

OECD/NEA Data Bank Integral Experiments Databases in Support of Knowledge Preservation and Transfer

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The OECD/Nuclear Energy Data Bank was established by its member countries as an institution for the collection, verification, validation, dissemination and enrichment through user experience and feedback of the basic tools used today for nuclear energy system design and the simulation of their functioning under different operating conditions. These tools comprise standardized databases with microscopic basic nuclear and chemical-thermodynamic data, computer programs for a wide range of applications, and integral experiments on fissile material systems, reactor or radiation shielding mock ups and on in-core fuel behaviour.

The OECD/NEA Nuclear Science Committee (NSC) has identified the need to establish international integral experiments databases containing all the important experiments that are available for sharing among the specialists. Specific activities to achieve this have been set up with the aim of preserving them in an agreed standard format in computer accessible form, to use them for international activities involving validation of current and new calculational schemes comprising computer codes and nuclear data libraries, for assessing uncertainties, confidence bounds and safety margins, and to record measurement methods and techniques.

The databases so far established cover the following areas related to physics issues:

- IRPhE - International Reactor Physics Experimental Benchmarks Evaluation Project.
- SINBAD - a radiation shielding experiments database encompassing reactor shielding, fusion blanket neutronics, and accelerator shielding;

In the area of fuel behaviour, the IFPE – International Fuel Performance Benchmark Experiments Database was established.

The proposed paper will concentrate on knowledge preservation aspects related to integral experiments and will include:

- The scope and comprehensiveness of the different databases
- The methods used in standardizing their compilations, and for the following peer review process

- A brief summary describing for each of them the data so far acquired, evaluated and reviewed.
- The organisational structure, the computational environment required and methodology established in storing, updating, and in providing user access to the data.
- Benchmark activities for recording and disseminating user expertise its integration in computer codes and computational procedures. .
- Examples of use made and respective benefit
- Importance for preserving measurement technology and techniques and the ensuing data evaluation process.
- The role this activity has in assessing, justifying and quantifying the benefit of new experiments.
- Their role as a tool for knowledge and competence assessment of newcomers in the field.
- The essential documentation it represents on which computational methods and analyses in use today are based.

Finally, the programme of future activities will be described.