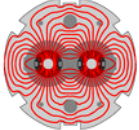







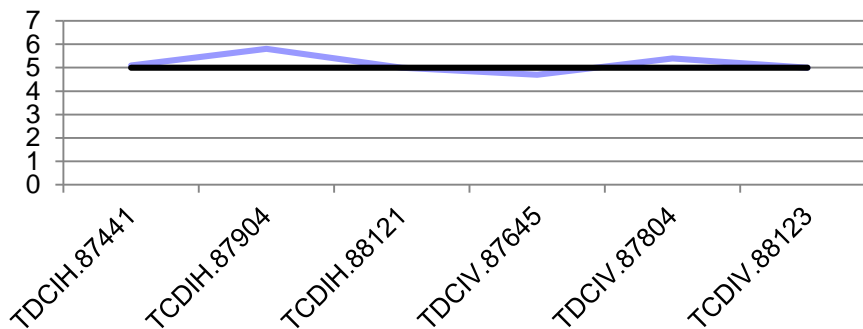
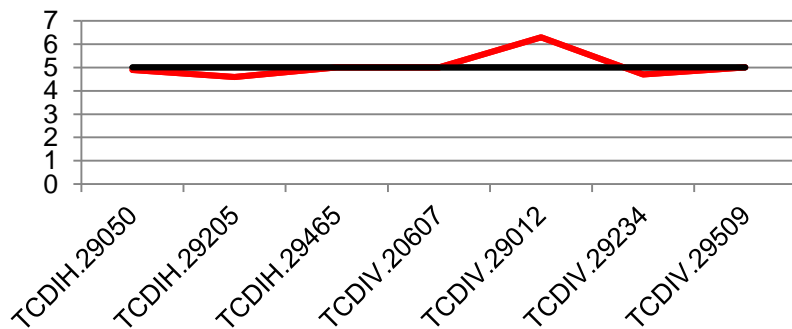
Q20 TCDI Settings

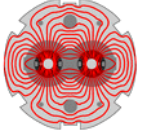
J. Uythoven, C.Bracco,
W.Bartmann, B.Goddard



From LMC, 21/11/2012 (concerns 19/11/2012)

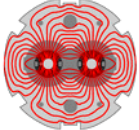
- SPS changed to Q20 optics (after TS3), transfer lines re-matched
- Changes of β at TCDIs (end of the lines) expected to be small and no explicit verification of TCDI settings done within the injection team
 - Lack of procedures and definition of responsibilities: coordination to improve 
- In preparation of this LMC, changes in β at the TCDIs quantified:
 - Differences in settings up to 1.3σ : **protection not guaranteed**
- TCDIs immediately moved to corrected settings and validated with beam last Mon/Tue night
- Effect on losses not verified yet  OK
- Following up internally and with rMPP to improve procedures and possibly add functionality in control system to prevent repeat  NOW





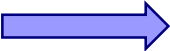
Conclusions from an ABT “PM meeting”

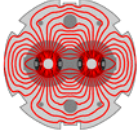
- How did this happen?
 - We assumed that the optics changed only upstream in the tl.
 - Never changed optics at collimators before
 - We could steer to the same reference trajectory as Q26 (normally no need to re-setup collimators....if optics doesn't change!)
 - Procedures presented at the LMC, including tl set-up for one shift, not followed up!
 - Missed one person from ABT being responsible for full TL setup and checks
 - Started as informal quick test. Rushed to make it operational
 - No regular meetings – most of the time OK – did not sit down together and ask: what could compromise machine protection?
 - Communication of procedures and checklist by email is not good enough.



From the same meeting

■ How to improve:

- Define responsibilities. One person overall responsible to pull things together – person to be defined ad hoc per case.
- Formal preparation. Meeting – ask the right questions: what are the possible machine protection implications?
- Define procedures.
- To be approved by all, use edms
- Send off to (r) MPP.
- Apply this upon any change in machine operation, change of optics, MDs (need to define precisely when this is needed!)
- In case of urgent hardware problems (masking LBDS signals): force to sit together and write down what to do.
- Template of key questions (like ecr): implications
- Test case: present scrubbing run 



Use - case: scrubbing run

- Had a meeting one week ago
 - Basically too late
- Resulted in a set of procedures to be followed during the scrubbing run
 - Concerning the MKI vacuum and TDI deformation
 - Was a bit late to go through the proper approval procedure
 - But many comments and lots of discussion!
 - Served its purpose during the preparation
- Left as procedure in the ccc

Switzerland

the
**Large
Hadron
Collider**
project

CERN-Div./Group-or-Supplier/Contractor-Document-No. x
TE-ABT x

EDMS-Document-No. x
1255458 x

Date: 2012-12-04 x

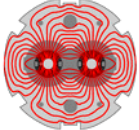
LHC-MD-Test-Program---MD-Class-C-&D

**PROCEDURES-TO-BE-FOLLOWED-DURING-
THE-25NS-SCRUBBING-RUN-CONCERNING-
THE-TDI-AND-MKI**

Abstract

During the 25ns scrubbing run foreseen in December 2012, the vacuum at the MKI magnets may limit the total intensity of the circulating beam. At the same time any electrical breakdown in the magnets must be avoided. The proposed strategy for increasing the vacuum interlock levels at the MKI magnets and the interconnects is described below. The second topic of this note is the maximum deformation of the TDI jaws which is acceptable. Any deformation above the indicated values is assumed to risk mechanical damage.

<p><i>Prepared-by:</i></p> <p style="text-align: center;">M.Di-Castro A.Lechner M.J.Barnes J.Uythoven</p>	<p><i>Checked-by:</i></p> <p style="text-align: center;">Relevant Equipment Experts rMPP members G.Arduini G.Rumolo G.Iadarola V.Mertens</p>	<p><i>Approved-by:</i></p> <p style="text-align: center;">J.Weninger R.Schmidt M.Zerlauth D.Wollmann</p>
---	--	--



Back to the TCDI

- Improve in the future due to increased awareness within the ABT team
 - Responsible, meet, right questions, procedures
- Role for formal approval by (r)MPP
 - Also to be applied to others
 - MDs – already in place, but getting more sloppy recently
 - Equipment groups
 - Other ‘special machine events’....ions to come
- Specific ‘solution’ for the TCDI: position interlock limits which are based on dynamic beta’s and limits in sigma
 - Like for the LHC collimators
 - ABT project for LS1
 - Does not replace the ‘awareness’ but makes it more robust