

Summary session 5 – Beamloss and machine protection

300 seconds including discussion

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Speakers:

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General comments



- All speakers warmly thanked for their detailed, comprehensive and concise presentations
- No issues identified for running at 4 TeV
- Selection of points requiring discussion/decision presented

Considerations for 2012 – Part I

- Are **DIDT monitor and new orbit bump interlocking available from startup?** Need commissioning time and procedures (BI and OP).
- Do we need to improve **change management procedures for SW?** If so, how? Each group submit ALL changes both before and after each TS, to wider audience (coordinators, rMPP, ...) for approval?
- How to **improve interlocking of critical TDI element?** Remove human element – could add separate HW surveillance for this specific element? Suggest follow-up in MPP with LIBD/COLL.
- **No major UFO issues expected** for 4 TeV in 2012 (MKI rate to estimate), but need to learn as much as possible for post-LS1 **7 TeV**, where UFOs might become **serious limitation** – priorities for machine time, analyses, simulations and lab measurements (UFO team)

Considerations for 2012 – part II

- Seems feasible to start with **tight collimator settings in 2012** - question of **overall orbit stability** needs some fixes which remain to be demonstrated early in 2012 commissioning.
- **Commission ADT bunch-by-bunch blow-up at start of year.** Is this then **ONLY validation** needed, or still do full loss maps **in addition?**
- **70 cm beta*** seems ‘comfortable’ always assuming tight collimation settings work in other respects (impedance, orbit in IR3/7, ...)
- **Margins for 60 cm beta*** seem **tight** - all tolerances have to be uncorrelated, and 1.5σ TCSG6/TCT retraction is at interlock limit
- What **extra information is needed** to decide between 70/60 cm? And **when do we need this decision**, to prepare functions, settings etc.?
- Can possibly increase margins **slightly** by rematching IR6 to 90° MKD-TCSG6 $d\Phi$. Examine implications (**MPP?**) before final proposal.

Reach in β^* with tight settings

old	3.5 TeV	4 TeV	7 TeV
gamma	3730	4263	7461
TCP 7	4	4.3	5.7
TCSG 7	6.0	6.4	8.5
TCLA 7	8.0	8.6	11.3
TCSG 6	6.8	7.3	9.6
TCDQ 6	7.3		10.3
TCT	9.1	9.6	12.6
aperture	10.9	11.6	15.0
Φ (μ rad)	143	134	110
β^* (m)	0.7	0.7	0.6



new	3.5 TeV	4 TeV	7 TeV
gamma	3730	4263	7461
TCP 7	4	4.3	5.7
TCSG 7	6.0	6.3	7.7
TCLA 7	8.0	8.3	9.7
TCSG 6	6.8	7.1	8.5
TCDQ 6	7.3		9.0
TCT	8.2	8.6	10.4
aperture	9.4	9.9	12.1
Φ (μ rad)	155	145	126
β^* (m)	0.6	0.6	0.45

- Tight settings, old method:

- IR6 and IR7 fixed in mm at the 3.5 TeV tight settings
- Adjusting other margins IR6-TCT-aperture with expected beam size

- Tight settings, new method:

- primary collimator stays at 4σ 3.5 TeV position in mm, but using σ at 4 TeV for margins in IR7 and IR6-IR7

Fall-back solution in case of unexpected problems:
intermediate settings, linear margins, $\beta^*=0.9$ m