

LHC-Beam Commissioning Working Group

Notes from the meeting held on 23 February 2010

Present: Masamitsu Aiba, Carmen Alabau, Gianluigi Arduini, Chiara Bracco, Roderik Bruce, Paola Catapano, Pierre Charrue, Laurent Deniau, Lene Drøsdal, Alan Fisher, Massimiliano Ferro-Luzzi, Rossano Giachino, Brennan Goddard, Per Hagen, Eugenia Eva Barbara Holzer, Lars Jensen, Mike Lamont (chair), Alick Macpherson, Gabriel Müller, Giulia Papotti, Mario Pereira, Bruno Puccio, Frank Schmidt, Marek Strzelczyk, Ralph Steinhausen, Rogelio Tomas, Jan Uythoven, Glen Vanbavinkhove, Simon White, Uli Wienands, Daniel Wollmann.

Excused: Reyes Alemany, Oliver Bruening, Massimo Giovannozzi, John Jowett, Verena Kain, Malika Meddahi, Stefan Roesler, Ezio Todesco, Heinz Vincke.

1. Comments and follow-up from previous minutes

- Magnets with a precycle whose minimum current was not low enough to recover the ascending branch of the hysteresis at injection: the minimum precycle current will be lowered. **Mike reported that this has been modified and is in place.**
- MQWB have a non negligible residual magnetization. A down-up precycle will be implemented by Mike Lamont for those magnets with negative current settings. **Mike reported that this has been sorted out and is in place.**
- Improved model of the LHCb spectrometer – Massimo Giovannozzi on 2 March.
- Expected snapback at 3.5 TeV – Ezio Todesco on 2 March
- Pierre Charrue:
 - Status of the Proxies/Logging/JMS issues: since the new versions were deployed no more instabilities or crashes have been observed and these systems were stable.
 - An Automatic Server Recovery (ASR) occurs when a Proliant detects that there is no “internal bus” activity. After 10 minutes or so a reset of the machine occurs. This had recently been observed several times on two SIS servers (CS-CCR-SIS1 and CS-CCR-LHCSIS1) and was back traced inside the Timing driver. A new version of this driver was installed in CS-CCR-LHCSIS2 last Monday. Since then, CO made several tests and monitor the behavior of this new version. They did not notice any crash or mis-behavior. On Tuesday 23rd Feb, this new version was deployed into the other SIS servers.

Mike Lamont restated that any controls issue should be reported to Pierre Charrue.

2. RBAC policies for LHC devices – Pierre Charrue ([slides](#))

Reminder about RBAC for LHC:

- Modes are no-check, lenient and strict. Modes set using RBAC Controls Configuration Editor, distributed by central CMW server.
- LHC operational mode, set by LHC sequencer and distributed by CMW (note that this implies discipline in running sequences which change accelerator mode).
- Roles are a set of NICE logins, and each equipment has the roles Expert and Piquet. The Piquet role is owned by LHC EICs, and a login can be added temporarily; will expire after designated time (no upper limit).

- RBAC rules are filled by equipment owner and these define while Role can take which action on the equipment.

When LHC is in Operation mode, only Piquet can access from outside CCC; inside CCC Expert and LHC operator roles can access.

Tools available are Controls Configuration Editor to browse and modify roles, rules and mode, CMW admin which displays (modifies) RBAC and Machine mode.

All LHC devices are in strict mode, LHC operators have all rights from CCC, experts have all rights from anywhere when non-operational, and from CCC when operational; Piquet has all rights from anywhere when operational.

Next steps:

– Equipment owners must verify that their CMW servers are in strict mode and that their Rules and Roles are following the RBAC policies for LHC presented above. RBAC team will follow this up. **Action: all equipment owners to check this.**

- Alick Macpherson: should check for systems where only 1 expert is defined in the Expert role, to avoid problems. Pierre Charrue will add this to the request for the equipment owners.

- Lars Jensen asked if the CMWadmin actions logging is available? Pierre Charrue said yes and will send details.

- Mike Lamont asked if RBAC is ready to work with the LHC mode OPERATIONAL now. Pierre Charrue replied yes, it's ready. **It was agreed to set the LHC machine mode to OPERATIONAL next Monday 1st March, after giving warning to all equipment groups. Action: Pierre to inform equipment owners.**

3. Transfer line beam tests – Chiara Bracco ([slides](#))

Transfer line beam tests took place from Thursday 18 Feb., 21:00 to Friday 19 Feb., 06:00. The tests proved very successful with only a few minor issues to follow up. The lines looked very reproducible compared to last year, and all measurements and system tests

- About $4.5e12$ p+ were sent to the lines in total
- Trajectories showed 0.6-1.0 mm rms difference wrt 2009, <2.5 mm bare, and got below 1 mm rms easily. Same correctors found as used in 2009.
- MKI synch was checked with both beams, in right place.
- Dispersion measured in both lines, good agreement with model, TI 8 looks even better than 2009, also used screen matching application, again good agreement.
- Aperture measurements in TI 2 in H plane to complete 2008 measurements – looks reasonably consistent, with maybe 1-2 sigma difference –some unexpected limits found to corrector strengths – to follow up in detail.
- Collimator alignment upstream of TED in TI2 – problem with 29050 setup to understand. The new vertical TCDIM was studied in detail – checked for off-momentum losses – interesting results and still being analysed.

Conclusions – lines showed good reproducibility, no major problems were seen and a few details remain to follow up. **In good shape for injection into LHC for 2010.**

4. LHC Re-start – round table discussion

a. Checkout news – Rossano Giachino

- Now starting with checkout program today, trying to get machine closed tonight and into beam mode. Are closing BIS loops and try to start some LBDS tests.
- Alick Macpherson asked when to open vacuum valves – will need all valves open to be able to arm beam dump...but rule is not to open valves with HWC ongoing. Need to coordinate this carefully. Also need to wait for HWC for heat run.
- PGC status – 4/8 sectors well advanced, still most to do for 4 sectors and pre-cycle for 5.

- Dry runs – some things still to check – IQC, BLM checks, XPOC, RF, handshakes and DIP, LBDS inject/circulate and dump.
- Transformer switch-over back to CH network from EL this 14:00 this Thursday – again to be coordinated.
- Tomorrow plan is to get stuck into the LBDS and other checks, if the HWC is finished. Earliest possible date for beam would be Thursday evening, again contingent on HWC.

b. Commissioning planning – Mike Lamont ([slides](#))

- Planning established for next 5 weeks – to note that the 3 day technical stop looks fixed (injector planning).
- Detailed version of planning was presented of shifts needed, which met with general approval.
- Timeline: estimate ~4 weeks to pilot collisions at 3.5 TeV.
- Massimiliano Ferro-Luzzi noted that it would be good to have 5e10 to collide at 450 GeV to reduce the time needed.

5. A.O.B

- Hysteresis – Marek Strzelczyk said to have a solution but would be good to test in advance. Will start up with this in place.
- Actual trim interface and run control interface – Mario Pereira said this is being implemented.
- New sequencer release planned for the next days.
- New version of incorporation released.
- Run configuration – Alick Macpherson: have a new VISTA page which shows important information for experiments.
- **Termination of the old CMW Name Service** : Please note that according to our prior announcements and the lack of user complaints, the old CMW Name Service will be stopped as it is no longer supported and no longer used. The service has been terminated Tuesday 23rd Feb.

Daily 8:30 HWC meeting in the CCC conference room (09:00 at weekends).

Daily 17:00 machine check-out/OP meeting, CCC glass box.

Next meeting: **2 March 2010**, 15:30, 874-1-01. Agenda will be sent in due time.

Brennan Goddard.