

SAC-23 – 24/25. October 2019

Location: ESS, Lund, Sweden

SAC members present:

Juan Colmenero de Leon, Sabrina Disch, Giovanna Fragneto, Bela Farago, Thomas Hellweg (chair), Stephen Hull, Martin Månsson, Kell Mortensen, Marie Plazanet, Bill Stirling, Fred E. Wietfeldt

Apologies:

Michael Preuss, Monika Budayova-Spano, Richard Dronskowski, Regine Willumeit-Römer, Bella Lake

General Comments:

First, the SAC would like to thank the Science Directorate for the excellent organization of the 23rd SAC meeting and for the hospitality at the ESS site. The Science Directorate was again able to schedule all STAP meetings before our SAC meeting enabling the STAP chairs to update us in a timely manner. This is appreciated by the SAC.

The ESS team is congratulated on the significant progress made during the past 6 months reaching 61% completion. Most remarkable is the fact that the hall for the long instruments was handed over and first components of the guide system are already installed. Also the support infrastructure is progressing on schedule.

In the following we will address all developments of the last six month which are relevant for the scientific success.

Reorganization of the ESS decision making bodies:

The SAC can see how this reorganization could improve short-term efficiency and reduce short-term risk for achieving First Science in 2023. However, it is the opinion of the SAC that these changes could introduce long-term risks. We are concerned at the lack of direct scientific advice at the highest level of decision-making in the Project Management Team (PMT). Seemingly benign technical or project-related decisions can have real impact on scientific capabilities in the long run, which is why a stronger involvement of the Science Directorate is needed.

Initial operations budget:

Based on the ESS 2016 steady state review and the collective experience of the SAC, the 140 FTE envelope envisaged for the Science Directorate for 2025 is only enough to commission and operate significantly fewer instruments than 15 in and beyond 2025. In order to operate 15 instruments, we consider that at least 20 FTEs are missing and should be found somewhere else in the organization if no further funding can be allocated.

The strategy at ESS has always been to deliver instruments that perform at a world-leading level. When ESS starts up, for the community and the early success of ESS, a few really good instruments will be better than many mediocre ones. Therefore, SAC supports the strategy to initially focus on three instruments. On the other hand, as pointed out in previous SAC reports in order for ESS instruments to be capable of cutting-edge science, no further descoping of the 15 instruments, which already are in construction, should be allowed. Given the fact that 15 instruments are a key deliverable of the ESS construction project the potential reduction in initial operation funded personnel mentioned above could force ESS to delay commissioning and user operation of the later instruments or reduce the level of user support below the required level.

Since First Science is the overarching goal of ESS, the focus on first getting three good instruments also requires necessary provisions for sample environment, software, support labs, etc.. The SAC recommends starting to think now about the first interesting bench-mark experiments and recommends to involve the STAPs in these discussions. Choose experiments that have low requirements on the source, as we cannot count on it being fine-tuned for several years. The SAC strongly recommends to tailor the early provision of sample environment and other support functions to focus on those experiments and wants to hear more on this at the upcoming SAC meeting.

Access policy:

SAC supports the version presented during the 23rd SAC meeting on Friday morning, and is pleased that all our recommendations from the 22nd SAC meeting have been incorporated.

Sample Handling and General Use Labs (SULF):

The SULF platform is making good progress, and supporting the ESS construction project in many important ways, including materials analysis. The user labs are set to play an important role already in the construction project as well as in delivering First Science.

Sample Environment Systems for Fluids Including Gases, Liquids and Complex Fluids (FLUCO):

We recognize the advanced status of the sample environment platform for Fluids. It appears to be well on track.

Detectors:

Very good progress on the multigrid detector technology has been made by the detector group, and we believe they will be able to deliver the detector area needed. However, they should take note of the concerns raised in the Spectroscopy STAP and the Diffraction STAP reports. Better communications with the instrument teams will help a lot. We recommend more intense discussions between the ESS Detector Group and the Spectroscopy instrument teams take place before the next STAP meeting, with the STAP kept informed of the outcomes of those discussions on a regular basis.

Moreover, we recommend extensive testing to make sure the concerns of both STAPs are addressed. Testing should be done as near as possible to the real conditions, as soon as possible.

DMSC:

The SAC finds that DMSC is on good track. They have installed hardware and are focusing on instrument control and data reduction. We agree with the prioritizations made, and note the importance of instantaneous data reduction.

^3He Polarization:

We are pleased to see that our recommendation to advance in terms of providing ^3He polarization was taken into account, and that ESS has recruited an expert in the field. We recommend advancing this as fast as possible in order for it to be available by 2025. This is important mainly to the magnetism community but can also be important in the future to other areas of increasing interest as soft matter and biology. Furthermore, we emphasize the importance of building instruments in a way that allows for retrofitting polarization capabilities later.

STAP Reports:

SAC appreciates the regular reports from the STAP chairs at the SAC meetings. The STAP work is very important for the technical advancement of NSS and delivery of First Science. We note that the remote conference systems are not reliable enough to enable constructive discussions with the STAP chairs calling in, and look forward to face-to-face meetings in the new co-scheduling scheme.

DMSC STAP report

SAC supports the idea of working out the controls for one entire instrument, preferably using one of the first three.

Engineering STAP report

BEER is technically well on track but is being held back by administrative issues at HZG. This is a very unhealthy situation, and we hope it will be solved in the very near future.

Reflectometry STAP report

The Reflectometry instruments seem to be progressing well on all fronts.

Spectroscopy STAP report

The suite of spectroscopy instruments are progressing well. However, there is a clear difference between the views of the STAP and Detector Group on the suitability of the MultiGrid detector technology for spectrometers. SAC notes that after the last Spectroscopy STAP meeting the CSPEC instrument has opted for the MultiGrid detector technology. Therefore, we recommend a better communication between the Detector Group and the spectroscopy instrument teams, well in advance in preparation for the next STAP meeting. We recommend the involvement of someone from the instrument teams in future detector testing.

The beam monitor project is desirable, and its success depends upon clear communication between the monitor team and instrument teams. We appreciate that this communication

has improved, but we suggest that even more effort is made to make sure all parts are properly informed and consulted.

[SANS STAP report](#)

STAP sees good progress in both instruments and recommends focus on early science. SAC concurs.

[Diffraction STAP report](#)

The report raises concerns about the long-term performance of detectors and recommends more testing. This echoes the SAC recommendations on detectors. We commend this STAP for establishing a strategy for identifying early science, and encourage the other STAPs to do the same.

[NMX STAP report](#)

The NMX instrument is on track, making good progress.