MD Requests for ADT 2012

Re-commissioning of system at start-up:

- re-commission system with software and firmware updates
- more re-commissioning time needed for one damper system which will be re-cabled
- commission blow-up for loss maps (software !)

→ no MD request for these activities, but they are absolutely essential and must be done before any intensity ramp-up (we are set up only up to 1.3e11 ppb)

MD Requests for ADT 2012

MD request #1: ADT – Q/Q' diagnostics compatibility

- use leading 12 bunches for continuous tune measurement
- for leading 12 bunches use a combination of
  - "dead band"
  - excitation by damper (positive FB for small amplitudes)
  - lower feedback gain, leading to

  → oscillations visible on ADT pick-ups
- poll data regularly and record for determination of tune on-line

6 hours, 2 ramps, 12+12 bunches @50 ns, 1380 bunch Physics beam
bunch intensity as used for the nominal Physics beam

If successful, put new tune measurement into operation(extra time needed)

MD Requests for ADT 2012

MD request #2: Noise properties of ADT with feedback on and off

- compare noise properties of ADT in open and closed loop as well as its dependence on the bunch spacing
- needed in preparation of 7 TeV running before LS1
- evaluate the improvement resulting from re-cabling that will be done for one damper system during this technical winter stop

6 hours at 450 GeV, from 1 up to 48 bunches; pilot bunch to maximum intensity, 25 ns and 50 ns bunch spacing, relatively short measurements, but large variety of beams from injectors required during the same MD

measurement of satellite bunch intensity for the 50 ns and 25 ns variants, compare different satellite intensities (?)

MD Requests for ADT 2012

MD request #3: Optimization of ADT in the ramp

- find the optimum gain in the ramp to minimize the transverse emittance increase
- requires a tune diagnostics compatible with high ADT gain if tune feedback to be used
- if method proposed for MD#1 not available for this MD, use 20% lower intensity for "main" beam and highest bunch intensity for witness bunches (leading 12). This should enable BBQ to lock tune feedback; alternatively ramp without tune feedback (?)

2x6 hours, several ramps; possibly modulation of gain with frev
1380 bunches Physics beam; option with 20% less intensity except for leading 12

MD Requests for ADT 2012

MD request #4: Tune from ADT signals in closed loop

- check the feasibility of a tune measurement system based on the damper residual signal in closed loop
- works in simulations, some measurements done in 2010
- quantify feasible bandwidth and precision for tune measurement based on the damper signals

6 hours @450 GeV, 1 up to 48 bunches, single bunch, 25 ns and 50 ns spacing; Pilot bunch, otherwise maximum intensity used in Physics.

change of ADT phase shift and gain