ESS SAC.33 Report

ESS & Zoom
24-25 October 2024

SAC members present: Hartmut Abele, Debora Berti, Elizabeth Blackburn (Vice Chair), Anne Borg, Fabrice Cousin, María Teresa Fernández Díaz, Victoria García Sakai (Chair), Annette Eva Langkilde, Maria Paula Marques, Martin Sahlberg, Frank Schreiber, Romain Sibille, Bill Stirling.
Apologies: Jacqueline Cole.

We thank ESS for the organisation of a better structured, better timed and less busy agenda for SAC.33. The amount of information provided, which was mostly available in advance, a shorter charge and plenty of time for discussions made the pace easier and led to a more effective meeting. SAC also thanks Jos Cooper for an engaging presentation on his experiences and views on the opportunities offered by reflectometry combined with software advances for Li-ion battery research. The SAC very much appreciated the tour of the facility, which in addition to the updates provided, served as evidence of the impressive progress in the last six months and noticeable change of atmosphere at ESS. We thank ESS for addressing our previous recommendations and comments so diligently and the STAP chairs for their timely reports and input.

At SAC.33, we said goodbye to Bill Stirling and thanked him for all his contributions to date as a member of ESS SAC; he has brought invaluable wisdom, experience and expertise to the discussions.

Updates from ESS Council, ESS Director General, ESS Director for Science, Science Divisions and STAPs	SAC to note and comment

General Comments

SAC would like to congratulate the ESS for the impressive progress in the last six months, with a noticeable change of pace and a palpable sense of achievement. There is generally a feeling of convergence, a feeling that ESS is getting closer to being a working facility, which is great to see. SAC notes the milestones achieved within the accelerator division and the work towards achieving beam on dump and beam on target. SAC looks forward to beam on dump before our next meeting in April 2025. SAC notes good advances in other areas particularly instruments, whether it is completion of components, delivery and installation on-site, or successful testing and run-through of the user experience through data pipelines.

We note two major issues that concern SAC. First is the matter of energisation. It is very disappointing to hear that there are instrument teams ready to test components, but are unable to do so. SAC would ask that ESS resolves this issue with utmost priority. Second is the issue of the waste, which, if not resolved, would mean no beam on target. We are confident that ESS is working hard to resolve this very soon and look forward to hearing a positive outcome.

SAC welcomes the news that the schedule continues to be within the P80 plan. Regarding the schedule presented, SAC notes a planned 4-5 month shutdown to take place 1 month after start the start of SOUP. We ask ESS to reconsider this timing, as it will be very poorly received by the user community. We also note that the schedule float for instruments is quickly

eroding. SAC reminds the ESS to communicate regularly with the user community (and obviously Council) to update on progress and manage expectations accordingly.

SAC welcomes the convergence of the organisation's structure towards what it will look like in steady state, from one designed for a project to one more appropriate for an operational neutron facility. SAC agrees with the merger of the operations and machine directorates (to OMD), and with the move of NSS into the science directorate. SAC appreciates that there may still be a few final tweaks, but hopes that they will be minimal. Achieving stability is very important at this point in the journey, as it will help add confidence to the organisation and its staff.

Helmut Schober presented the remit of each directorate. Specifically, the OMD has ownership 'for delivering both technical and full operational readiness' and the Science Directorate has ownership for 'finishing the instruments and assuring their preparedness for the science programme'. SAC highlights one key missing item which should not be forgotten: 'the delivery of reliable operations and a sustainable and successful scientific programme'. This should be owned by both directorates. In simple terms, it is not sufficient to provide a working source and working instruments; real success of the facility requires a complete and continued operational pipeline, that is, 'happy/satisfied users'!

Related, SAC still believes that ESS should have a guesthouse for the users as soon as possible. Until this is realised, we welcome the efforts for interim arrangements. SAC also welcomes that Council has agreed that travel and subsistence forms part of the SSO budget at the level proposed.

Finally, SAC embraces the work on the risk register, which is viewed as an important and positive step forward. SAC agrees that it should be a dynamic document. SAC appreciates permission to participate in those discussions, *via* a SAC representative. We will make suggestions through them if necessary. We discussed a few items, but note in particular risks around the relationships with IK partners. SAC highlights that the risk of insufficient funding and resources to finish instruments could be significant.

Science Directorate. As in previous meetings, we note a good level of continued scientific activity even in the absence of neutrons, and efforts in the right direction towards first science and engagement with the user community.

Instruments are showing impressive progress, there is a lot of momentum, on-site presence of IK partners is clearly advantageous, and the pre-tests performed by DMSC on the entire work-flow is great progress. Apart from the aforementioned concerns with energisation, this meeting raised a number of concerns around staffing and resourcing. Key points to note:

1. SAC notes issues with resourcing efforts for instruments in the different tranches and thus impact on progress. SAC is unclear of how ESS is dealing with tensioning and prioritisation in the case of parallel resourcing requests or with possible opportunities to swap instruments between tranches. Related, SAC notes the possibility of NMX not being ready as part of tranche 1 and ESTIA not being able to regain its tranche 1 status.

