

**12th Executive Committee Meeting of the
IEA Technology Collaboration Programmes for
Co-Operation on Tokamak Programmes (TCP-CTP)**

Draft Minutes

Thursday 9th December 2021

(14:45-16:30)

Video Conference

Participants: Luo Delong (CN-Chair), Yalan Zhu (CN), Xu Min (CN), Ge Zhuang (CN), Duarte Borba (EU-Secretary), Tony Donné (EU), Fabio Belloni (EU), Volker Naulin (EU), Alberto Loarte (IO), Hajime Urano (JA), Shunsuke Ide (JA), Jong-Gu Kwak (KO), Matthew Lanctot (US), Matthew Hole (AU), Sakeena Moeen (IEA), ...

0. Welcome

Luo Delong (Chair) of the Executive Committee of the IEA Technology Collaboration Programmes for Co-Operation on Tokamak Programmes (TCP-CTP) welcomed the participants to the meeting.

1. Approval of agenda and minutes of the last meeting

The Agenda "Agenda Point 1 - Agenda for the 12th Meeting of the TCP-CTP Exco Thursday 9th December 2021 Version 1" was unanimously approved, together with the approval of the minutes from the previous meeting "Agenda Point 1 - 11th IEA TCP-CTP Meeting Minutes Version 4 22-Jan-2021".

Decision: The IEA TCP-CTP Executive Committee unanimously approved the Agenda for the 12th Meeting of the TCP-CTP Executive Committee "Agenda Point 1 - Agenda for the 12th Meeting of the TCP-CTP Exco Thursday 9th December 2021 Version 1"

2. Report from the CTP TCP Chair

Luo Delong (Chair) gave a brief report on the CTP TCP activities in 2021. Luo Delong (Chair) added that there was a proposal to host a sectoral discussion among the fusion related TCPs, but

due to the unavailability of the respective Chairs this meeting did not take place. Regarding the 2021 TCP Universal meeting, Duarte Borba (Secretary) informed that the agenda and conclusions of the meeting were distributed to the executive committee members "Agenda Point 2 - TCP Universal Meeting 2021 - Agenda - 26 & 28 October", "Agenda Point 2 - TCP Universal Meeting 2021 - Summary of breakout discussions". Duarte Borba (Secretary) added that the meeting was hosted by IEA and the discussion was organised in three topics, enhancing multi-lateral collaboration, expanding global outreach and improving communication; following on the publication of handbooks covering these topics. Luo Delong (Chair) added that there has been a peer review of these handbooks "Agenda Point 2 - IEA Handbook - Enhancing collaboration between multilateral initiatives (embargo)", "Agenda Point 2 - IEA Handbook - Expanding the global reach of the TCPs (embargo)" and a meeting with the IEA legal affairs was organised focussing on the preparation of the extension of the CTP TCP to be discussed later in the agenda.

3. Accession of new parties to the CTP TCP

Luo Delong (Chair) remarked, that since there were no observers at the meeting from Thailand and that no contacts have been made for a long time regarding Thailand joining the CTP TCP, the discussion on the accession of Thailand will be resumed if further contacts with Thailand take place.

4. Reports on the completed workshops and personnel assignments for 2021

Luo Delong (Chair) pointed out that travel difficulties continued in 2021 due to the covid-19 pandemic, nevertheless, many activities took place mostly via remote participation tools.

Report on EU outgoing assignments (Duarte Borba)

The EU report was presented by Duarte Borba (EU) "Agenda Point 4&5 - EU-Assignments-2021-2022_IEA_TCP-CTP" emphasising that almost all activities took place via video conference; covering the participation in the ITPA topical group meetings, workshops and joint experiments.

Report on China outgoing assignments (Prof. Zhuang)

The CN report was presented by Prof. Zhuang (CN) emphasising the US-CN collaborative high beta poloidal and active detachment control experiments on EAST; US-CN-IO collaborative experiments on ELM control on EAST, EU-CN collaborative experiments on the ITER baseline scenario and CN-IO workshop on disruption mitigation, EU-CN collaborative experiments on LH-transition and ELM control in HL-2A and EU-JP collaborative experiments on fast ion losses in HL-2A.

Report on Japan outgoing assignments (Ide Shunsuke)

The JP report was presented by Ide Shunsuke (JP) mentioning that 3 out of 4 assignments to the EU and US have been cancelled and pointing out the ongoing studies on validation of SPI modelling using JET and DIII-D data via remote participation "Agenda Point 4&5 - Personnel_Exchange_JA2021_v2".

