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IAEA Nuclear Data Section Progress report for 2018/2019

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Staff changes

The authorized staff level of the Nuclear Data Section (NDS) consists of a total of 16.25 professionals and support staff. The latest staff changes include:

- Shin Okumura (Associated Nuclear Data Physicist) joined on 3 September 2019.
- Andras Vasaros (IT System Engineer) resigned on 22 September 2019.
- Ludmila Marian (Scientific Data Manager) has joined on April 1 2019.

Svetlana Selyankina was contracted from 15 October 2018 to 14 January 2019 as a consultant, and performed EXFOR compilation, retroactive literature scanning, and some other tasks.

EXFOR transmissions

During the reporting period, the following final tapes have been transmitted:

- 6 neutron final TRANS tapes (3183 – 3187, V036) containing 29 new entries and 59 revised entries;
- 10 CPND final TRANS tapes (B027-B028, D116 - D119, S024 - S025) containing 114 new entries and 99 revised entries;
- 3 PhND final TRANS tapes (G041 - G042 containing 12 new entries and 3 revised entries.

Number of new entries transmitted by final tapes since the NRDC 2018 meeting
(TZ: Timur Zholdybayev, MO: Myagmarjav Odsuren)

	NDS	ATOMKI	CNDC	KNDC	NDPCI	UkrNDC	TZ	MO	Sum
Neutron	4	-	19	1	3	2	-	-	29
CPND	21	16	10	2	18	33	4	10	114
PhND	2	-	0	5	0	5	-	-	12
Sum	27	16	29	8	21	40	4	10	133

EXFOR quality control

During the reporting period, 76 preliminary tapes (PRELIM) were uploaded to the NDS open area for checking by NDS and other centres. Both ZCHEX and JANIS TRANS Checker are regularly used. The finalized tapes are also checked against comments from centres before uploading to the NDS open area. NDS also registers comments on EXFOR entries from users and centres to the **EXFOR Feedback List** (https://www-nds.iaea.org/nrdc/error/) and monitors the correction process by checking each preliminary tape against the feedback list.

EXFOR coverage control

Under the EXFOR compilation control system, 40 journal titles are regularly scanned and registered to the EXFOR Compilation Control System (X4CoCoS), and they are listed in the **Article Allocation List** (https://www-nds.iaea.org/nrdc/alloc/). The newly published articles are also listed on https://www-nds.iaea.org/exfor-master/x4compil/.

Completeness checking of EXFOR for articles published in Soviet Physics JETP was performed (Memo CP-D/971).

Retroactive scanning of regularly scanned journals was performed to fill the gaps in the scanning record on X4CoCoS (CP-D/972).

Completeness checking of EXFOR for fission product yields is in progress by comparing EXFOR/CINDA with the citation lists of the evaluation reports prepared by Mills (UKFY) and England & Rider (ENDF).

ENDF (Evaluated Nuclear Data Files)

- new and updated evaluated libraries in the ENDF database:
- JENDL/AD-2017, JENDL Activation Cross Section File for Nuclear Decommissioning 2017
- TENDL-2017: TALYS-based Evaluated Nuclear Data Library
- MINKS-ACT, Minsk Actinides Library (Maslov et al.), 2011
- IAEA/PD-1999, IAEA Photonuclear Data Library, 1999

Software news:

- online reconstruction and plot of elemental reaction data using natural isotopic abundancy; calculations of production cross sections (via ENDVER package)
- plotting MF8: MT454, MT459 fission product yield: FPY(Z,A)

EXFOR

- added to C5: relative uncertainties and monitor data
- added output of columns with miscellaneous data to “std-output”
- revised system of automatic cross sections renormalization; added 8 files to archive of monitors
- added advanced plotting of fission product yield (via C4 and C5)
- “native” EXFOR plotting with arbitrary selection and grouping columns was extended to plot f(x,y)
- online X4toR33 was extended with systematic uncertainties
- display information for IBANDL community: number of angles in EXFOR dataset and number of datasets in IBANDL

- PDF database (now in total: 205,509 PDF files)
  - EXFOR-PDF database: 54 updates (now in total: 23,508 PDF files: 74% of 32,015)
  - NSR-PDF database: 35 updates (now in total: 174,500 PDF files: 76% of 231,115)
- Web-ZVView:
  - added extended “marker” showing nearest values of functions of the plot
  - added relative uncertainties to output of plotted data

- Development of the Web-Tools for EXFOR compilers, ENDF and ENSDF evaluators:
- MyExfor: updated by new version of ZCHEX and new Dictionaries
- MyEnsdf: added/upgraded codes: JAVA_NDS (ENSDF publication program), FMTCHK, RULER, ALPHAD
- The Web EXFOR-CINDA-ENDF database retrieval system is functioning at NNDC (USA), BARC (India), CNDC (China) and “Atomstandart” (Russia).

Coordinated Research Projects (CRP)

- Testing and improving the IAEA International Dosimetry Library for Fission and Fusion IRDFF (2013-2018): *CRP finished.*
- Primary radiation damage cross sections (2013-2018): *CRP finished.*
- Reference database for beta-delayed neutron emission (2013-2018): *CRP finished.*
- Updating photonuclear data library and generating a reference database for photon strength functions (2016-2019): *Ongoing.*
- Recommended Input Parameter Library (RIPL) for fission cross section calculations (2017-2021): *Ongoing.*

Data Development Projects (DDP)

- Maintain the international neutron cross section standards file and evaluation techniques: *IAEA STD 2017 released and documented in NDS publication; project will keep going.*
- INDEN collaboration (International Nuclear Data Evaluation Network): *Ongoing.*
- Development of evaluation methodology and nuclear reaction modelling systems: *Ongoing (EMPIRE, TALYS).*
- Evaluation of charged-particle-induced reaction data in the resolved-resonance region for applications: *Ongoing*.
- Improvement of analysis codes for nuclear structure and decay data evaluations: *Ongoing*.
- Stopping power database: *Ongoing*.
- Different data processing routes (NJOY, PREPRO and other methods): *Ongoing*.
- Total absorption gamma-ray spectroscopy (TAGS): Decay data for decay heat calculations and other applications: *Ongoing*.
- Nuclear data for safeguards: *Ongoing*.
- Nuclear Data Libraries for Advanced Systems: Fusion Devices (FENDL-3): *Ongoing*.
- Thermal scattering law data: *Ongoing*.

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Thank you!