WPEC/SG-39 Meeting, 10-11 May 2016

Revision of Actions

O. Cabellos
OECD/NEA Data Bank

28th WPEC meeting, 9-13 May 2016,
OECD Headquarters, Conference Centre, Paris, France.

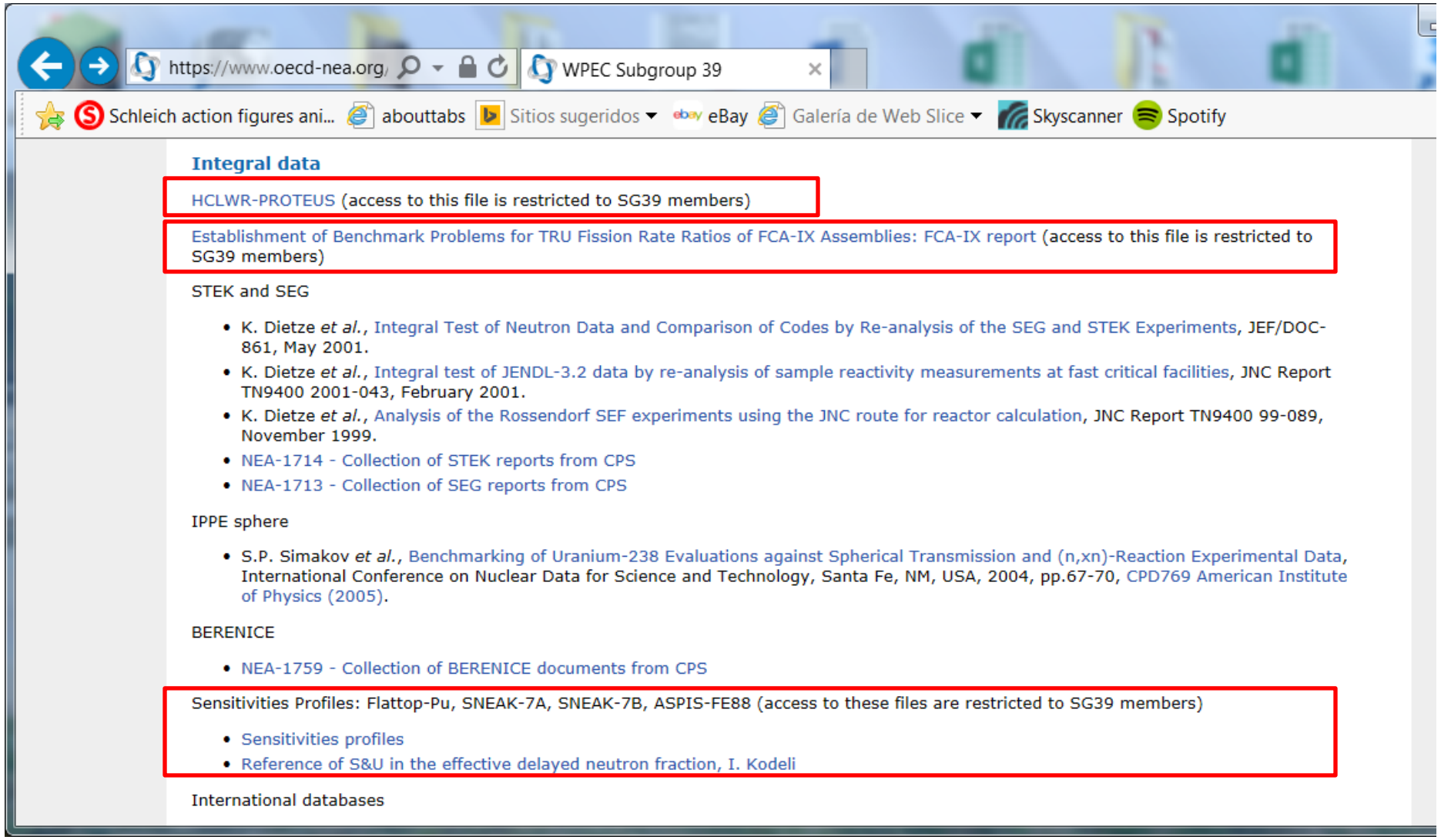
SG-39 Meeting, 2016: List of ACTIONS- 2015