2. SAC is concerned by the limited engineering resources (in particular from IK partners) raised by the diffraction division head and consequential impact on instrument delivery schedule. We ask ESS to address this with some urgency and, if necessary, take ownership of the problem.
3. Insufficient staff was also highlighted as a problem in the science support division, as raised by the CLS and MSPS STAPs. SAC discussed with the new head of division, Hanna Wacklin-Knecht, who is planning to review staffing within her division in the next few months. SAC would like a general staffing plan update for the division at SAC.34.
4. SAC welcomes the latest science recruits, but notes difficulties with recruitment within the directorate. SAC notes the large staffing ramp up that is foreseen in the near future (*e.g.* spectroscopy from 4 to 22 FTEs and more widely across the directorate). SAC recommends that ESS reviews the offering carefully, including the attractiveness of the jobs, the flexibility and adaptability of systems and recruitment process, and suggests that they could benefit from drawing up a coherent recruitment strategy for directorate.

STAP reports. SAC thanks the STAPs for their work and reiterates the essential role they play towards supporting and guiding the scientific success of the ESS. They act as a critical friend, but also play a crucial role as both external technical experts and as the interface with the user community. We thank the STAPs for emphasizing the issues brought about by the energisation matter as well as the consequences of the common utility project prioritisation choices. STAPs are generally happy with the overall progress and note a few specifics:

1. STAPs suggest that teams prepare resource-loaded plans for completing installations successfully as well as detailed commissioning plans.
2. Two detector-related items were raised: (i) a question arose about the operability of the infrastructure to be used for the diffraction detectors, which SAC feels needs rapid resolution; (ii) SAC did not understand the origin of the large resource implications for the integration of the SKADI detectors. We ask that you report back on both these items at our next meeting.
3. The diffraction STAP has questioned plans around hot commissioning, who the friendly users will be and how will they be chosen, whether their status be the same as a 'regular user' in steady state operations (availability of travel and subsistence for example), etc. SAC agrees that the focus for these first experiments should be on good science. Since SAC raised this same issue at SAC.32, thus we request that ESS clarify and report back both to us and to the STAPs.
4. We welcome the idea of running a 'round-robin' exercise on all instruments as part of the commissioning activities.
5. There is some concern that the soft matter sample environment is overly biased to reflectometry needs.

SAC are pleased to welcome the Spectroscopy STAP back. In addition, since the DMSC STAP did not meet prior to SAC, we ask that ESS share with us their feedback. We would like to request an update from DMSC in person at SAC.34 now that the move to DTU has bedded in.

Scientific Support Division. SAC welcomes Hannah Wacklin-Knecht as new head for the division. SAC appreciated hearing her vision and plans. We welcome and agree with the re-

organisation of the division into three main pillars, Sample environment, Labs and Deuteration and look forward to seeing it implemented. SAC asks for a more detailed presentation on the staffing plan (including numbers, roles and responsibilities) as a complement to the instrument teams. SAC also requests more details about the planned service model in steady state operations, at a more practical level (for example, where do the boundaries lie between their roles and the users). The need for a biology lab on-site as part of the lab offering for the user programme was highlighted once more.

Access Policy. We thank ESS for sharing the latest version of the access policy and for taking into account our feedback, in addition to that from Council. As a result of the changes, SAC feels that a few items have now become less clear. We thus propose alternative wording that may help avoid confusion:

- Item 1.1.3: All available beamtime at ESS shall be allocated in accordance with the ESS statutes [1] thereby facilitating top-level research, technological development, innovation and addressing ~~a challenge-based approach to~~ societal challenges. [We propose deleting "a challenge-based approach to"]
- Item 4.2.8: To strengthen industry-academic partnerships and increase the collaboration between neutron and non-neutron research infrastructures, ESS management may establish different and more tailored ~~additional~~ review ~~panels~~ routes ~~to promote new ways of working~~. [We propose deleting "additional", "panels" and "to promote new ways of working"]

In addition, we recommend that ESS check that the numbers (especially percentages of intended allocations) in the text are consistent with those in the tables.

Re-scoping prioritisation, next call for instruments and First science.	SAC to advise

Re-scoping prioritisation. We thank ESS for the information provided about the re-scoping options and for sharing the internal prioritisation. SAC welcomes the involvement of the STAPs in these discussions. All of the upgrade proposals presented are strongly justified and hence SAC found it challenging to validate the order in which the projects should be implemented. This will depend on a number of other factors that ESS will have to manage. Instead, the exercise highlighted a set of 'must-do' or 'essential' work that SAC recommends ESS needs to prioritise. In our view, there is certain re-scoping which is essential to take instruments to the minimum level necessary for them to be competitive. Examples include Freia shutters, Dream, CSPEC and Heimdal detectors, and the T0 chopper for Vespa.

Next call for instruments. SAC is supportive of the process presented by the ESS, the format and the timing. SAC believes the driver for the new instruments should be scientific and that the additional instruments should both complement the initial 15 instrument suite and fill any scientific gaps. SAC suggests a review of the wording around the space constraints in the call, to not deter great scientific ideas that may require long instruments. Although SAC agrees that now is the right time to launch the call, we emphasize the importance of this process not impinging on ESS resources nor detracting from the current priority of getting instruments 1-15 into steady state operations.

First science. SAC is supportive of current efforts to address first science through workshops and other engagement activities with the user community, but note different levels of progress across the different science divisions. SAC notes that there is a difference, and tension, between the aims and purposes of "commissioning" science and "first call" science. As mentioned in previous reports, SAC views the process followed by the diffraction division in close collaboration with their STAP, as a very successful avenue for the other divsions to consider and follow.

V. García Sakaí, 18th November 2024

Cc: all members of the ESS SAC, STAP chairs, Giovanna Fragneto, Helmut Schober.