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**NUCLEAR ENERGY AGENCY
MANAGEMENT BOARD FOR THE DEVELOPMENT, APPLICATION AND VALIDATION OF
NUCLEAR DATA AND CODES**

Joint Evaluation Fission and Fusion (JEFF) Intermediate Co-ordination Group Meeting

Summary Record

9 November 2022
Virtual Meeting

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Next Co-ordination Group Date

Ms Daniela FOLIGNO distributed a Doodle on 4 November 2022 to identify a suitable date for the next Co-ordination Group meeting. Unfortunately, being a busy period of the year, it was impossible to identify a date. After a discussion with the CG members, 2 December 2022 from 2pm to 4pm was selected.

Acceptance of external participants to the JEFF Meetings

Ms Daniela FOLIGNO explained that she received three requests of attendance to the JEFF Nuclear Data Week from participants representing NEA non-member countries:

- 1) Haicheng WU, Chinese Nuclear Data Center (CHINA)
- 2) Xiaofei WU, China Institute of Atomic Energy (CHINA)
- 3) Olga OGORODNIKOVA, Moscow Engineering Physics Institute (RUSSIA¹)

NEA Guidelines clearly forbid the participation of experts representing Russian institutions. The CG therefore decided to refuse the request from Olga Ogorodnikova.

Ms Daniela FOLIGNO clarified that, for non-member countries, an alternative could be to define the terms and conditions they should respect, as well as to limit the content they are given access to. These participants could be invited as “invited experts” or “observers”. For the time being, there is no clear policy for external participants to the JEFF meetings.

Concerning the Chinese participants, **Mr Arjan PLOMPEN** explained that in the past he used to accept the requests of experts in the field of nuclear data when the participation contributed to the goals of JEFF. He highlighted that recently, material export issues rose concerns about Chinese attendance.

Mr José Ignacio MARQUEZ DAMIAN pointed out that JEFF is a public library, and that if external users have comments, it would be convenient to have them participate in the discussion.

Mr Dimitri ROCHMAN proposed a case-by-case approach. He suggested to investigate the reason for their request and what kind of contribution they could give.

Mr Oscar CABELLOS stressed that Mr Haicheng WU is an active WPEC participant, and he supported his participation.

In conclusion, it was decided that **Mr Arjan PLOMPEN** would send an email to Mr Zhigang GE on behalf of the CG to ask for his opinion about the two Chinese candidates and explain how their participation could contribute to the JEFF effort.

- **Action (Arjan Plompen): send email to Mr Zhigang GE on behalf of the CG to ask for his opinion about the two Chinese candidates (completed: Mr Zhigang GE explained that both are engaged with the Chinese Nuclear Data Center and CENDL; on the basis of this information, Mr Arjan PLOMPEN decided to allow their participation, even if they are not contributing with a presentation).**

Release of the JEFF-4T2 test version

Ms Daniela FOLIGNO explained to the CG members that the release of the test version JEFF-4T2 was planned for 28 October 2022. However, preliminary tests from the community showed that the numerous changes made to T2 did not lead to an improved behaviour of k_{eff} as a function of burnup. This raised

¹ In 2022, following Russian's invasion of Ukraine, Russia's membership in NEA was suspended.

questions whether or not it made sense to release T2 and initiate testing. It was finally agreed to issue a warning to the community that calculating k_{eff} versus burnup will only test the new U-235 thermal FY library. **Mr Arjan PLOMPEN** further requested to ensure that the new H in H₂O TSL was used in the testing of the burnup behaviour.

Error messages from verification codes

Mr Dimitri ROCHMAN mentioned that many errors and warnings arose from processing the Big 3 files (U-235, U-238, Pu-239). He recalled that errors are there for a reason and that releasing important isotopes with basic format errors would undermine the credibility of the JEFF library itself. **Mr Arjan PLOMPEN** agreed with the fact that format issues should be fixed before the release. **Mr Oscar CABELLOS** pointed out that errors could be just warnings, and that JEFF-3.3 was released despite many of them. **Ms Daniela FOLIGNO** asked the point of performing preliminary checks with verification codes if the outputs are not used. **Mr Dieter LEICHTLE** agreed saying that errors and warning should be checked to see if they are relevant or not. **Mr Arjan KONING** commented that, of all the messages, some might be more problematic than others. He made the example of threshold energies that, if wrong, would not stop NJOY from running, but would still be wrong. He explained that a Hackathon was organised by CSEWEG to address these issues. **Mr Arjan PLOMPEN** concluded that errors should not stop the release, but the community should try to resolve as many as possible. **Mr Gilles NOGUERE** volunteered to investigate the errors and warning of the Big 3 and fix them, if possible. If not, he suggested to release JEFF-4T2 as it is, and try to fix them for the next test version.

