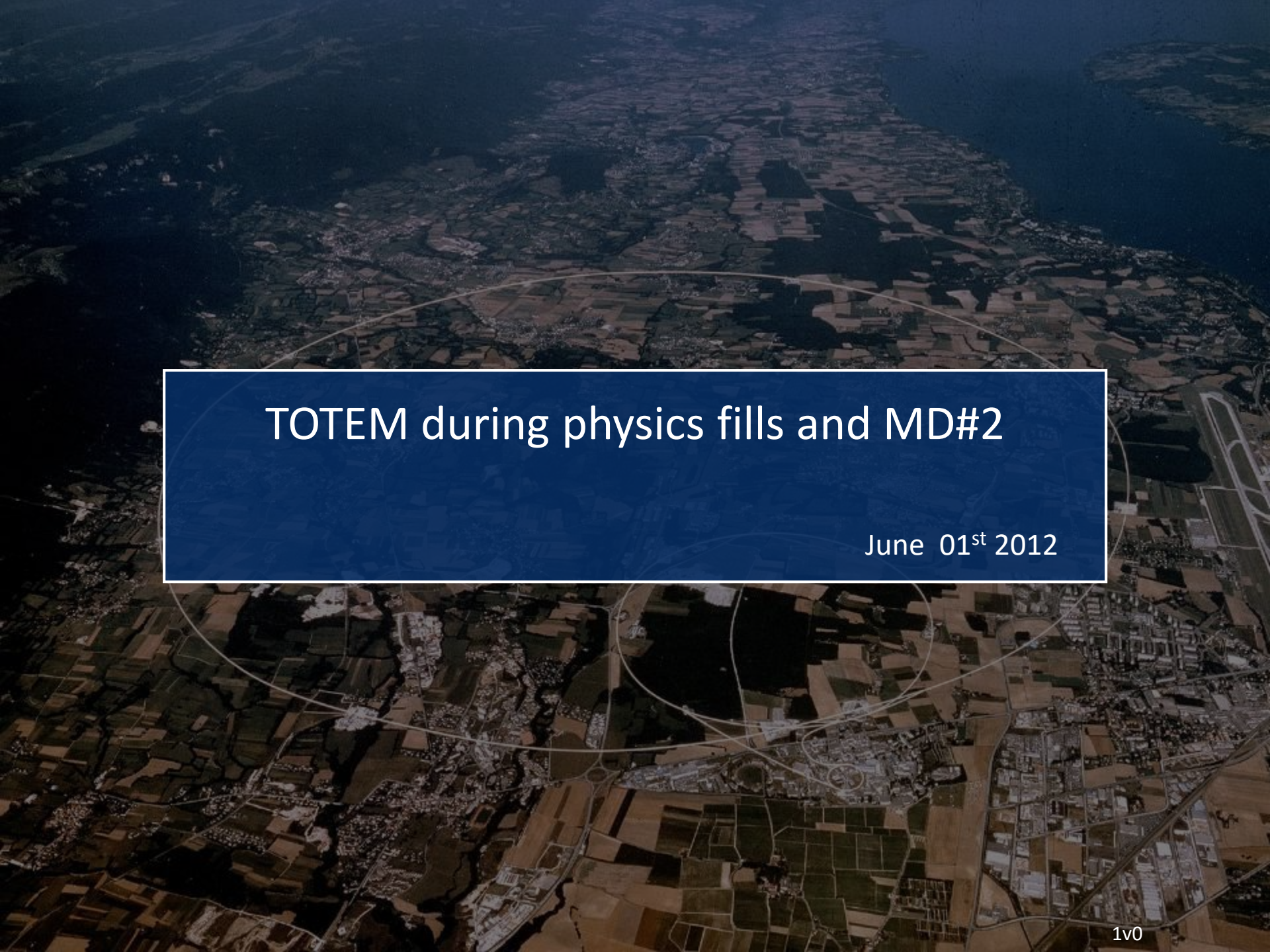

TOTEM during physics fills and MD#2

June 01st 2012

1v0

TOTEM operation

Alignments for both 90m and 0.6m have to be defined

In particular to be clarified:

- Collimation support in the critical week 24.
- How to obtain settings and limits, and what to do with them:
  - calculation via excel sheet
  - how and when are they approved ?
  - who types the values into the beam process ?
- Which loss maps are needed, how many fills ? Can the first one be done at the end of the alignment fill ?
- Any other validation steps ? (n.b. the 90 m optics needs to be validated for stable beams this year !)