Actions	Deliverables, reports, databases	
1. Action:	Finalize Deliverable on "Methodologies and Covariance Data": • MS (INL) to write introduction by 31/12/2015 • Secretariat: to edit and publish by next meeting the report based on the last versions provided by K. Yokohama and M. Ishikawa (JAEA) and endorsed during the meeting	✓
	DOCS: ○ "SG39-report_Comments on Covariance Data_Rev.2 151028.doc" ○ "SG39-report_Methodology-151127_with_revs_from_150430.docx" ○ "SG39 Deliverables_Introductions.docx" ○ **"Guidance and template for NEA Reports"** PUBLICATION TITLE, NEA No. XXXX, © OECD 2016 The **chapter title** should be in font "Caecilia LT Std Roman", point size 12, …	

SG-39 Meeting, 2016: List of ACTIONS- 2015

Actions	Deliverables, reports, databases	
2. Action:	I. Kodeli (IJS) to send to Secretariat by 1/1/2016 (Please confirm) sensitivity coefficients and infinite dilution cross sections in SG33 format together with the C/Es of: • Beff experiments in Flattop and SNEAK 7A and 7B • Propagation experiments in ASPIS-88 (which detector responses? Please specify)	✓
3. Action	M. Hursin (PSI) to provide by next meeting new sensitivity for PROTEUS experiments (spectral indices, please specify which one) and C/E values for all experiments provided to SG39	✓
4. Action	K.Yokoyama to provide status of FCA-IX experiments of central fission rate ratios for minor actinides measurements to be used in SG39.	✓

SG-39 Meeting, 2016: List of ACTIONS- 2015



Integral data

HCLWR-PROTEUS (access to this file is restricted to SG39 members)

Establishment of Benchmark Problems for TRU Fission Rate Ratios of FCA-IX Assemblies: FCA-IX report (access to this file is restricted to SG39 members)

STEK and SEG

- K. Dietze *et al.*, Integral Test of Neutron Data and Comparison of Codes by Re-analysis of the SEG and STEK Experiments, JEF/DOC-861, May 2001.
- K. Dietze *et al.*, Integral test of JENDL-3.2 data by re-analysis of sample reactivity measurements at fast critical facilities, JNC Report TN9400 2001-043, February 2001.
- K. Dietze *et al.*, Analysis of the Rossendorf SEF experiments using the JNC route for reactor calculation, JNC Report TN9400 99-089, November 1999.
- NEA-1714 - Collection of STEK reports from CPS
- NEA-1713 - Collection of SEG reports from CPS

IPPE sphere

- S.P. Simakov *et al.*, Benchmarking of Uranium-238 Evaluations against Spherical Transmission and (n,xn)-Reaction Experimental Data, International Conference on Nuclear Data for Science and Technology, Santa Fe, NM, USA, 2004, pp.67-70, CPD769 American Institute of Physics (2005).