Mr Dimitri Rochman also alluded to the completeness of files. In this context, **Mr Arjan Plompen** reminded of the need for updating the File 1 information about the evaluation history. This implies recently contributed files requiring updates to properly document changes.

Bias of k_{eff} with burnup

Mr Dimitri ROCHMAN stated that JEFF-4T2 contains too little change and no effective improvement. He suggested putting into place a pre-testing procedure with simple cases before any testing release to verify the trends and prevent a waste of time. **Mr Arjan PLOMPEN** wondered to what extent a small group of people should pre-test a library before the release to a larger community. **Mr Oscar CABELLOS** confirmed that the new Big 3 do not improve the k_{eff} versus burnup behaviour, but highlighted that they do not worsen it either. He recalled that the burnup issue is also present in other libraries. He shared his concern about not releasing the library, as this could disconnect the people in the JEFF community who would stop benchmarking activities. **Mr Gilles NOGUERE** supported **Mr Oscar CABELLOS**, adding that, unless we change the U-238 RRR, the burnup will always be wrong, but that it is worth testing the new fast evaluation of Pu-239. **Ms Daniela FOLIGNO** proposed to add an additional step in the validation procedure, during which the test library would only be accessible by a limited number of people for testing purposes. If the trends all appear to go in the right direction, a public beta release would follow. **Mr Arjan PLOMPEN** explained that this was the usual procedure in the past, and that it was later decided to follow the ENDF-policy of publicly releasing all the beta versions. **Mr Dimitri ROCHMAN** proposed to release JEFF-4T2 without the Big 3, to better see the impact of the other changes, but no one agreed. **Mr Arjan PLOMPEN** summarised the changes in T2: new fission yields, new Pu-239(fast), new Fe, some INDEN evaluations, some new TENDL files. He concluded that they will not solve the burnup issue but are worth testing. **Mr Dimitri ROCHMAN** asked if the changes in Neodymium, Caesium, and Strontium FY were expected. **Mr Arjan PLOMPEN** asked **Mr Robert MILLS** if there is experimental evidence independent of the evaluation that confirms their change, and if they affect applications. **Mr Robert MILLS** answered that there is not much data to benchmark them, and commented that some long-lived precursors could be of interest after some hundreds years. **Mr Dimitri ROCHMAN** pointed out that some libraries keep specific quantities fixed. He also stressed that, since certain fission product cross sections have not changed from T1 to T2, the

burnup will still be wrong. He referred to the presentation of Mr. David Bernard at the previous JEFF meeting (April 2022). He proposed to release JEFF-4T2 warning people about the burnup issue and inviting them to only test criticality and shielding. **Mr Gilles NOGUERE** disagreed, as burnup benchmark should be run to see if FYs go in the right direction. In conclusion, **Mr Dimitri ROCHMAN** asked to at least write on the website that we do not expect any change in the burnup (see point made above).

- **Action (Gilles Noguère): review errors and warnings coming from processing the Big 3 and solve as many as possible by Wednesday 16 November 2022**
- **Action (NEA): release JEFF-4T2 (ENDF-6 files by Friday 18 November 2022, processed files as soon as possible) warning to the community that burnup calculations are not expected to improve, but can be used to test the new U-235 thermal FYs**
- **Action (next CG): discuss how to solve the burnup problem**
- **Action (next CG): discuss the correction of MF1 to reflect the changes from one test version to the other**

Need for new permanent evaluators in Europe

Mr Arjan PLOMPEN stressed the importance for Europe to secure a new resonance region evaluator position. In the next couple of years, several experts will retire. As a consequence, we need qualified workforce to permanently replace them.

Mr Dimitri ROCHMAN mentioned that many people use the tools SAMMY and REFIT at n_TOF, and that someone from there could be hired.

Mr Arjan PLOMPEN concluded saying that this is an extremely important topic and that the CG should come up with a plan to advertise and hire a new permanent position.

Ms Daniela FOLIGNO confirmed that the item will be added to the next CG agenda.

- **Action (next CG): discuss how to secure new evaluators in Europe**