

NEA Data Bank

Progress Report 2012-2013

NRDC Meeting, Vienna, Austria

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1. General

The Data Bank (DB) of the OECD Nuclear Energy Agency (NEA) provides scientists in member countries with reference materials in the field of nuclear energy applications. The services include the compilation, verification, and distribution of nuclear data, chemical thermodynamic data, integral benchmark experiments, as well as computer programs and associated application libraries. The Data Bank also develops and maintains databases and related administration/retrieval tools, including the JANIS display software. The Data Bank staffs work in close co-operation with the secretaries of the Nuclear Science (NS) Working Parties (WP), especially in the field of computer codes and libraries benchmarking, integral experiments, nuclear data evaluation, and knowledge preservation. These activities are in essence international and organised in close collaboration with other main national and international organisations.

More information on the NEA Data Bank can be found at www.oecd-nea.org/databank.

2. Organisation

The Data Bank's current membership consists of 24 countries in Europe, North America (Mexico) and the Asia-Pacific region. The Russian Federation joined the NEA and its Data Bank on January 1st, 2013.

The Data Bank is governed by the Data Bank Executive Group of the Nuclear Science Committee (NSC), one of the seven standing technical committees working under the supervision of the Steering Committee for Nuclear Energy, which is the governing body of the NEA.

The Data Bank is composed of 8 administrators and 8 support staffs working on both Data Bank and Nuclear Science related activities (plus additional NEA related activities when relevant). One full-time equivalent man-year is allocated to NRDC activities.

K. Matsumoto	DB Head
J. Gulliford	DB Deputy-Head and NS Head

DB Computer Programme Services (inc. integral experiments): J.-M. Galan, C. Lebunetelle, C. Rocher-Thomas, M. Laurent

DB Nuclear Data Services and JEFF Project: E. Dupont, F. Michel-Sendis

DB Thermochemical Database (TDB) Project: J. Perrone, M.-E. Ragoussi

DB Secretariat: D. Michel-Holmes

NS WP on Scientific Issues of Reactor Systems (WPRS) and associated databases: A. Yamaji

NS WP on Nuclear Fuel Cycle (WPFC): S. Cornet

NS WP on Nuclear Criticality Safety (WPNCS) and associated databases: F. Michel-Sendis

NS WP on International Evaluation Cooperation (WPEC): E. Dupont

NEA DB IT-system: A. Ventura, E. Lacroix, N. Soppera, M. Bossant

3. Nuclear Data Services

The Data Bank maintains large databases containing evaluated, experimental and bibliographic data and makes them available online to scientists and engineers in member countries. Other important nuclear data related activities of the Data Bank are the coordination of the Joint Evaluated Fission and Fusion (JEFF) file project and the development of the JANIS software, designed to facilitate the visualisation, comparison, and manipulation of nuclear data.

More information on Nuclear Data Services can be found at www.oecd-nea.org/dbdata.

3.1 Experimental data compilation

The Data Bank compilation of measured neutron and charged particle induced reaction data continues with the help of external consultants. Continuous efforts are made to check the content of the database and retransmit corrected entries. The large number of new entries for charged particle data is the consequence of a specific NRDC effort to improve the coverage of proton and deuteron-induced reaction data.

Neutron induced data (Area 2)

In 2012, 22 new and 101 updated entries were compiled by the Data Bank for area 2. In the first months of 2013, the corresponding figures are 15 new and 206 revised entries.

Charged particle induced data (Area O)

In 2012, the Data Bank compiled 111 new entries and updated 137 others for area O. The corresponding figures for the first months of 2013 are 69 new and 1 updated entries.

The following table shows more detailed statistics of recent NEA transmissions.