BERENICE

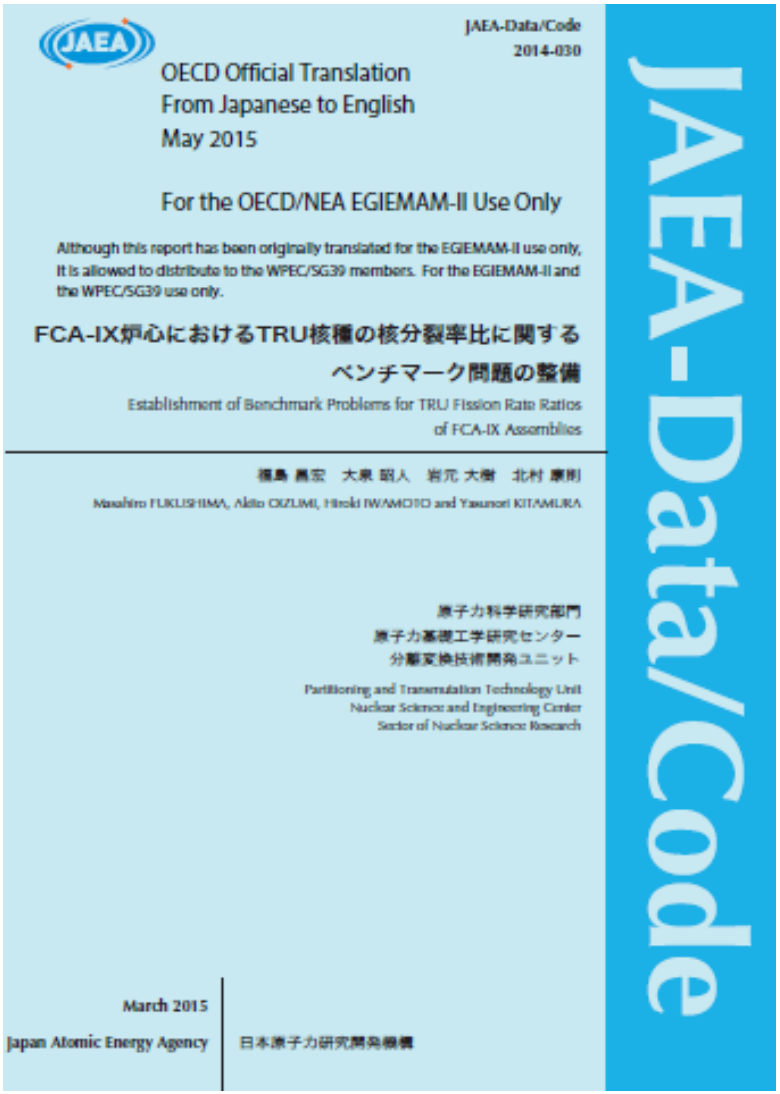
- NEA-1759 - Collection of BERENICE documents from CPS

Sensitivities Profiles: Flattop-Pu, SNEAK-7A, SNEAK-7B, ASPIS-FE88 (access to these files are restricted to SG39 members)

- Sensitivities profiles
- Reference of S&U in the effective delayed neutron fraction, I. Kodeli

International databases

SG-39 Meeting, 2016: List of ACTIONS- 2015


JAEA-Data/Code 2014-030

OECD Official Translation
From Japanese to English
May 2015

For the OECD/NEA EGIEMAM-II Use Only

Although this report has been originally translated for the EGIEMAM-II use only, It is allowed to distribute to the WPEC/SG39 members. For the EGIEMAM-II and the WPEC/SG39 use only.

FCA-IX炉心におけるTRU核種の核分裂率比に関するベンチマーク問題の整備

Establishment of Benchmark Problems for TRU Fission Rate Ratios of FCA-IX Assemblies

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March 2015
Japan Atomic Energy Agency　日本原子力研究開発機構

JAEA-Data/Code

Summary of FCA-IX cores benchmark

Kazufumi TSUJIMOTO
JAEA

6-7/April/2016, OECD/NEA/NSC 4th Meeting of EGIEMAM-II

WPEC/SG-41, Wednesday, May 11, 2016

14:40 – 15:20	Feedback from EGIEMAM-II (Expert Group on Improvement of Integral Experiments Data for Minor Actinide Management): “Summary of FCA-IX cores benchmark” by K. Tusjimoto (JAEA)	O. Cabellos

SG-39 Meeting, 2016: List of ACTIONS- 2015

Actions	Deliverables, reports, databases	
5. Action:	E. Ivanov (IRSN) to finalize report on MC sensitivity coefficients by 1/3/2016. Update some bibliographic references in the report.	✓
6. Action	S.Pelloni (PSI) to complete report on PIA method utilization (adjusted results for more reactions etc.) and possibly to contribute to propagation experiments analysis and sensitivity coefficient data bases implementation.	✓

SG-39 Meeting, 2016: List of ACTIONS- 2015

Actions	Deliverables, reports, databases	
7. Action	O. Cabellos to provide feedbacks from CIELO	✓

