Stefano Redaelli, 31-08-2009

104th Meeting of the LHC Collimation Study Group, August 24th, 2009

Present: Oliver Aberle, Gonzalo Arnau Izquierdo, Ralph Assmann (chairman), Alessandro Bertarelli, Chiara Bracco, Alessandro Dallocchio, Bernd Dehning, Ramon Folch, Barbara Eva Holzer, Lew Keller (SLAC), John Jowett, Luisella Lari, Steve Lundgren (SLAC), Daniela Macina, Tom Markiewicz (SLAC), Stefano Redaelli (scientific secretary), Stefan Roesler, Federico Roncarolo, Alexander Ryazanov, George Smirnov, Jeff Smith (SLAC), Daniel Wollmann.

Comments to the minutes

No comments to the previous minutes.

Agenda of this meeting

- Regular status reports:
  a) Hardware and tunnel activities (O. Aberle)
  b) Remote and beam commissioning (R. Assmann)
  c) Phase 2 at CERN (A. Dallocchio)
  d) Phase 2 at SLAC (S. Lundgren)
  e) FLUKA work (L. Lari)

- Commissioning scenarios and availability of loss data (C. Bracco)

- Final implementation of RBAC for collimators (S. Redaelli)

- TCL loss simulations (F. Roncarolo) [postponed to next meeting]

List of actions from this meeting

Action	People	Deadline
Follow-up the SPS-LSS5 layout change request for the installation of the new collimator prototype	A. Bertarelli R. Assmann	Sep. 7th (next LCSG)
Phase II energy deposition input to MME team	L. Lari	Aug. 31st
Deployment of RBAC for all collimators in the tunnel	A. Masi S. Redaelli	End of August
Define roles and people for injection protection and dump protection collimators.	R. Assmann B. Goddard S. Redaelli	Week 37

(Complete list at http://lhc-collimation.web.cern.ch/lhc-collimation/action.htm)

The next meeting will be September 7th, 2009.

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Minutes of the meeting

1 General information

The dates of the collimation meetings until the end of the year have been fixed and are available on our web page.
As the collimation meetings will address both Phase I and Phase II topics, the meetings will be structured with brief (5 min.) status reports on the different ongoing activities and detailed presentations on special topics (20 min.). A list of future topics is being prepared and will be soon available. Additional presentation requests should be transmitted to the scientific secretary.

2 Regular status reports

2.1 Activity in the tunnel (O. Aberle)

O. Aberle reported that the hardware commissioning activity in the tunnel is basically completed. All the points with collimators are finished except point 8 that will be completed by the end of the week.

2.2 Remote and beam commissioning (R. Assmann)

R. Assmann announced that a weekly collimation commissioning meeting has started (every Friday morning at 9h in the CCC glass-box) to steer the remote commissioning of the system from the CCC. The full system will be available for remote operation starting on August 31st.
D. Macina asked if the tests will include also the Roman pot commissioning. R. Assmann replied that to some extend tests will involve also the Roman pots however the details remote commissioning will only be performed for the collimation system. The Roman pot hardware is under the responsibility of the TOTEM team. S. Redaelli commented that regular meetings are ongoing since the beginning of the year between OP and the TOTEM control team to set-up the required controls. More details one the ongoing activities were presented in a dedicate joint meeting of Collimation and Machine Protection, held on April 24th, 2009.

2.3 Phase II activities at CERN (A. Dallocchio)

Alessandro Dallocchio and Alessandro Bertarelli reported on the status of the Phase II studies at CERN, in particular on the TCSG prototype that is being equipped with BPM for SPS beam tests. Details are available in A. Dallocchio's slides.
The planning for installation in the SPS is that the TCSG prototype presently installed in the machine will be removed on the technical stop **Nov. 2nd** and an LHC type support will be installed in preparation for the installation of the new prototype. A. Bertarelli requested to decide at the next meeting the details of procedure and planning to request the SPS-LSS5 layout change to remove the old prototype and install the new one (**ACTION**).
R. Assmann suggested that a careful radiation should be done in the LSS5 region where the works have to be done.

