

MPP meeting 12 February 2010

Agenda:

- SMP status and plans (B. Todd)
- VELO movements and limits (T. Bowcock).
- AOB

Present:

Daniela Macina, Bruno Puccio, Tobias Baer, Antonio Di Mauro (Alice), Alick Macferson, Laurette Ponce, Massimiliano Ferro-Luzzi, Mario Deile, Giulia Papotti, Siegfried Wenig (ATLAS), Themis Bowcock, Richard Jacobsson (LHCb), Bernd Dehning, Jorg Wenninger, Mike Koratzinos

Minutes:

AOB

Jorg briefly reported on the decision taken during the experts meeting following the previous MPP meeting (regarding BLMs): all BLMs for primary collimators will remain as are. All other will be modified.

Jorg: a trial test regarding Alice overinjection issues will be scheduled.

Ralph: Collimator tests started today.

Alick: a machine protection systems checkout list will need to be filled by everybody and reviewed before we go up in intensity.

LHCb Velo: Operation with beam (Themis)

Themis presented a few slides regarding the LHCb VELO, the vertex detector of LHCb that sits in a secondary vacuum and moves close to the beam. A document on procedures is also being prepared.

The velo retracts by 30mm each side and sits at 5mm from the beam at its closed position. It is separated from the beam vacuum with 300um of aluminium extruded foil. Length of the velo is about 1m and the IP is 20cm from its end.

Closing control: the two halves can be driven independently and the detector will always center around the beam, which the detector measures with an accuracy of about 5microns per minute. Firmware ensures that the two halves cannot drive into each other. It has never been fully closed it with beam. The first closure will be done in close collaboration with the CCC.

Monitoring: three types: Active: occupancies, vertex (beam) position, sensor currents (can be read even when the detector is not read out.); Environmental: temperatures, vacuum; External devices: BCMs, LHC BPMs

Maximum power load from RF is a few watts under nominal conditions; has been simulated.

Motion: The velo can move in steps if a series of conditions is met, like BCM <2% of dump threshold. BPM is used as lose veto. Ralph reminded us that the velo needs to be in the shadow of the collimators at all times.

Currently a flag (velo IN/OUT) is sent to the CCC. Ralph: it would be nice to send the position as well.

Interlocks: cut the power but do not move anything. HV goes up before stable beams and the velo will move out before stable beams expire. If there is a power failure the velo is retracted

Alick: would the velo move within a run? Premature to answer yet. If so, an extra flag (velo_moving) will be needed. The velo is safe to move in above 2TeV.

SMP in 2010 and beyond (Ben)

Ben resented the plans for the safe machine parameters (SMP) system for this year using an animated power point slide show.

The system (that publishes a series of flags) follows the steps of the equivalent system in the SPS that became operational in 2008. The LHC equivalent became operational last year. Some early problems were rectified (by increasing the tolerance between the two energy values received) and since 20 Nov it works with no problems. It is difficult to find a balance between safety and availability and the system is designed to be erring to the side of safety at the expense of availability. Ben needs some guidance regarding strategy and the limits to be used. His proposal is to start operating this year as last year (for instance, no masking is allowed when stable beams) , then overhaul the system to be ready for nominal energy and intensity by redesigning and performing a safety review. The deadline for the new system was discussed. Jorg is in favour of a staged approach where the system would first be used in logging mode and when stable, will switch over to production. We will come back to this in a couple of months.

Intensity increase criteria (Jorg)

Jorg updated us on the strategy to increase the beam intensity this year. We are converging on the following strategy: up to 1-2MJ each step will be a factor of 2. Above that, each step about would be about 2MJ; minimum time per step would be 10 days/10 dumps. There will be an approval procedure with a document. Another criterion before going up in intensity is stability. Steps in intensity should not be done at the same time as other changes in the machine.

Jorg then showed a table with the required beam time by the collimation system: this is quite heavy – 1 shift twice per week. There are organizational issues to be solved.

To accumulate 1 fb-1 we would need to run at 2E32 in 2011 (700 bunches, 35MJ). Getting to 2E32 by the end of this year will not be easy.