	Joint Session SG39+SG40 Wednesday, May 10, 2016. Room CC20	
13:30 – 13:50	"Status of SG39 activity and perspectives of potential interest for CIELO"	Massimo SALVATORES
13:50 – 14:10	"Overview of Cielo progress as it pertains to collaborations with SG39"	Mark CHADWICK
14:10 – 14:25	"Extended adjustment with a wider integral experiment data base"	Guiseppe PALMIOTTI
14:25 – 14:40	"Continuous energy adjustments: a potential breakthrough"	Manuele AUFIERO
14:40 – 14:55	"Adjustment of U, Pu and Fe cross-sections based on k-eff, ß-eff and shielding benchmark experiments"	Lucijan PLEVNIK
14:55 – 15:15	Coffee Break	
15:15 – 16:15	"Summarizing Cielo data testing"	Andrej TRKOV Skip KAHLER
16:15 – 17:00	Discussion	All
17:00 – 18:00	Discussion	All

SG-39 Meeting, 2016: List of ACTIONS- 2015

Actions	Ongoing activities and expected results/discussions At the next meeting the following should be discussed:	
8. Action	Further progress on optimal experiment utilization (avoiding compensations etc.) and new approaches: G.Palmiotti (INL), E.Ivanov (IRSN), S.Pelloni (PSI), K.Yokoyama (JAEA), M. Salvatores (INL), C. de Saint Jean (CEA) (?), others (?)	✓
9. Action	V. Sobes (ORNL) to report progress at ORNL on target accuracies, continuous energy adjustments etc.	✓
10. Action	M. Aufiero (Un. Berkeley) to be asked to report on continuous energy adjustment methodology	✓
11. Action	A. Hummel presentation on TRIPOLI analysis of SEG experiments and associated uncertainty/sensitivity analysis	✓

SG-39 Meeting, 2016: List of ACTIONS- 2015

WPEC/SG-39 Tuesday, May 10, 2016. Room CC 24		
12:40 – 14:00	Lunch Break	
14:00 – 14:45	"Welcome and actions review"	Giuseppe PALMIOTTI Massimo SALVATORES Oscar CABELLOS
	Methods	
14:45 – 15:15	"XGPT: uncertainty propagation and data assimilation from continuous energy covariance matrix and resonance parameters covariances"	Manuele AUFIERO
15:15 – 15:45	"Optimal experiment utilization (REWINDing PIA)"	G. Palmiotti (TBC)
15:45 – 16:00	Coffee Break	
	Experiment analysis, sensitivity calculations and benchmarks (1)	
16:00 – 16:30	"Tripoli-4 analysis of SEG experiments"	Andrew HUMMEL
16:30 – 17:00	"Tripoli-4 analysis of BERENICE experiments"	Pierre LECONTE
17:00 – 17:30	"Preparation of sensitivities of k-eff, beta-eff and shielding benchmarks for adjustment exercise"	Ivo KODELI
17:30 – 18:00	"S&U due to Nuclear data in TWR", Video-conference	Nick TOURAN

SG-39 Meeting, 2016: List of ACTIONS- 2015

WPEC/SG-39 Wednesday, May 11, 2016. Room CC 24		
	Experiment analysis, sensitivity calculations and benchmarks (2)	
9:00 – 9:30	"SA and UQ work for the VENUS-F facility using the SANDY code"	Luca FIORITO
9:30 – 10:00	"KIT and INL Results of the NEA/EGIEMAM-II Calculation Benchmark on Low Void SFR Burner Core"	Fabrizio GABRIELLI
10:00 – 10:30	"KIT and INL Results of the NEA/EGIEMAM-II Benchmark problems for TRU's central fission rate ratios of FCA-IX assemblies"	Fabrizio GABRIELLI
10:30 – 10:45	Coffee Break	
	Adjustments	
10:45 – 11:15	"Adjustment of U, Pu and Fe cross-sections based on k-eff, ß-eff and shielding benchmark experiments"	Lucijan PLEVNIK
11:15 – 11:45	"Extended adjustment using a wider integral data base"	Guiseppe PALMIOTTI
	Future actions, deliverables	
11:45 – 12:00	Future actions, deliverables	All

