

# MSWG Meeting #3, 6-April-2018

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**Present:** S. Albright, M.E. Angoletta, H. Bartosik, M. Carla', L. Carver, K. Cornelis, D. Cotte, H. Damerau, G.P. Di Giovanni, V. Forte, M. Fraser, E. Gschwendtner, K. Hanke, S. Hirlander, V. Kain, M. Kaitatzi, K. Li, A. Huschauer, V. Kain, A. Lasheen, T. Lefevre, A. Oeftiger, G. Papotti, J. Repond, G. Rumolo, E. Senes, F. Tecker, B. Urbaniec, F. Velotti

The minutes of the last meeting were approved.

## **Agenda:**

### [Link to the Indico Event:](#)

- Approval of minutes – Karel Cornelis
- Status of operational Beams – Machine supervisors
- Main presentations:
  - AWAKE commissioning – Edda Gschwendtner
  - Introduction to new MD tool – Bartek Urbaniec

## Status of operational Beams

### [PSB – Gian Piero Di Giovanni](#)

All beams prepared and in specification. R1V WS calibration fixed this week by A. Guerrero.

92% average availability: Lower due to commissioning ISOLDE (cut cable for External Condition of BTY.BVT.101), beam profile was too large in vertical: experimental tuning of optics BTY transfer line, as no optics model available. BE-ABP will prepare an optics for the BTY line. Plan to work on procedure to allow tests of EIS during HW commissioning without beam.

LHC BCMS 25 beam checked this week and looks in good shape, taken and confirmed by the PS.

### [PS – Heiko Damerau](#)

97% average available, good running and no big issues.

The beams available to date are EAST Irrad/North, MTE (up to  $1.8E13$  ppp), TOF (almost operational intensity at  $700E10$  ppp) and AD ready for operation ( $1.4E13$  ppp). LHCProbe being used extensively, LHCINDIV tested up  $4E11$  ppb, LHC25 STD (12b and 72b) operational at nominal intensity of  $1.3E11$  ppb, LHC25 BCMS ready in PS now at nominal intensity.

**K. Cornelis** explained that the SPS will need the intensity increase on MTE for Monday morning and asked if we could increase the intensity already on Sunday morning, and if so do we need an expert?

No, **H. Damerau** stated that it should be OK but he requests that the operators are informed before the weekend for the request so it can be prepared this evening.

#### SPS – Francesco Velotti

Setting-up ongoing with no major issues. SFTPRO transmission optimised up to 98%, optimisation of the main QF regulation is on-going as issues on the spill quality were observed but 50 Hz already appears to be reduced. Needs more work. Last ZS alignment completed last night, slight reduction on the normalised (to intensity) BLM loss levels of 2017, first automatic alignment routine tested on simple girder scan and diffuser actuated into beam to test, about a 15% improvement of the losses at ZS, TCE and TPST BLMs observed.

LHC pilot is being used heavily by the LHC, INDIV long cycle ready, LHC25ns (standard) taken 3 batches at FT, HRT set-up in parallel with LHC25 ns and BCMS setting-up start on INDIV.

#### Main presentations:

##### AWAKE commissioning – Edda Gschwendtner

Project timeline presented. This year the second milestone aims to observe electron acceleration in plasma. After LS2: depends on results this year but an AWAKE Run 2 (during Run 3 of LHC) design report is being prepared, but aim would be to preserve electron beam quality and demonstrate scalability of electron acceleration. After Run 2: planned to kick off particle driven application through PBC project.

First experiment and concept of seeded self-modulation was reviewed. The mechanics of the experiment and its key parameters were outlined. The main results from last year were explained showing direct and indirect measurements of seeded self-modulation of the proton beam in the rubidium plasma with the laser; the first milestone and pre-requisite for injecting and accelerating electrons in 2018.

The plan and physics experiments for this year were reviewed. The commissioning of the 5 MeV electron source and 16 MeV booster linac, laser system and transfer line presented. Issues with jitter have been brought under control by stabilising a mirror support and adding an aperture to bring the electron beam jitter under control, which was causing very large trajectory jitter in the transfer line. Electron beam is now well focused into the plasma chamber with a proper treatment of the edge effects on the dipoles. Commissioning of the electron beam is almost complete, but proton beam will not be requested until the commissioning stage is fully completed.

The AWAKE beam schedule was presented for 2018. Expected to shift the first AWAKE beam by one week, starting 7 May. The requirements (services, access etc.) for the AWAKE experiment during the Long Shutdown 2 were outlined.

#### *Discussion:*

**K. Cornelis** asked how the phase stability of the self-modulation was measured: was it on one shift or over days? The measurements were only made at a given instance and it is not clear how stable this will be over many days. **E. Gschwendtner** explained that this is strongly dependent on the plasma

density which is nevertheless very well controlled to a stability of 0.2%. This phase stability should be kept in mind.

**E. Gschwendtner** explained that the jitter of the electron beam was coming from the laser driving the source and once this was resolved performance was improved.

#### [Introduction to new MD tool – Bartek Urbaniec](#)

The Accelerator Schedule Management (ASM) system was explained along with its present application at CERN. It's extension to encompass Machine Development was explained; it will be better integrated to the CERN schedule allowing easier management of the MD schedule and requests, as well as being fully maintained. The new features and improvements of the MD planning tool were explained. A [demo video](#) can be found attached to the meeting's Indico page to explain how to use the tool.

#### *Discussion:*

**H. Bartosik** requested an online demo in the meeting to complete an MD request for the injectors. **M. Fraser** asked if an MD user can quickly check the dates they applied for: one simply has to click on their request and the requested slots are hyperlinked in blue.

**A. Lasheen** asked if an MD request is made in the SPS will the beams required also appear in the PSB and PS? No, not now, this would be very useful for information for the operators. To be discussed offline.

**K. Li** explained that some history of what timing users the MD cycles were mapped to in the past would help speed up the mapping process for the operators. **H. Bartosik** stated that everything will be linked to LSA and this should be enforced.