fine-mesh Bundle Tests (BFBT) – (BFBT-3) 26 – 27 April Contact person at UNIPI: Fabio Moretti Phone: +39 050 2210 372 Fax: +39 050 2210 384 E-mail: f.moretti@ing.unipi.it	<i>Will you attend the BFBT-3?</i>
	<i>If so, will you be giving a presentation?</i>
	<i>Please specify titles, authors, and sessions for the presentation(s)</i>
	<i>I shall not attend but send me the summary. (Yes – No)</i>
Workshop / Date / Contact Person	Attendance / Presentations / Comments - Requests
AER Group D Workshop (VVER Dynamics Group) 26 – 27 April Contact person at UNIPI: Carlo Parisi Phone: +39 050 2210 374 Fax: +39 050 2210 384 E-mail: c.parisi@ing.unipi.it	<i>Will you attend the AER workshop?</i>
	<i>If so, will you be giving a presentation?</i>
	<i>Please specify titles, authors, and sessions for the presentation(s)</i>
	<i>I shall not attend but send me the summary. (Yes – No)</i>
Expert Group on "Uncertainty Analysis in Modelling" 28 – 29 April Contact person at UNIPI: Alessandro Petruzzi Phone: +39 050 2210 377 Fax: +39 050 2210 384 E-mail: a.petruzzi@ing.unipi.it	<i>Do you will attend this meeting?</i>
	<i>If so, will you be giving a presentation?</i>
	<i>Please specify titles, authors, and sessions for the presentation(s)</i>
	<i>I shall not attend but send me the summary. (Yes – No)</i>

The workshops will take place at the Grand Hotel Duomo. A set of **40 rooms** have been pre-reserved. The organising committee will take care of the hotel reservation.

Do you wish to stay at “Grand Hotel Duomo”?

If so, please specify the type of room, check in and check out dates:

Type of room (Single or Double):

Check in:

Check out:

Alternative hotels are listed herewith for which participants are requested to do their own booking at:
http://www.pisaonline.it/PISA/hotels_centro.htm

Workshop Location

Grand Hotel Duomo
Via S.Maria, 94
56126 Pisa Italy

Tel. +39 050 561 894 - Fax +39 050 560 418
<http://www.grandhotelduomo.it/>

Single room EURO..127.00
Double room EURO..183.00

Other Hotels

<i>Albergo Villa Kinzica</i> 56126 Pisa (PI) - 2, p. Arcivescovado tel: +39 050 560419 - fax: +39 050 551204	<i>Albergo La Pace Di Romanelli A. & A. S.N.C.</i> 56125 Pisa (PI) - 3, viale Gramsci Antonio tel: +39 050 29351, +39 050 48863 fax: +39 050 502266
<i>Albergo Roma</i> 56126 Pisa (PI) - 111, Via Pisano Bonanno tel: +39 050 554488	<i>Hotel Alessandro Della Spina</i> Via Alessandro della Spina, 2/7/9, 56100 - Pisa http://www.dormireintoscana.it/AlessandroDellaSpina/

Annex 3(For detailed address information please look up <http://www.nea.fr/add/>)

OECD Nuclear Energy Agency

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