

Minutes of the MPPr 1st September 2010

Present :

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General issues:

- The LMC did not agree to the suggestion of MPPr to continue 25 bunch operation for a 4th week, and decided to go to 48 bunches already earlier (meeting no. 66), despite for example the fact the B2 momentum collimation system was not conform.
- In the future such a non-conformity of the collimation system must be fixed immediately.
- In the future one loss map per week is still required, to ensure the correct collimator hierarchy.

BLM thresholds:

- Various beam dumps (see Q' measurement in previous week) indicate that the long running sums (20-80 seconds) in warm elements are too low. In fact the thresholds are calculated to correspond to the same absolute loss in protons for each RS. For example at 450 GeV, for RS1 it corresponds to 1E12 p in 40 us, for the longest RS to 1E12 p in 83 seconds. [The thresholds for warm magnets will be increased by a factor of 10 for the long RS](#) during the technical stop. Simulations studies are needed to better establish the correct thresholds. The issue of temperature measurements of the vacuum was raised.
- For BLMs on cold magnets, the thresholds will be maintained at the present level for the moment. [If two additional 'dust' events with the same signature are observed, the monitor factors of the MQs \(arcs\) will be increased by a factor of two.](#) This can be done between fills.

Quench tests:

- Some of the tests will not quench a magnet, but just measure the voltage below the QPS threshold.
- Proposed tests:
 - Single turn test at injection in cell 14R2 where there is special QPS diagnostics.
 - Closed orbit bumps (cell 14R2) at injection and at 3.5TeV, intensities for the 3.5 TeV test to be defined after the 450 GeV test.
 - Wire scan at 3.5TeV: those tests are interesting because they probe the time scales of ~1 ms. The BLM thresholds have already been increased by a factor 10 (monitor factor to 1.0). Wire scans with 25 bunches do not lead to quenches, the loss reach 60% of the (increased thresholds). With higher intensity (assuming we are still below quench level) it will be required to increase the threshold for BLMs in point 6 (Q4).
- Additional proposals were made during the meeting:
 - Quench test from collimators (losses in the cleaning insertion), possibly not quenching, but looking at the magnet (cryo) temperature.
 - Quench test of Q4 in IR6 which is important to define the abort gap population limits. The tests would be performed by driving the TCSG in 6 into the beam.

Direct dump BLM:

- The threshold is not energy dependant, it is fixed (not programmable, requires access) to 13 kG/s from simulations.

- So far this monitor has not been used, its maximum range was reduced to the equivalent of $4E12$ p at injection. It was agreed that someone must first look at the data from that monitor before one can start testing its dump functionality.

Intensity ramp up in September/October:

- R. Assmann proposed a modus operandi where one would increase intensity much faster (still in steps of 48b, 2.7 MJ), operating only 1 fill and then increasing intensity at the next fill if no problems are seen. This will ensure that the increase is done close in time to the collimator setup, and not many weeks later.
- In the discussion that followed a consensus emerged towards possibly operating at a given intensity for 3 fills, and then to increase if no problems are encountered. But to stop in case of problems (still need to define what a problem is exactly). Fills should not be longer than 12 hours. In any case such a scheme would at best allow increasing twice per week, which could compensate for time lost due to occasional longer downtime or setup/MD time.
- Loss maps must be performed around once per week, either with the classical method (dedicated single bunch ramps) or using scrapping with a TCP (see last week). If the analysis reveals that the scrapping method can replace the classical method, then this would be preferred and be much less time consuming.
- No luminosity production should be done before colliding 48 bunches.
- Injection from the SPS must be done with at least 24 bunches, possibly 48 bunches.

Van der Meer scans:

- It was agreed that this can be done with moving the TCTs to follow the closed orbit changes, but only for these special scans. This option would allow scans with a wider range. Moving the TCTs minimizes the risks, but in the scan procedure it is essential to ensure that the TCTs are back at their initial position at the end of the scan.
- The orbit change must be defined before the scans such that the collimation team can define the required interlock limits, and decide if the TCTs must move during the scan or not.
- The next step is to write the software.
- M. Zanetti from CMS will define procedures and parameters for the scans.

BLM firmware changes:

- B. Dehning raised the issue of the strategy of changing firmware of the BLM system (how, what tests etc). A proposal should be made by the BLM team and then discussed at the MPP.