

# FAIR Commissioning & Control Working Group

## Notes from the meeting held on 24<sup>th</sup> February 2016

e-mail distribution: [FAIR-C2WG-ALL at GSI.de](mailto:FAIR-C2WG-ALL@GSI.de), [participants list](#)

### Agenda:

- FAIR (Re-)Commissioning (in 2018) – follow up ([jump below](#)), Ralph J. Steinhagen
- AOB

#### 1. FAIR (Re-)Commissioning (in 2018) – follow up, [Ralph J. Steinhagen](#)

In his presentation (see [slides](#)), Ralph presented the follow up on the Machine Commissioning procedures and tools. His reflections on the question how to structure recommissioning of SIS-18 and ESR in 2018 lead to a proposal of breakdown of the commissioning process into phases. Again he underlined the importance of dry runs, which are the last stage of hardware commissioning. In the dry runs the machine is in beam-ready state, what allow to check inter-dependences between various subsystems. Results of a dry run will be a list of issues to be corrected before the next dry run takes place.

The commissioning with the beam is divided into 3 main stages. In the first stage (A) the main is to drive the beam expeditiously through the beam production chain (BPC) (from the sources, through the synchrotrons, beam transfers, up to the experimental targets/storage rings), to check basic 'accelerator mechanics' (threading, injection, capture, cool, convert, acceleration/decelerate, stripping & extraction), and to identify beam-related limitations such as polarities, RF, beam instrumentation, machine alignment, effective physical machine aperture, early on. Stage B focuses on the intensity ramp-up and special systems. During this stage it should be demonstrated that the facility can achieve and maintain the machine design performance for limited number of reference beams. At last during the Stage C – sometimes referred as assisted operation – the aim is to make fast setup and switch-over between different beam production chains routine, to push physics and beam parameter performance (intensity, brightness/emittance, momentum spread, ...), to identify and improve upon bottlenecks impacting FAIR's 'figure-of-merit', and to improve the knowledge on the machine model using beam-based techniques.

The presenter stressed that (some of) the commissioning procedures will be repeated every year before the beam time, therefore it is mandatory to prepare good commissioning procedures.

It is important to identify early all the missing parts of the procedures and to think thoroughly what are the optimal ways to operate the facility. These procedures together will eventually constitute an operators handbook.

The commissioning wiki page (<https://fair-wiki.gsi.de/FC2WG>) aims to be a tool facilitating the commissioning. Everyone is invited to participate in wiki creation. Ralph presented some of the

existing structure and editing guidelines using 'Phase A.1 – Injection and First Turn' as a generic example. The wiki will contain the commissioning procedures however a question is raised how to track commissioning progress and save the relevant data.

Other commissioning tools which needs to be provided is hardware tracking database (similar to MTF at CERN), sequencer to execute tests in order (example: testing 100 power converters – manual execution of such tests would be tedious) and automated recording.

No specific procedures how to commission transfer lines – they are considered part of injection or extraction.

### *Discussion:*

*<summary of discussion, main points only>*

C. Kleffner: How CERN keeps track of commissioning ?

R. Steinhagen: Data are logged in Logging DB and MTF database.

R. Bär: Archiving system maybe not available in 2018. Anyway this system is not designed to play the same role as MTF at CERN.

F. Herfurth (?): Component DB (Product Lifecycle Management System?) maybe good to store (repeated commissioning results).

C. Omet: Current Component DB is not sophisticated enough.

R. Bär: Big problem of current Component DB is user interface.

C. Kleffner: Maybe a special electronic logbook could be used for commissioning phase.

R. Steinhagen: Tried at CERN, however not very good experience, very few entries and almost nobody looking at this later. Not useful for Hardware Commissioning.

U. Weinrich: What is the next step? What will be done this year on SIS-18? Who will work on 2018 recommissioning preparation?

R. Steinhagen: The idea is to have a first look at SIS-18 commissioning procedures during this year recommissioning. Write up some procedures. Right now the SIS injection documentation is one slide.

C. Omet: Experts should be obliged to write down their knowledge.

M. Sapinski: There is substantial amount of written documentation available on HKR webpage and in Operation Group (sometimes “privately” distributed). The Operation Group is organising training shifts this year and one of the goals is to write down the procedures.

C. Omet: why don't we put these documents on FC2WG wiki?

R. Steinhagen: At CERN there is always a person responsible to follow-up issues with the equipment from the design/construction phase up to operation from the control room. Equipment groups are often also responsible for writing software, test procedures and documentation.

M. Traxler: Connection between machine and experiments is missing in commissioning procedures. The procedures will be quite different for various beams, what is different than for the machines.

R. Steinhagen: To some extent it exists: the same pilot beam/ intensity ramp philosophy, but details are not yet worked out. [post-meeting comment: the presentation focused primarily on the commissioning of the accelerator chain and does not cover or replace all aspects of the hardware commissioning presently under the responsibility of the MC, MPLs or experiments.)

C. Omet: Experiments have more changes than machine – commissioning is different.

R. Bär: An IT tool to support commissioning maybe needed (Commissioning management system). Such a configurable tool could be helpful.

M. Traxler: HADES pion target commissioning is a big issue for the experiment which lacks experience in commissioning of such objects. They start doing it years before the beam.

U. Weinrich: some of experiment interface issues will be discussed at HIC workshop on Friday, 26<sup>th</sup> of February 2016.

M. Traxler: Experiments need to know schedule of machine commissioning, to plan correctly how to spend money they foresee for experiments commissioning.

F. Herfurth (?): Who will take care of equipment tracking tool development.

R. Bär: We should not wait for that, start with “poor man solution”, writing specs, make survey for the right tool. Everyone should be writing procedures and specifications.

F. Herfurth (?): Move in small steps but try to get one of the databases online. Who will follow this up?

R. Bär: Proposed short-term solution: write procedures and excel files. Upload them in current wiki.

The next meeting is planned for: Wednesday 9 March 2016, 15:00-17:00 (SE 1.124c)

Reported by M. Sapinski