

12th Secondary Beam Line Meeting September 12, 2016

Present: Marlene Turner, Falk Braunmüller, Erdem Öz, Lars Jensen, Joshua Moody, Edda Gschwendtner, Ans Pardons, Karl Rieger, Mathias Hüther, Alexey Petrenko, Sebastien Bustamante, Valentine Fedosseev, Marine Gourber-Pace, Spencer Gessner, Lucia Maricalva

All presentations can be found on Indico at: <https://indico.cern.ch/event/568330/>

The next SBLM date is:

- **3rd November** 2016 15:00 in B530-R-30

Agenda

1. Beam commissioning plans (Janet)
2. Summary of the Dry Run (Marine)
3. Laser update (Josh)
4. A.O.B.

1) Works during the Technical Stop and Planning of the proton and laser beam commissioning during Sept'16

https://indico.cern.ch/event/568330/contributions/2297374/attachments/1334827/2007391/16_09_2ndaryBeamlineMeeting.pdf

Janet presented the planning for the upcoming three weeks (week 37-39). During the LHC technical stop in week 37 the magnet heat run and the preparations for the BPM front ends will be performed. Additionally to a laser inspection follow-up, waste material removal, RP check, fire compartments HSE visit, MPP laser tests and finalisation of the doors and walls in TT41 there will be an intervention on BTV.412350 to realign the imaging screens. All the tasks and the planning for week 37 are shown on slide 3, 4 and 7. The schedule for week 38 includes: BPMs and BTVs commissioning, proton beam commissioning, preparations of synchronized extraction, laser and proton beam alignment and the realignment of the equipment to the reference trajectory (see slide 8-10). The tasks of week 39 include: synchronized extraction from the SPS proton beam, commissioning of the streak measurement, synchronization of the laser and proton beam and testing of the OTR and CTR signals (see slide 11,12).

2) Status of AWAKE Controls dry-run

https://indico.cern.ch/event/568330/contributions/2297377/attachments/1334751/2008546/AWAKE_DryRun06Sep2016-Outcome-new.pdf

Marine presented the Status after the AWAKE controls dry run on the 06th of September.

General:

- The working sets (WSET) and applications are declared in the AWAKE Console Manager and checked OK.
- **→ Action: Edda asks Verena to assign a configurator for AWAKE to configure CCM, WSETS.**
- **→ Action: Edda asks the configurator to put eLogbook in AWAKE CCM.**

Fix Display:

- The GUI was checked OK.
- Depending on the type of device, a unit needs to be added on the vertical scale:
 - Already done for the Beam Intensity Monitor (BCT), Beam position and Beam angle.
 - **→ Action: Jozef implements units for the bunch length and for the frequency of the proton micro-bunches (new version expected this week).**

File reader (rubidium density) integration in the Fix Display:

- The file reader was checked OK.
- **→ Action: Marine sets a meeting with Roman and other experts to discuss if the final density value (written in the file) will be computed in Veronica class (no standard FESA library exists), in the Data Concentrator (means adding another software layer) or somewhere else.**
- **→ Action: Veronica defines the variables to be logged in the logging database and gives them to Johan.**

Logging:

- **→ Action: Edda retriggers people to send requests to Jakub (filling the template).**

RF Devices (classes LTIM +ALLVTU): controls from WSET

- All devices put in SPS: AWAKE WSET were checked OK.
- Controls from KNOB/WSET were checked OK by Heiko.

OASIS crate 'cfc-tsg4-csaos11' with signals from Misha:

- The cabling and hardware was checked OK.
- The Functionality to switch from TRIGGER 1 (10Hz) to TRIGGER 2 (SPS Extraction) was done on Wednesday (7th of September) by Benjamin and is ready for testing. It is not ready according to Karl (12th of September); **→ Action: Karl contacts Ioan.**
- **→ Action: Ioan declares the trigger devices in WSET/KNOB.**
- **→ Action: Misha checks (with help from CO) the signals display on the OASIS viewer.**
- **→ Action: Karl contacts Anastasiya concerning the logging of OASIS signals.**

OTR and CTR diagnostics:

- For all LTIM devices for OTR/CTR the controls from KNOB/WSET: AWAKE / OTRCTR-TIMING were checked OK.
- The check behavior of LTIM devices by setting ENABLE /DISABLE from KNOB: SX.OTRCTR11/10 were checked OK.
- There is an issue with the AWAKE LTIMs to pulse both for operations (beam extraction) and dry-runs (NO beam extraction): 8 LTIMs (SX.OTRCTR_{x0}) need to be reconfigured to be non-PPM and gated on DEST=AWAKE. → **Action: loan for the LTIM class and Roman for LSA.**

Laser line:

- The KNOB/WSET controls on devices (FESA classes involved: FlipMount and all others) in AWAKE / LASER LINE WSET were checked OK.
- The logging was checked OK.

Camera motor controls:

- BI card for MPP controls: The device list for devices in WSET: AWK / OCTRCTR-BICONTROLS is OK.
- Due to an issue in the FESA class, the remote position in KNOB is not ok (-999.99 value). → **Action: Lars informs Stephane to discuss integration in KNOB with Eric.**

OTR streak camera data integration in fix display:

- The format of data from the FESA class (David) is not compliant with BTVI data format. → **Action: Lars Jensen asks David to review his code.**

RF setting for laser synchronization:

- The controls from WSET/KNOB need to be checked. → **Action: Discussion between Edda, Valentin, Heiko,**

3) Laser update

https://indico.cern.ch/event/568330/contributions/2297379/attachments/1335015/2007707/SBLM12_09_2016.pdf

Josh summarized the status and the required capabilities of the laser for proton beam commissioning and the self-modulation measurement (slide 2 to 5). He showed acquired beam images of the virtual beamline where the laser was run at 30 mJ and Laser Dump 1 in. The ionization threshold of rubidium is 2 TW/cm². Josh showed that the Laser intensity at radius 1 mm is not completely symmetric and ranges from 3 to 15 TW/cm². In TSG40 the effective diameter of the beam is 27 mm, and the average fluence at 450mJ will be 60 mJ/cm² which is below the damage threshold of the gratings (100 mJ/cm²).

4) A.O.B.

The documents to obtain the safety beam permit must be approved before Friday 16th of

September.

The AWAKE control room can only be accessed with: **Dosimeter**, Helmet and safety shoes.

Connection of vapor source data to SIS:

Originally it was said that we don't need to have the vapor source data in the SIS. It is important that the valves are connected to the BIC, but in case e.g. the temperatures are not correct in principle we still can send beam. → **Action: Edda discusses with Falk, Enrique (BE-ICS), Roman and Gabriel (SIS) as all the different parameters are now defined.** This is important only once the end flanges are installed (Oct/Nov).

Next meeting

The next Secondary Beam Line Meeting will take place on the **3rd October 2016 at 15:00** in B530-R-30. A detailed agenda will be sent out in due time.

Marlene and Edda 14/09/2016