MD #2 (courtesy of Jorg)

MD	Energy	Intensity/beam	Conditions	Comments	Classification	MPP doc
Large Piwinski Angle	450 GeV	2 x 2.5E11 , 2 um	Xing angle in IR8 zeroed in 3 steps, TCTs to be readjusted.	By design limited to safe beam at injection	**A**	
Longitudinal dynamics studies	450 GeV, 4 TeV	8 bunches, from 0.5E11 to 2.2E11	With/without phase loop, variable long. Emittance	Same bussiness as usual	**B**	
Tune scan for beam-beam	4 TeV	EOF	Tune scans in X and Y. Tune measurement at the end, how ?		**B**	
Long-range beam-beam with high bunch intensity	4 TeV	50 ns 1.7E11, at least 84 (?) bunches	Reduce Xing angles in steps, need to adapt the TCTs.		C	MPP document for similar experiment already exists - to be adapted.
Beta* leveling	4 TeV	Phase 1: with 2 nominal bunches. Phase 2: with a full train (12+36 or 84)	Standard squeeze, but from 3m on IP1/5 in collisions, lumi scan opt. Manual movement of TCTs.	Squeeze with collisions in IR1/5. First round is used to establish settings, second round with pre-established settings.	C	MPP document for phase 2 - MD3.
Landau damping threshold	4 TeV	Single beam (no beam-beam), nominal 50 ns	Step 1: reduce octupoles, step 2: reduce Q' < 0.		C	MPP document to be written.
High beta*	4 TeV	Probes, safe beam (relaxed-like)	Mostly squeeze to 500 m, scraping of bunches for low emittance.	**Details not finalized**	**A-ish**	
MKI UFO studies	450 GeV	50 ns	Pulse length of MKIs	**Not yet well defined**	C?	MPP document for similar experiment already exists - to be adapted if needed.
Collimation (impedance, nominal settings)	4 TeV	1 nominal bunch	Test of nominal in mm 7 TeV setings.	Impedance (move collimators back and forth), loss maps with 7 TeV settings	B?C?	
Collimation fast losses (with ADT)	450 GeV, 4 TeV	1 probe	Check of fast loss with ADT, at the location of a collimator, to simulate UFO time response.	Prepartion of quench test. Prepare document??	**A**	MPP document for final quench test
Injection and Q20 optics	450 GeV	probe, then nominal	Q20 injection	Mask all TL interlocks	**A**	
RF cavity phase modulation for 25ns	450 GeV	injecton of 144b, machine ~ full			**B**	
Aperture	4 TeV	1 nom + 7 probes 7E9	Scan TCTs, Xing and separation bumps. Similar to previous requests and measurement. Blow up with damper.	MPS documents exist (I think).	C	
Scraping, diffusion and Repopulation Study	450 GeV, 4 TeV	1 nominal bunch	Retract all collimators except TCP in IR7 to > 15 sigma	4 TeV is unsqueezed, so pleny of aperture.	**A?C?**	Document probably not needed.
Beam Instrumentation	450 GeV, 4 TeV	Various beam types	Except for matching monitor, the MDs are in the standard enveloppe.		**A-B**	
Beam Instrumentation	450 GeV	Intense probes	Matching monitor stuides	Exact value of intense probe to be provided by F. Roncarolo	C	MPP document will be provided. Request for increasing the PBF to the experiments
Test ramp for emittance calibration	4 TeV	2 nominal	Ramp with coarse/constant collimator settings, bumps, squeeze, k-mod IP4, collide	Ramp with coarse, then must move back to standard collimators before squeeze.	**B-ish**	Slight deviation from nominal ramp, but low intensity - acceptable.
Dynamic Aperture MD	450 GeV	1 probe 1E10	MKQA activated. Collimators to 12sigma.	Requires access before/after.	D	Document exists?

Thanks a lot for your attention

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