PENNSTATE

UNIVERSITÀ DI PISA

3D S.UN.COP 2004

24-27 May 2004

SEMINAR AND TRAINING ON TRANSFER OF COMPETENCE KNOWLEDGE AND EXPERIENCE ON SCALING, UNCERTAINTY AND 3D COUPLED CODE CALCULATIONS

To be held at Penn State University – University Park PA - USA

PROGRAM OUTLINE

Session I

Welcome and Reasons for the Seminar – J. Brenizer (PSU)

Presentation of the Activities and Introduction to the Seminar - F. D'Auria (UPI), K. Ivanov (PSU), A. Petruzzi (UPI/PSU)

Session II

System Codes: Evaluation, Application, Modelling & Scaling

- **Lecture 1:** System Code Models and Capabilities - F. D'Auria (UPI), K. Ivanov (PSU)
- **Lecture 2:** Scaling of Thermal-Hydraulic Phenomena: Addressing the Scaling Issue – F. D'Auria (UPI)
- **Lecture 3:** Influence of Numerics upon the Uncertain Prediction of System Thermal-Hydraulics and CFD Computer Codes – J. Mahaffy (PSU)
- **Lecture 4:** User Effect on code Application and Qualification Needs – F. D'Auria (UPI)
- **Lecture 5:** TRACE System Code: Status, Features and Capabilities – J. Mahaffy (PSU)

Session III

Best Estimate in System Code Applications and Uncertainty Evaluation

- **Lecture 6:** The Origin of Uncertainties – F. D'Auria (UPI)
- **Lecture 7:** IAEA-TECDOC: Uncertainty Evaluation in Best Estimate Safety Analysis for Nuclear Power Plants – F. D'Auria (UPI)
- **Lecture 8:** Best Estimate LOCA Methodology **–** L. Hochreiter (PSU)
- **Lecture 9:** Comparison Between Uncertainty Methods – F. D'Auria (UPI)
- **Lecture 10:** Results from the Application of Uncertainty Methods in the CSNI Uncertainty Methods Study (UMS) – A. Petruzzi (UPI)
- **Lecture 11:** The BEMUSE Programme (Best-Estimate – Uncertainty and Sensitivity Evaluation) – A. Petruzzi (UPI/PSU)

PROGRAM OUTLINE

Session IV **Qualification Procedures**

- **Lecture 12:** Procedures for Nodalization Qualification (at Steady State and on Transient Level) – A. Petruzzi (UPI/PSU)
- **Lecture 13:** The FFTBM for Accuracy Evaluation (Support to Uncertainty Tools) – A. Petruzzi (UPI/PSU)

Session V **The CIAU/UMAE Methodology**

- **Lecture 14:** The Features of UMAE Methodology – F. D'Auria (UPI)
- **Lecture 15:** The CIAU: The Code with – the capability of – Internal Assessment of Uncertainty – A. Petruzzi (UPI/PSU)
- **Lecture 16:** The Bifurcation study by CIAU – F. D'Auria (UPI)
- **Lecture 17:** Applications and Main Results achieved by CIAU – F. D'Auria (UPI)
- **Lecture 18:** Application of Uncertainty to the Licensing Process: Main Results and Procedures – F. D'Auria (UPI)
- **Lecture 19:** CIAU Software – A. Petruzzi (UPI/PSU)

Session VI **Training on use of FFTBM and CIAU Code –** A. Petruzzi (UPI/PSU)

Session VII **Coupling Methodologies**

- **Lecture 20:** Basis for Coupled 3D Neutron-Kinetics/Thermal-Hydraulic – F. D'Auria (UPI)
- **Lecture 21:** Cross Section generation and Modelling for Coupled Transient Analysis – K. Ivanov (PSU)
- **Lecture 22:** Modelling Fuel Behavior and its Interaction with Thermal-Hydraulics – K Ivanov (PSU)
- **Lecture 23:** Sub Channel Analysis Needs for Fuel Assembly Design - L. Hochreiter (PSU)
- **Lecture 24:** OECD/NEA Benchmarks – K. Ivanov (PSU)