2.4 Phase II activities at SLAC (S. Lundgren)

S. Lundgren gave a status of the SLAC design and fabrication for a Phase II collimator prototype. The new design foresees to implement IR7 LHC style BPM buttons at each end of the collimator jaws. In order to provide more details on the work done in the last months, S. Lundgren and T. Markiewicz proposed to have a 20 minute presentation in one of the next collimation meetings.
As a comment to the statement that the new tank allows now a maximum jaw separation of 60 mm, R. Assmann stated that this is an important progress since, during tests in the SPS, losses were recorded by the BLM when the jaw gap was set at 56 mm.
A. Dallocchio asked if the BPM integration at the end of the collimator causes integration issues due to the additional length. This is not the case because the jaw of the SLAC design is shorter and the total length still fits into the allocated space of 1.48 m.

2.5 FLUKA work (L. Lari)

Luisella Lari reviewed the status of FLUKA simulations for Phase II. She should provide A. Dallocchio, by the end of the week, with results for energy deposition on the first GlidCop secondary collimator (TCSM.A6L7.B1) for the nominal loss case (**ACTION**).
Future simulations will be performed by including collimator jaw imperfections (tilt and deformation). Luisella referred to the talk by C. Bracco for details on the loss inputs for Phase II collimator losses (see next section).

3 Commissioning scenarios and availability of beam loss data (C. Bracco)

C. Bracco recalled the commissioning scenario studies performed for different collimator settings at several energies, from injection up to collision. The availability of inputs for FLUKA simulations for each scenario is given in detail in her slides.
She reported that the LMC has approved the so called "tolerance optimized collimator setting" as official setting during beam commissioning (collimator half gaps as a function of the energy for this scenario were presented). See the minutes of the 11th LMC meeting, held on April 22nd, 2009. Particular attention is dedicated to studies at 5 TeV and 3.5 TeV that will be the nominal top energy values during the 2009/2010 run. The effect of collimator and machine imperfections on the cleaning efficiency was then presented. C. Bracco pointed out that the FLUKA team required that, for future simulations, the single diffractive scattering events should be recorded in the FLUKA input files as well as the inelastic scattering coordinates.
C. Bracco finally summarized the list of studies established during a meeting that took place offline between the FLUKA (V. Vlachoudis, A. Ferrari and F. Cerutti) and the collimation (R. Assmann and C. Bracco) teams. Details can be found in the attached slides. At first only the nominal 7 TeV case will be simulated with the flag on the single diffractive events in order to be able to estimate the overall effect on energy deposition. The eventuality of redoing simulations on commissioning and imperfection scenarios will be evaluated accordingly to the obtained results.

4 Final implementation of RBAC for collimators (S. Redaelli)

S. Redaelli presented the final implementation of RBAC (Role-Based Access) for collimators, the results of tests and the planning for deployment in the tunnel. The list of collimator Roles

and Rules and the critical MCS role that protects the interlock thresholds were presented for approval. S. Redaelli presented also a preliminary list of people that are given the different roles but stressed that the critical roles should be discussed with the colleagues from injection and dump projects (**ACTION**). Due to the coupling of cleaning and protection systems, additional collimator operators will be added under the condition they assume responsibility for the full system.
The time line for deployment in the tunnel is as follow:

- approval of roles, rules and people at this meeting;
- final validation tests with the collimator prototype at Bld. 252 and preparation of the final maps during this week (S. Redaelli and A. Masi);
- deployment in the tunnel on Monday Aug. 31st with RBAC in "STRICT" mode for all the collimators.

The proposed implementation was approved and therefore we will proceed with the planning above (**ACTION**).
S. Redaelli commented similar implementation are ongoing other movable devices, in particular for the TCDQ and for the Roman pots, but RBAC has not been tested yet for these devices. Stefano is following this up in collaboration with the owners of these devices.
B. E. Holzer asked what is the difference between critical properties that are protected with RBAC only and properties protected by MCS. S. Redaelli replied that MCS protects interlock thresholds that are changed on a regular basis (thresholds versus time or energy for the position measurements). The RBAC expert roles protect sensor calibration tables that are under the responsibility of system expert and are not changed in standard operation.

5 TCL collimation studies (F. Roncarolo)

Due to lack of time, this talk was postponed to the next meeting. The slides are available on our web page.

The next meeting will be September 7th, 2009.