

LHC-Beam Commissioning Working Group

Notes from the meeting held on 1 September 2009

Present: Gianluigi Arduini, Etienne Carlier, Massimiliano Ferro-Luzzi, Massimo Giovannozzi, Brennan Goddard, Eugenia Hatziangeli, Hitomi Ikeda, Lars Jensen, Verena Kain, Mike Lamont (chair), Malika Meddahi, Gabriel Mueller, Mario Pereira, Laurette Ponce, Stefan Roesler, Benjamin Todd.

Excused: Reyes Alemany, Oliver Brüning, Alick Macpherson, Bruno Puccio, Jan Uythoven, Ralph Steinhagen.

1. Comments and actions from the last minutes

Presentation of Ezio Todesco on "[Update on LHC field model activities and critical issues](#)": Comment from Stephane Fartoukh was received concerning the MS –[e-mail](#). Massimo Giovannozzi said that this point is indeed part of the follow-up actions of the FiDel collaboration.

Comment from Oliver Brüning was received ([e-mail](#)) and minutes have been updated accordingly. Ezio Todesco will report on the required magnet cycling after a beam abort in a coming LHC Beam Commissioning meeting.

2. News from LMC – Mike Lamont

There was no LMC meeting on 26 September. Previous LMC minutes, written by Brennan Goddard or Frank Zimmermann, are available [here](#). The LHC schedule has been updated, with the addition of the transfer line ion tests on Monday 28 September. Brennan Goddard said that the transfer line ion tests might be completed earlier than foreseen and proposed that the RP survey, foreseen at the end of the beam line tests, takes this eventuality into account. Follow-up: Stefan Roesler.

LHC injection tests of beam 1 are pencilled down for week 43. Beam 2 tests may be at the earliest in week 45.

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

Summary of the activities was made by Verena Kain:

BCTs: still a lot of open points:

BCTs need proxies, the front-ends cannot handle the load of connected clients.

Fixed displays, applications, DIP, SIS will have to go through the proxy.

Before each injection it has to be ensured that the FBCT is set to be triggered by the pre-pulse and not the capture event (or even worse the software trigger). Need a sequencer task, but probably also a set from the injection sequencer.

Not everything is logged yet.

Alarms do not appear.

Not the final lifetime algorithm implemented.

A couple of fixed display updates are required.

BIS: BICs and generators in RBAC strict mode.

Everything fine. Everything working as it should (sequencer, SIS, applications, logging). LHC-EIC role: all EiCs added plus Jorg and Mike.

I to IREF filtering:

New filtering algorithm (time filtering (1 ms spacing) with check of introduced error in filtered function and y-value filter with PC I-ultimate dependent tolerance). Works. Loading time not an issue (seconds).

Tested without y-value filtering (number of points not an issue for the time being), only kept time filtering. No points were removed. Works. Loading time not an issue (still seconds for ramp of several sectors in one go). Decided to not use any y-value filtering for the time being.

FiDel:

Beautiful. Trimming on injection plateau working nicely. Calculating ramp corrections and incorporation working nicely. Pic of RCOs, RCSs, RBs and RCDs during ramp.

Re-phasing:

Had protons on the LHC cycle Friday afternoon. Re-phasing fixed. Can now re-phase even if beam 1 and beam 2 have different frequencies and we fill interleaved.

Beam 2 inject & dump:

Bug fixed. Inject & dump for beam 2 also working nicely.

IQC:

New version available: Masking of individual analysis modules working.

Program for this week:

Incorporation through hypercycle (function to function) -> order beam processes. Virtual critical settings. RF logging issues. Generation of 3.5 TeV settings.

4. LHC Commissioning plans – Mike Lamont ([slides](#))

Mike Lamont summarised the beam commissioning work performed in 2008, together with the beam optimisation and measurements achieved. A lot was learned through the 2008 exercise and will be of much use and experience for this year. Mike Lamont added that despite the very impressive progress, the approach could have been more systematic, as done for the LHC injection tests.

A list of objectives had been established with very detailed milestones, e.g, circulating beam, 450 GeV basics, measurements, ramping...

2009 approach: Go for collisions at 3.5 TeV as soon as possible, which requires a full machine protection commissioned and a well adjusted and understood machine. The first beam commissioning steps are the completion of the essential 450 GeV commissioning, together with the first step of the machine protection commissioning. To note: during the period of two beam optimisation at 450 GeV, some first beam ramping will already be tried.

Details of the activities through the various commissioning steps were shown, in particular for the delicate ramp process.

To be done: Compile a schedule showing all milestones of the main commissioning activities and people involved.

Brennan Goddard added that the schedule should leave enough time for off-line analysis.

Mike Lamont confirmed that, as last year, a daily commissioning meeting will be organised where the progress will be reported and analysed. At this occasion, if needed, daily goals can be re-organised.

Next meeting

Tuesday 8th September 2009, 15:30, 874-1-011. Agenda will be sent in due time.

Malika Meddahi.