

NNDC Report to USNDP Meeting 2004

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Brookhaven National Laboratory, Upton, NY 11973**

**Annual Meeting of the US Nuclear Data Program
BNL, November 3-5, 2004**

NNDC Operations

■ Personnel

- Boris Pritychenko (PhD nuclear structure, MSU) replaced Yako Sanborn, since Oct 2004 → Linux system backup, web master, applications development
- Gail Brown (secretary) replaced Sue Catalado, since Oct 2004
- Vicki McLane retires in Dec 2004, new hire **Dimitri Rochman** (PhD nuclear reactions, postdoc LANL), starting Nov 8, 2004 → CSISRS compilation, ENDF evaluation, partly experiments at LANSCE
- Current NNDC staff level: **12.25 FTE** = 8.0 PhD + 1.75 Professional + 2.5 Support

■ Coordination and reporting

- CSEWG-USNDP Annual Meetings 2003 held (Nov 2003)
- Minutes of Meetings 2003 issued, presentations and reports on Web (Dec 2003)
- USNDP Annual Report 2003 issued (Jan 2003)
- USNDP Workplan 2005 issued (Feb 2004)
- **USNDP Budget Briefing** held at DOE (Feb 2004)
- Draft of Annual Report 2004 prepared (Oct 2004)
- Work started on Workplan 2006

Databases and Services

■ Databases

- NSR, XUNDL, ENSDF, NuDat – maintained and distributed regularly (1m – 6m)
- CINDA, CSISRS, ENDF – maintained and distributed regularly (1m – 1y)
- Includes processing and checking (see Structure Data, Reaction Data)

■ Database migration

- Complex project: relational database software **Sybase**, operating system **Linux**, new **DELL** servers, entirely new **web interface**
- Project successfully completed in FY 2004 (CINDA completion in Nov 2004)
- Alpha server and old web service disconnected on Sep 30, 2004

■ New NNDC web service

- Entirely new web service launched on **April 19, 2004**
- Data retrievals increased by **46% in FY04** (17% increase in FY03)
- **Presentation by Boris Pritychenko** (Thu pm, Data Dissemination)

Nuclear Structure Data

■ ENSDF evaluations

- Completed and submitted: A = 48 (13 nuclides, Burrows), 70 (11, Tuli) and 88 (13, Sonzogni & Mukherjee), ^{135}Tb , ^{144}Er , ^{145}Tm (all Sonzogni) → total 40 nuclides
- Published: A = 60 (Tuli), 134 (Sonzogni)
- Reviewed 7 mass chains: A = 158 (Sonzogni), 197 (Burrows), 205, 211, 212, 240, 247 (all Tuli)

■ ENSDF processing

- Processed 20 mass-chains, 8 nuclides and 9 datasets
- Processing includes file checking, corrections and manuscript preparations

■ Nuclear Data Sheets

- Published 11 ENSDF issues + 1 NSR issue
- Proposed to drop NSR issue and publish non-ENSDF evaluations instead

Nuclear Structure Data ctn'd

■ Nuclear Wallet Cards

- Nuclear Wallet Cards for Radioactive Nuclides issued in April 2004
- Distributed ~ 2,000 copies to 50 states, Departments of Emergency Preparedness
- **Presentation by Jag Tuli** (Thu am, Homeland Security Session)

■ ENSDF analysis and utility codes

- All codes converted to Fortran-95, currently being tested

■ Nuclear Science References

- 75 journals scanned, small input from non-NNDC compilers
- Compiled 4,899 new references, including 3,456 with keywords

Nuclear Reaction Data

■ Database codes

- Updates of CINDA and CSISRS codes provided
 - Future responsibility transferred to IAEA Nuclear Data Section (Otto Schwerer)

■ CSISRS compilation and ENDF management

- CSISRS data compiled from 159 publications
 - 122 charged particle papers, 37 neutron papers → 815 reactions
- ENDF/B-VII: webpage maintenance, library assembly, phase 1 testing
 - **Presentation by Mike Herman** (Tue am, CSEWG Meeting)
 - **Presentation by Charlie Dunford** (Tue am, CSEWG Meeting)

■ Model code development

- EMPIRE-2.19 developed
 - **Presentation by Mike Herman** (Thu am, Reaction Modeling Session)
 - Many new features, release expected in a couple of months

Nuclear Reaction Data ctn'd

■ Evaluation work

- Photon production from Ge+n
 - **Presentation by Mike Herman** (Thu am, Homeland Security Session)
 - $^{70,72,73,74,76}\text{Ge}$, from thermal energy to 20 MeV
 - Always evaluated 6 reaction channels (total, elastic, capture, nn', n2n, np)

■ Review of fission products

- International project (WPEC SG21) completed
- Recommendations made for best neutron cs evals for 218 materials
 - **Presentation by Pavel Oblozinsky** (We am, CSEWG Meeting)

■ Atlas of Neutron Resonances

- Book under preparation (Academic Press 2005, Said Mughabghab)
- Resonance parameters & thermal cross-section, nuclides $Z = 1-100$

FY04 Metrics

■ NNDC metrics for FY04 (tentative)

- Compilations 5,714 (4,899 NSR + 815 CSISRS)
- Evaluations 70 (40 nuclides ENSDF + 30 reactions ENDF)
- Dissemination 478k (increase by 46% compared to FY03)
- Reports 6
- Papers 5
- Invited Talks 9

Notes:

1. CINDA compilation dropped, CINDA is no more primary database
2. ND2004 posters not counted, will be included under Reports once Proceedings is published in 2005
3. Trieste Workshops counted as 2 invited talks for each major lecturer