Year	Trans	Entry	
		New	Updated
2010	Total	127	269
2011	Total	119	140
2012	2229	3	7
	2230	12	11
	2231	6	12
	2232	1	71
	O047	36	7
	O048	0	121
	O049	75	9
	Total	133	238
2013 (1 st quarter)	2233	15	10
	2234 ¹	0	196
	O050 ¹	69	1
	Total	84	207

¹ Status = PRELIM

3.2 The JEFF project

The Joint Evaluated Fission and Fusion File (JEFF) project is a collaboration between NEA Data Bank member countries to produce common sets of evaluated nuclear data, mainly for fission and fusion applications. The library contains a number of data types, including neutron and proton interaction data, radioactive decay data, fission yields and thermal scattering law data.

The JEFF Report 23 was published early 2013. It covers the integral validation of the JEFF-3.1 library for thermal reactors, fuel cycle, storage and reprocessing, fusion and other applications. This report is available at www.oecd-nea.org/dbdata/nds_jefreports.

The latest version of the JEFF library, JEFF-3.1.2, was released in February 2012. This release includes new hafnium evaluations and more complete photon-production data for fission products in the General Purpose file. JEFF-3.1.2 data are available on the NEA website at www.oecd-nea.org/dbdata/jeff.

In 2013 the Data Bank continued the preparation of the next major update of the JEFF nuclear data library with the distribution of a revised test library. JEFF-3.2 is expected for an official release at the end of 2013.

3.3 The JANIS software

The JANIS software allows the user to display and compare evaluated and experimental nuclear data from large international databases (e.g. JEFF, ENDF/B, JENDL, EAF, CENDL, BROND for evaluated data, and EXFOR for experimental data). In June 2012, JANIS 3.4 was released online and on DVD. Using the latest version of the JANIS software and database, the Data Bank also made available compilations of cross-section curves from a number of libraries, nuclear reactions and associated reaction products. These compilations, known as JANIS Books, provide a global overview of the quality and completeness of experimental and evaluated nuclear data. The interactive JANIS Books allow the user to zoom in the plots, access complementary information and plot additional data. An new version of JANIS will be released shortly with an updated web extension (JANIS Web), the possibility to plot, tabulate and compare user's data in simple ASCII format, as well as the possibility to save and restore JANIS state (plot, table, settings, etc.). More information on JANIS products can be found at www.oecd-nea.org/janis.

The Data Bank also develops in-house codes to help check the correctness of EXFOR data. These codes are based on the JANIS software and use EXFOR dictionaries. They are used at the Data Bank to peer review EXFOR files submitted to NRDC as well as the EXFOR Master file shared among Data Centres. The JANIS Trans checker (www.oecd-nea.org/janis/trans-checker) periodically checks if new preliminary EXFOR TRANS files are uploaded to the NDS folder and provides compilers with an on-line log file containing error(s) and warning(s) to allow correction of format errors at an early stage. An updated version of the JANIS Trans checker was recently made available for insertion into the EXFOR-Editor developed at VNIIEF. In addition, a new Web version of the Trans Checker is now available for interactive online use at www.oecd-nea.org/janisweb/trans-checker.

In line with recommendations from WPEC Subgroup 30, new methods have been developed and implemented in Data Bank tools to cross-check experimental data (EXFOR) and evaluated data (e.g. JEFF) with the objective to further improve the quality of both databases (cf. ND2013 contribution #PR 20 on "Cross-checking of Large Evaluated and Experimental Databases").

3.4 Web services to nuclear data users

The Data Bank nuclear data online services were upgraded to take advantage of the new web interface of the JANIS software. The new web retrieval pages allow browsing and searching evaluated, experimental and bibliographic JANIS databases in a more user-friendly environment. The search results can now be

displayed and compared using the new JANIS Web interface. The statistics for online services are given in the following table and graph. Find out more about NEA DB databases at www.oecd-nea.org/dbdata/databases.htm.

Number of visits to the NEA web site for nuclear data related activities

	Number of Visits		
	2012	2011	2010
Nuclear Science	124489	124 419	113 238
Nuclear Data	46954	47 724	47 951
Janis (web+soft)	95621	84 873	70 542
Searches			
EVA (Evaluated Files)	15936	11 430	13 018
EXFOR	2729	2 429	2 982
CINDA	1488	1 221	1 709
High Priority Request List	2312	1 679	1 551

Number of requests in the JANIS database

