NUCLEAR ENERGY AGENCY
NUCLEAR SCIENCE COMMITTEE

Working Party on International Nuclear Data Evaluation Co-operation (WPEC)

WPEC Subgroup 45 (VaNDaL) Meeting

SUMMARY RECORD

22 May 2019

China National Convention Center, Beijing, China

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Organisation for Economic Co-operation and Development
Nuclear Energy Agency

WPEC Subgroup 45 (VaNDaL) Meeting
China National Convention Center, Beijing, China

22 May 2019

Contents

1 Welcome and practicalities

The chair, **Wim Haeck**, opened the meeting. They welcomed the participants (see Appendix A) and the NEA Secretariat, **Michael Fleming**.

2 Adoption of the agenda

The proposed agenda (see Appendix B) was adopted at the opening of the session.

3 Presentations and discussion

3.1 The NEA GitLab: a tool for international collaboration, M. Fleming

Michael Fleming gave a short overview of the NEA GitLab and its use for a variety of NEA Nuclear Science and Databank activities. Users were shown the SG45/VaNDaL space and the area provided for individual contributions to share with other members of the subgroup. This space is and will likely remain private.

All participants were encouraged to share any issues that they may find or to request assistance from the Secretariat or other knowledgeable participants for help in using the system.

3.2 Update on the cross validation exercise performed by IRSN, LLNL and LANL, C. Percher

Catherine Percher presented an inter-comparison study of benchmark results using data from LLNL, ORNL, LANL and IRSN. Different codes and libraries from the most recent JEFF and ENDF/B evaluations were considered. It was noted that although many participants in this study had many hundreds of cases, the common cases were limited to a few dozen. The issue of revision history was raised again and it was agreed that this should not be a factor in the storing of data other than users should be aware of the revisions that have occurred and consistently use the most recent revisions. A summary of the revision history is available in the ICSBEP handbook and in the DICE database. An extract of this will be provided by the NEA. Various differences were identified in this cross-comparison, of which several were identified as due to code or library differences, but some may attributable to inputs such as geometry or material specification.

3.3 Proposing a JSON structure for calculation results, W. Haeck

Wim Haeck discussed several points on the difficulty of sharing data and proposed to define a common format in JSON that may include the standard outputs relevant for most benchmarks (e.g. k_{eff}) but may be extended to accomodate more complex data. The use of a rigorously defined JSON (or similar) schema will allow straightforward parsing with modern programming/scripting languages that have many standard and powerful data analysis libraries.

A proposed prototype schema was shown with different data types and units defined and example python scripts were shown. These are not unique and many different scripts could

be created with little effort. Different data were shown, including sensitivities. It was commented that this should avoid duplication of existing databases such as the data within the DICE database, although close collaboration with the DICE developers would be advantageous to assist the project and provide more direct feedback for ICSBEP/DICE users.

Several participants expressed concern that this format must be defined as a collaborative project and that some tools should be shared to perform basic manipulation of well-known code outputs and serialisation into the defined format. Wim agreed to provide a prototype schema to initiate this activity, as well as scripts to parse files.

3.4   Discussion

Various participants updated the group on their actions to share inputs for benchmarks, including:

- P. Romojaro (CIEMAT) intends to provide inputs for KENO VI for SCALE and progress is being made

- C. Percher (LLNL) intends to provide around 2000 benchmark inputs for COG, which has a version available through the NEA Databank CPS and RSICC

- A. Trkov (IAEA) has already begun sharing inputs from his suite based on multiple input decks within the NEA GitLab

- W. Haeck (LANL) indicated that LANL are making progress to share various inputs

A space on the NEA GitLab

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https://git.oecd-nea.org/science/wpec/sg45/contrib/
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has already been setup and contributions are currently being made from different participants. All members are encouraged to contact Michael for assistance in setting up spaces to share their content with the group.

Various participants do not expect to share inputs, in part due to the fact that some codes are not distributed through the CPS or RSICC and do not have plans to do so in the near future. However, outputs and meta-data for these models and simulations are of considerable interest for all participants as part of cross-comparison activities.

The proposal that W. Haeck presented was recognised as an ideal solution for this and the collaborative development of a schema for sharing output and meta-data was encouraged. The W. Haeck agreed to share some of the content within the NEA GitLab SG45 space and in the next meeting the proposal will be discussed amongst the general membership of the subgroup.

The naming convention for benchmarks was raised again and M. Fleming agreed to liaise with the NEA Secretariat I. Hill and ICSBEP TRG chair J. Bess (also in attendance at the meeting) to provide the group with an authoritative list of all cases with notes on the revision history and cross-references where evaluations included cases within different classes (e.g. PST40). These will take the DICE/ICSBEP database as source and can be easily verified by any participant from a member country.

The issue of material specifications was raised due to the complexity of the sections 1-3 in ICSBEP and possibility that users may, for convenience, select less detailed specifications. The availability of material details within a JSON file or within code inputs was agreed to be very

important and M-A. Descalle (LLNL) agreed that even where inputs may not be shared, the material specifications used may be included in outputs or other meta-data files.

It was recognised by the participants that the use of more robust and sophisticated computer technology (e.g. JSON and extensible file structures vs spreadsheets) was a great step forward but that some participants may find such technologies a barrier to participation. Experts within the subgroup and the NEA Secretariat agreed to assist participants to ensure that everyone, regardless of different expertise, will be able to contribute to the subgroup activities.

4   Any other business

None

5   Date and place of the next meeting

The next WPEC Subgroup 45 (VaNDaL) Meeting will take place during **the week of 24-28 June 2019** at the **OECD-NEA, Boulogne-Billancourt 92100, France**.

6   Actions

The following actions were agreed upon and will be reviewed at the next WPEC Subgroup 45 (VaNDaL) Meeting:

- **M. Fleming**: Review the official ICSBEP nominclature, cross-references and revisions to provide a nomenclature for the group
- **W. Haeck**: Provide computer resources for material composition translation between isotopic and elemental
- **W. Haeck**: Prototype a json schema and interact via wpec the subgroup via the GitLab to start a collaborative specification project
- **All**: Continue to provide all relevant inputs or summary data through the NEA GitLab

A   Participants

List of participants in the **WPEC Subgroup 45 (VaNDaL) Meeting** held at **China National Convention Center, Beijing, China** on **22 May 2019**, organised by represented country or international organisation.

Given name	Name	Country	
Bret	BECK	United States	
David	BROWN	United States	
Marie-Anne	DESCALLE	United States	
Michael	FLEMING	OECD-NEA	Secretary
Wim	HAECK	United States	Chair
Michal	HERMAN	United States	
Cédric	JOUANNE	France	
Caleb	MATTOON	United States	
Franco	MICHEL-SENDIS	OECD-NEA	
Catherine	PERCHER	United States	
Andrej	TRKOV	IAEA	
Tim	WARE	United Kingdom	
Haicheng	WU	China	

B   Agenda

OECD Nuclear Energy Agency
WPEC Subgroup 45 (VaNDaL) Meeting, 22 May 2019

China National Convention Center, Beijing, China
Meeting Room 305

AGENDA

Start	End	Topic	Participant(s)	Country
16:45	16:55	Welcome	Wim HAECK	USA
16:55	17:10	Comments on progress with input decks	All	
17:10	17:20	Overview of the NEA GitLab and use in WPEC45	Michael FLEMING	OECD-NEA
17:20	17:40	Update on the cross validation exercise performed by IRSN, LLNL and LANL	Catherine PERCHER	USA
17:40	18:00	Proposing a JSON structure for calculation results	Wim HAECK	USA
18:00	18:30	Discussion	All	