

**Nuclear Knowledge Management Experience of the
International Criticality Safety Benchmark Evaluation Project**

J. B. Briggs^a, A. Nouri^b

^aIdaho National Engineering and Environmental Laboratory, U.S.A

^bOECD Nuclear Energy Agency, Paris, France

E-mail address of main author: bbb@inel.gov

The International Criticality Safety Benchmark Evaluation Project (ICSBEP) was initiated in October of 1992 by the Department of Energy Defense Programs, now NNSA. The U.S. effort to support and provide leadership for the ICSBEP has been funded by DOE-DP since that time. The project is managed through the Idaho National Engineering and Environmental Laboratory (INEEL), but involves nationally known criticality safety experts from Los Alamos National Laboratory, Lawrence Livermore National Laboratory, Savannah River Technology Center, Oak Ridge National Laboratory and the Y-12 Plant, Hanford, Argonne National Laboratory, and the Rocky Flat Plant. An International Criticality Safety Data Exchange component was added to the project during 1994. Representatives from the United Kingdom, France, Japan, the Russian Federation, Hungary, Republic of Korea, Slovenia, Yugoslavia, Kazakhstan, Spain, Israel, Brazil, and Poland are now participating on the project and China, South Africa, and the Czech Republic have indicated that they plan to contribute to the project. The ICSBEP is an official activity of the OECD-NEA. The United States is the lead country, providing most of the administrative support.

The purpose of the ICSBEP is to:

1. Identify and evaluate a comprehensive set of criticality related benchmark data.
2. Verify the data, to the extent possible, by reviewing original and subsequently revised documentation, logbook data when possible, and by talking with the experimenters or individuals who are familiar with the experimenters or the experimental facility.
3. Compile the data into a standardized format.
4. Perform calculations of each experiment with standard criticality safety codes.
5. Formally document the work into a single source of verified and internationally peer reviewed benchmark critical data.

Each experiment evaluation undergoes a thorough internal review by someone within the evaluator's organization. The internal reviewers verifies:

1. The accuracy and completeness of the descriptive information given in the evaluation by comparison with original documentation (published and unpublished).

2. That the benchmark specification can be derived from the descriptive information given in the evaluation.
3. The completeness of the benchmark specification.
4. The results and conclusions.
5. Adherence to format.

In addition, each evaluation has undergoes an independent peer review by another working group member at a different facility. Starting with the evaluator's submittal in the appropriate format, the independent peer reviewers verifies:

1. That the benchmark specification can be derived from the descriptive information given in the evaluation.
2. The completeness of the benchmark specification.
3. The results and conclusions.
4. Adherence to format.

A third review by the Working Group verifies that the benchmark specification and the conclusions are adequately supported.

The work of the ICSBEP is documented as an International Handbook of Evaluated Criticality Safety Benchmark Experiments. Over 250 scientists from around the world have combined their efforts to produce this handbook, which currently spans over 30,000 pages and contains benchmark specifications for over 3350 critical configurations. The handbook is intended for use by criticality safety analysts to perform necessary validations of their calculational techniques and is expected to be a valuable tool for decades to come. The handbook is currently in use in 58 different countries.