Session VIII — Coupling Methodologies: Applications

- **Lecture 25:** OECD-DOE NEA WWER-1000 CT-1 Benchmark: 3D Neutron-Kinetics/Thermal-Hydraulics Coupled Calculation – J. Vedovi (PSU/UPI)
- **Lecture 26:** BWR PBTT2 Benchmark: 3D Neutron-Kinetics/Thermal-Hydraulics Coupled Calculation – J. Vedovi (PSU)
- **Lecture 27:** Stability Analysis: Cycle 14 Point 10 of Ringhals 1 with TRACE/PARCS Coupled Code – J. Vedovi (PSU)
- **Lecture 28:** A New Methodology for Early Detection of BWR Instabilities using Coupling Methodology – A. Petruzzi (PSU)
- **Lecture 29:** Boron Dilution Problem – J. Vedovi (UPI/PSU)
- **Lecture 30:** Extension of the CIAU Methodology to 3D Neutron-Kinetics/Thermal-Hydraulics Coupled Codes: CIAU-TN – A. Petruzzi (UPI/PSU)

Organization:

The University of Pisa (UPI) and the Pennsylvania State University (PSU) organize a Seminar and a Training to transfer competence, knowledge and experience in the field of Scaling, Uncertainty and 3D Coupled Code Calculations.

The Seminar will be held at the Department of Mechanical and Nuclear Engineering of Penn State University in University Park, Pennsylvania (USA), from 24 to 27 May 2004.

The seminar is open to Universities, Vendors, National Laboratories and Governor Agencies.

Registration has to be submitted by May 14, 2004. The participation fee is $ 1,500.
Coffee breaks, lunches and one official dinner are included in the registration fee.

Further information about participation, registration forms and practical information can be requested to the following email address: **axp46@psu.edu**

Objective of the Seminar-Training:

To transfer to specialists unfamiliar with Uncertainty Methodologies and 3D Coupled Code Calculations, and to newcomers in the field (advanced beginners), competence and experience acquired by University of Pisa and Penn State University from activities carried out during the last two decades, through the participation in Benchmarks, International Standard Problems and International cooperation. Managers and research planners would also benefit from attending the Seminar.

Expected Products:

The Seminar will provide good transfer of experience and know-how from recognized experts I the respective fields. It will so contribute to maintaining and increasing competencies, and to ensuring sustainable development of nuclear technology.

CDs containing all the lectures will be distributed to the participants.

3D S.UN.COP 2004

Seminar and Training on Transfer of Competence Knowledge and Experience on Scaling, Uncertainty and 3D Coupled Code Calculations

May 24-27, 2004, Penn State University – University Park, PA - USA

FINAL REGISTRATION FORM

To be returned by May 14th, 2004

Last name: ..... First name: .....

Title: .....

Organization: .....

Address: .....

Country: ..... Town: ..... Zip Code: ..……..

Phone: ……... Fax: ……....

Email: ……...

(please type all information as you wish it to appear on your name badge)

Registration Fees

Include the proceedings, lunches, coffee breaks and the official dinner (May, 25)

May 24-27, 2004 – 3D S.UN.COP Seminar ☐ **$ 1500**

Payment

☐ Wire transfer to*:

	Citizens Bank, Philadelphia, PA
ABA#:	**036076150**
SWIFT (only International):	**STZIUS33**
For credit to:	**The Pennsylvania State University - 3D SUNCOP 2004**
Account #:	**610001-168-2**

**** Bank charges will be covered by the issue of transfer***

☐ Check enclosed with the final registration form to the order of:

The Pennsylvania State University
133 Reber Building, University Park – PA, 16802
attention to: Holly Seidel
with the mention: 3D SUNCOP 2004

The registration form has to be sent to:

Alessandro PETRUZZI – Penn State University
334 Reber Building, University Park – PA, 16802
Tel: 814-863-3926 - Fax: 814-865-8499
Email: axp46@psu.edu