Report on US outgoing assignments (Matthew Lanctot)

The US report was presented by Matthew Lanctot (US) "Agenda Point 4&5 - US 2021 Exchanges CTP Actual - Dec 9 2021 Master" pointing out that in 2021 there have not been many exchanges and that the long-term assignments are covered under bilateral agreements. Nevertheless, Matthew Lanctot highlighted the collaboration with KO and IO on disruption mitigation and techniques for ITER; that the Shattered Pellet Injection hardware developments on JET have been concluded but collaborative experiments are foreseen in the next years under the current arrangement; collaborative experiments on EAST on steady state scenarios, detachment control, real-time wall conditioning and diagnostic developments; and diagnostic developments on TCV and WEST.

Report on Korea outgoing assignments (J. G. Kwak)

The KO report was presented by J. G. Kwak (KO) stressing that due to the covid-19 pandemic all assignments in 2021 were cancelled, including the cancelation of the KSTAR conference.

Report on ITER outgoing assignments (Alberto Loarte)

The IO report was presented by Alberto Loarte (IO) mentioning that most planned assignments needed to be postponed, but progress was achieved via remote participation including the SPI experiments in ASDEX-Upgrade, DIII-D, KSTAR, EAST and JET.

Report on IN outgoing assignments (TBD)

There was no presentation from India at this meeting.

Report on AU outgoing assignments (Matthew Hole)

The AU report was presented by Matthew Hole (AU) covering the remote participation in the ITPA topical group meetings in particular in the area of energetic particles and diagnostics. Matthew Hole added that the IAEA Energetic Particles meeting is planned in Australia in November 2022.

The discussion was concluded by Luo Delong (Chair) emphasising that despite of the big impact of the covid-19 pandemic a number of activities were conducted with very good results. Alberto Loarte added that a large number of the papers to the IAEA Fusion Energy conference reported results from these collaborative joint experiments and thanked the experiments leaders for keeping the collaboration going using remote participation.

Decision: The IEA TCP CTP Executive Committee adopted the Personnel Assignment reports for Jan. 2021 – Dec. 2021.

5. Proposals for workshop, personnel assignments, and remote participation 2022

Regarding the general guidelines for new proposals for workshops, personnel assignments, and remote participation given the current covid-19 travel restrictions, it was agreed that if there are established collaborations these continue as before via remote participation and are reported at the executive committee meetings. For new collaborations between parties, a short description should be submitted to Duarte Borba (Secretary) for distribution to all executive committee members for comments and approval.

EU proposals (Duarte Borba)

The EU proposals were presented by Duarte Borba (EU) emphasising that there is still some uncertainty regarding the possibility of travel in 2022, but the focus will remain in participation in the ITPA topical groups, joint experiments in DIII-D on the topics of fast particles, runaway electrons, integrated control, resonant magnetic perturbations, radiative scenarios, advanced tokamak physics and negative Triangularity; joint experiments in KSTAR on the topics of shattered pellet injection, resonant magnetic perturbations and conditioning, joint experiments in EAST and HL-2A on the topics of current drive and long pulse operation.

CN proposals (Prof. Zhuang)

The CN proposals were presented by Prof. Zhuang (CN) emphasising that in light of the continued travel restrictions in 2022 the proposals are foreseen to be carried out under remote participation focussing on US-CN developing hybrid, steady state operation in EAST and studying the scrape of layer width in HL-2A, CN-IO disruption mitigation experiments in EAST, EU-CN analysis of the LH-transition and ELM mitigation on EAST.

JP proposals (Ide Shunsuke)

The CN proposals were presented by Ide Shunsuke (JP) "Agenda Point 4&5 - Personnel_Exchange_JA2022_v2" emphasising the experiments in DIII-D on plasma transport,

MHD stability, heating and current drive, disruption mitigation; experiments in JET on MHD, energetic particles, disruption mitigation, edge turbulence, experiments on ASDEX Upgrade on current profile control, particle confinement, disruption mitigation; and simulations on EAST turbulence data.

US proposals (Matthew Lanctot)

The US proposals were presented by Matthew Lanctot (US) "Agenda Point 4&5 - US 2022 Exchanges CTP Proposed - Dec 9 2021 Master" emphasising the work on disruption mitigation on JET under the continuation of the present SPI agreement to be confirmed in the next months and that given the present situation travel will be very restricted in 2022.

KO proposals (J. G. Kwak)

The KO proposals were presented by J. G. Kwak (KO) pointing out that given the current uncertainty proposals for 2022 have not been yet collected but there are proposals to participate in TCV and JET.