SG-39 Meeting, 2016: List of ACTIONS- 2015

Actions	Ongoing activities and expected results/discussions At the next meeting the following should be discussed:	
12. Action	E. Ivanov, generation of 33 and 44 groups pseudo-covariance matrices for major CIELO nuclides to support the methodological studies of adjustment algorithms : "chi-squared analysis includes ND covariance matrix and it is sensitive in case of anti-correlations"	✓

As correlations data are at present very poorly known, we have generated several parametric correlation matrices associated to a simple correlation model. The rational followed in the generation of these matrices is as follows. Let us assume that the energy range are divided in G groups and let $[E_1, E_2, \ldots, E_G]$ be the energy mean values or centre points of each group. The correlation among the groups with energies E_i and E_j is defined by the equation

$$c_{ij} = \exp\left[-\theta\left|\log E_i - \log E_j\right|\right] \qquad (1)$$

where θ is a positive parameter between 0 and ∞, that can be considered as a energy-correlation range parameter. When θ is large, the correlations are low and *vice versa*, when θ is small, the correlations are high. In the extreme cases, $\theta = \infty$, all the coefficients c_{ij} are zero (no correlation) and when $\theta = 0$, all the coefficients are 1 (full correlation). For a given value of θ, the correlation c_{ij} decreases as the groups are more distant. For the fixed ANL variance/diagonal data set, the effect of the covariance structure in the actinide inventory will be explored using in addition to the ANL PE correlation matrix, a series of these correlation parametric matrices. These matrices are produced in the ANL 15-group structure.

Ref: "Application of Monte Carlo techniques for propagation of cross section uncertainties to actinide inventory in ADS transmuters: comparison with sensitivity analysis". J. Sanz, J. Juan, O. Cabellos, N. Garcia, F. Alvarez, and E. Gonzalez. ND2007

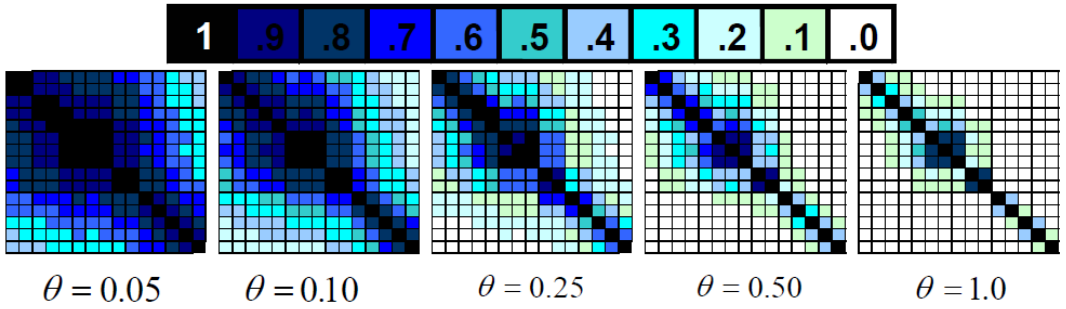

Fig. 2. Parametric correlation matrices in 15 groups generated from the proposed correlation model based on parameter θ.

SG-39 Meeting, 2016: List of ACTIONS- 2015

Actions	Ongoing activities and expected results/discussions As far as data adjustments and feedback to CIELO, the following results are expected:	
13. Action	SG33 benchmark exercise expanded to the new experiments provided in the frame of SG39 (PROTEUS, ASPIS, Beff) and any other experiment as suggested by H. Wu (CAEA) stress test. Use should be made also of suggested methods for optimal use of experiments.	✓
14. Action	Extended adjustment using a wider integral data base and new proposed approaches for optimal use of experiments, with the objective to provide feedback to CIELO.	✓
As for contributions to the last two points, commitment has been expressed by INL. It has been strongly suggested that JAEA and CEA provide their contributions to make trend assessment more robust		