

LHC-Beam Commissioning Working Group

Notes from the meeting held on
29 September 2009

Present: Gianluigi Arduini, Ralph Assmann, Jean-Claude Bau, Roger Bailey, Helmut Burkhardt, Andy Butterworth, Rama Calaga, Bernd Dehning, Massimiliano Ferro-Luzzi, Massimo Giovannozzi, Brennan Goddard, Eugenia Hatziangeli, Eva Barbara Holzer, Delphine Jacquet, Lars Jensen, John Jowett, Mike Lamont (chair), Malika Meddahi, Gabriel Mueller, Lasse Norman, Mario Pereira, Alick Macpherson, Bruno Puccio, Stefano Readelli, Tomas Rogelio, Ralph Steinhagen, Ezio Todesco, Jan Uythoven, Walter Venturini Delsolaro, Helmut Vincke, Jorg Wenninger, Simon White, Frank Zimmermann.

Excused: Reyes Alemany, Oliver Brüning, Kajetan Fuchsberger, Rossano Giachino, Verena Kain, Mirko Pojer.

1. Comments and actions from the last minutes

None.

2. News from LMC – Mike Lamont (slides)

Summary notes from previous LMC meetings, written by Brennan Goddard or Frank Zimmermann, are available [here](#).

Some items of the LMC 29:

- Read first results on FRESCA interconnect tests (Luca Bottura). Full measurements performed on test bench – but thermal conditions at the interconnect are not the same as for magnet interconnect - tests and analysis still in progress.
- Summary of dry run work (V. Kain).
- Status of the hardware commissioning (R. Schmidt): 2 sectors still coming down to 1.9K, good overall progress.
- First dipole and quadrupole busbar resistance measurements from first scan to 2 kA (Knud Dahlerup-Petersen).

3. Dry Run news – Verena Kain (e-mail)

Week39:

Ions: All tools ready in the control room, including fixed displays for the ion re-phasing. Ion re-phasing works most of the time, but not always.

Synchronisation SPS extraction and LHC injection:

The LHC proton beam arrives 1.2 ms too early for the injection kickers. The extraction pre-pulse cannot be adjusted because of the tight interlock window, so we can only start the charging of the PFNs earlier. To be tested as soon as possible -during the next TI 8 extraction test, 12-13 October.

AC Dipole:

Fully operational. An additional protection will be implemented to avoid requesting current above the limit of the devices. Waveform acquisition on OASIS to be looked at again: might hit the limit with the sampling rate, if so, only export the envelope to OASIS.

The rest of the week was spent on the preparation for TI 2/TI 8 beam tests. To note: Proton re-phasing fully reliable.

Week40 programme:

- Preparation of PGCs in week 41. Settings, knobs,...
- First look at feedbacks
- AC Dipole again: changes in controls application plus protection on front-end
- Abort gap monitor: changes in controls application
- IQC connected to injection sequencer
- Possible categories of hardware groups
- Friday: BCTs in the morning and XPOC+ BI in the afternoon

Malika Meddahi: The results of these complete runs indeed show up in the effectiveness of last week end beam tests, where all applications, systems and tools were up and functioning as defined.

4. LHC central timing upgrade – Jean-Claude Bau (slides)

Jean-Claude Bau briefly presented the overview the LHC central timing, described the CO consolidation project, the deployment foreseen in w42 and the future plans.

The LHC consolidation project was deployed for the LHC startup and fulfilled its job well during the short period of the LHC startup and in the dry runs performed since then.

Objectives to reach: Make the system more robust, thoroughly test new versions before releasing, improve documentation and tools, and reduce intervention time in case of problems and upgrades.

New deployment foreseen week 42 was described (optics ID- LHC injection test mode-CO consolidation tasks). Impacts:

- New hardware, new wiring, software deployment
- LHC timing distribution will be perturbed
- Need a dedicated MD half a day (only as 95% of the tests are already done in the lab)
- No modifications are needed for applications

Summary:

- New deployed version for the LHC startup;
- The effort of that consolidation project will continue during the LHC run;
- Will keep one stable version during the LHC run – only deployments with low impact;
- The next release will be made during the next shutdown. It will imply modifications of the CBCM and the LHC central timing.

Gianluigi Arduini: please check with hardware commissioning compatibility before fixing the ½ day MD.

Roger Bailey: only two persons can intervene at the moment? Jean-Claude Bau: yes, but documentations and training will be organized so more people should be able to intervene.

Mike Lamont: to plan tests after CO deployment. Delphine Jacquet: yes, will be done. To be scheduled in MD time.

Jean-Claude Bau: FESA classes do not change.

5. Organisation and planning for the LHC injection tests – Readiness of the systems and tools for the sector tests - Mike Lamont and round table (slides)

Dates:

To note: Extra TI 8 beam test for LHCb: 12-13 October.
DSO tests: Tuesday 20 October
Full patrol on Friday 23 October
Dates: from Friday 23 October to Monday 26 October, 07:00.
Next tentative date for the second sector tests: 7-8 November

Which beam, when? Although a small sector of 8-1 is needed at 450 GeV, Gianluigi Arduini said that it might not be available for the first injection test period.

Parameters: 2.5 days with beam, Pilot beam for most part, 1um emittance beam, stopping the beam with collimator as last year. No multibunch or more precisely no more intensity than $1e10$ protons.

What to do: One tentative programme was shown for one sector; if a second sector is as well ready, will have to update the programme accordingly. Programme shown is chronological work. Aperture work to be clarified.

Of the list of needed systems, applications, tools:

Ezio Todesco: Standard 3.5 TeV pre-cycle can be tried;
Gabriel Mueller: Knob generation in progress: Xing/Sep/Spectrometer Bumps;
Lars Jensen (private discussion): Beam instrumentation: systems ready;
Gianluigi Arduini for Alick Macpherson: Vacuum valves: start testing the vacuum valve interlock procedure on the 1st of Oct.;
Stefano Readelli: Collimators: locked through software;
Bruno Puccio / Jorg Wenninger: Machine protection: add the BLMs in last year's list?
Bernd Dehning: Tbc
Brennan Goddard: beam dump: beam permit issue: what will be the system connected to in terms of energy tracking: Being clarified.
Helmut Vincke: Controlled areas around the collimators where the beams will be dumped
List of needed support over the w.e. tests was presented.

Programme will be updated with a more detailed time breakdown in terms of activities and people.

[Next meeting](#)

Tuesday 6th October 2009, 15:30, 874-1-011. Agenda will be sent in due time.

Malika Meddahi.