ITER-IO proposals (Alberto Loarte)

The IO proposals were presented by Alberto Loarte (IO) emphasising that the collaborations in 2022 will continue focussing on SPI experiments as in 2021 and Helium and ICH experiments on JET. Alberto Loarte added that if travel restrictions permit, IO personnel is expected to travel to Japan to participate in the JT60-SA initial experiments under the F4E, IO and QST framework.

IN proposals

There was no presentation from India at this meeting.

AU proposals (Matthew Hole)

The AU proposals were presented by Matthew Hole (AU) emphasising participation in KSTAR experiments on energetic particles

Decision: The IEA TCP-CTP Executive Committee endorsed the proposals for personnel assignments, and remote participation in 2022.

6. Report from the IEA Secretariat / 8. CTP TCP Implementing Agreement Modernisation (All)

Luo Delong (Chair) welcomed Sakeena Moeen (IEA), invited to the meeting to discuss the topics directly related to the IEA. Sakeena Moeen remarked that she has been working with the IEA for about one and half years but recently she had taken a consulting position with the IEA focussing on the modernisation of the legal frameworks. Therefore, Sakeena Moeen (IEA) would not provide a general report from the IEA secretariat, but provide some information regarding the modernisation of the TCP agreements. Sakeena Moeen (IEA) added that around 10 TCPs have completed the process and for additional 10 TCPs the process is ongoing with discussions with the TCP leaderships updating the agreements in order to align the text to the new IEA legal framework. To this effect Sakeena Moeen (IEA) added that she has been working with Luo Delong and Duarte Borba in the last few months to update the legal text of the CTP TCP. Sakeena Moeen (IEA) stressed that the updates focus on clarifying the language, making it easier to read and uniform across the TCPs and that in general new signatures are not required for the implementing agreements amendments. Therefore, these can be approved by a unanimous vote at a meeting of the executive committee or by written procedure. Duarte Borba (Secretary) added that the modified text provided by the IEA legal office has been distributed to the executive members in October 2021 for comments emphasising that the changes are not substantial and urged the executive members to comment on the proposed text and/or consulting the respective legal departments. Alberto Loarte (IO) confirmed that if new signatures are required, the revised text needs to be endorsed by the ITER council. Fabio Belloni (EU) added that the representatives of the European Commission can only approve the new text conditionally since it requires a formal Commission decision which can take some months as it was used for the Stellarator related TCP. However, Fabio Belloni (EU) added that this procedure is being reconsidered in order to simplify it and it is possible that for the CTP TCP the representatives of the European Commission can approve the new text without a formal Commission decision. Regarding the time frame Sakeena Moeen (IEA) confirmed that the aim is to have the new text approved before the new term i.e. June 2022, but if there is a delay, the CTP TCP can be extended for one year conditionally to the approval of the new agreement, giving one additional year to finalise the process.

7. Discussion of annual report (All)

Regarding the annual report, Duarte Borba (Secretary) remarked that a draft will be distributed to the executive committee members by mid-January 2022 as it is needed for the FPCC meeting that takes place in the beginning of March 2022. It was asked that all members send a draft paragraph for the report as soon as possible as this will be important for the request for extension. Luo Delong

(Chair) emphasised that an additional effort is required to ensure that the agreement is extended. Duarte Borba (Secretary) added that the 5-year report, that was already distributed to the executive committee members, will be amended taking into account the results from 2021.

9. Request for Extension of the CTP-TCP

Regarding the request for extension, Duarte Borba (Secretary) confirmed that 3 documents need to be prepared, including the 5-year report, 5-year Work Plan and the questionnaire "Agenda Point 9 - Draft_CTP_EoT Report_ia 2021, Agenda Point 9 - Draft_CTP_Strategic Plan_ia 2021, Agenda Point 9 - RfE Questionnaire Template Excel)" emphasising that draft versions have been distributed on the 19th October 2022 and comments from ITER and China have been received. All members were invited to further comment on the drafts distributed. Duarte Borba (Secretary) added that in the previous years the ITER representatives helped with the interaction with the ITPA topical group leadership in providing statistics and list of publications for the reports and the questionnaire.

Decision: The IEA TCP CTP Executive Committee expressed unanimous consensus to the extension of the IEA TCP CTP.

10. Initiative Today in the Lab – Tomorrow in Energy?

Nothing to report as regards to the Initiative "Today in the Lab – Tomorrow in Energy?".

11. Further discussions on any outstanding issues (All)

Regarding the date of the 13th Executive Committee Meeting of the IEA CTP TCP, this is scheduled for the 8th December 2022 with the time to be confirmed depending on either the meeting will take place face to face in the ITER site or by video conference.