



37th Bi-weekly meeting

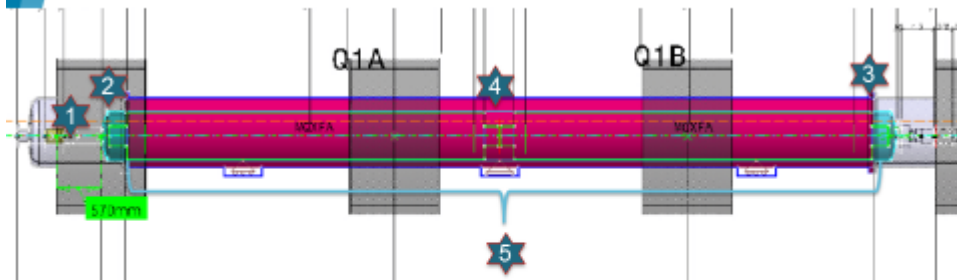
10 May 2016

News

- TAXS- BPM. Situation presented at HL-TCC
(<https://indico.cern.ch/event/515629/>)
- TAXS- Motorization
- P8: mini-TAN, D2 protecting mask- Layout meeting WP15 to be held next may 20th.
(<https://indico.cern.ch/event/502017/>)

Where can we gain?

Min 103 mm, target 120 mm



- 1 Using the distance gained between BPM 1 and the Q1 to approach the Q1 reducing β'
Limiting factor: the 2 phase separators volume, the diameter of the pumping lines and the integration with the beam screen cooling
- 2 Distance between end cover and magnet reducing space for MQXF connection box
- 3 Distance between end cover and magnet reducing space for MQXF connection box and the bus bar compensation loop
- 4 Distance between two MQXF inside the Q1 reducing the space for the end plates and tensioning rods
- 5 Decreasing the magnet lengths increasing the current therefore decreasing the margin

Plan

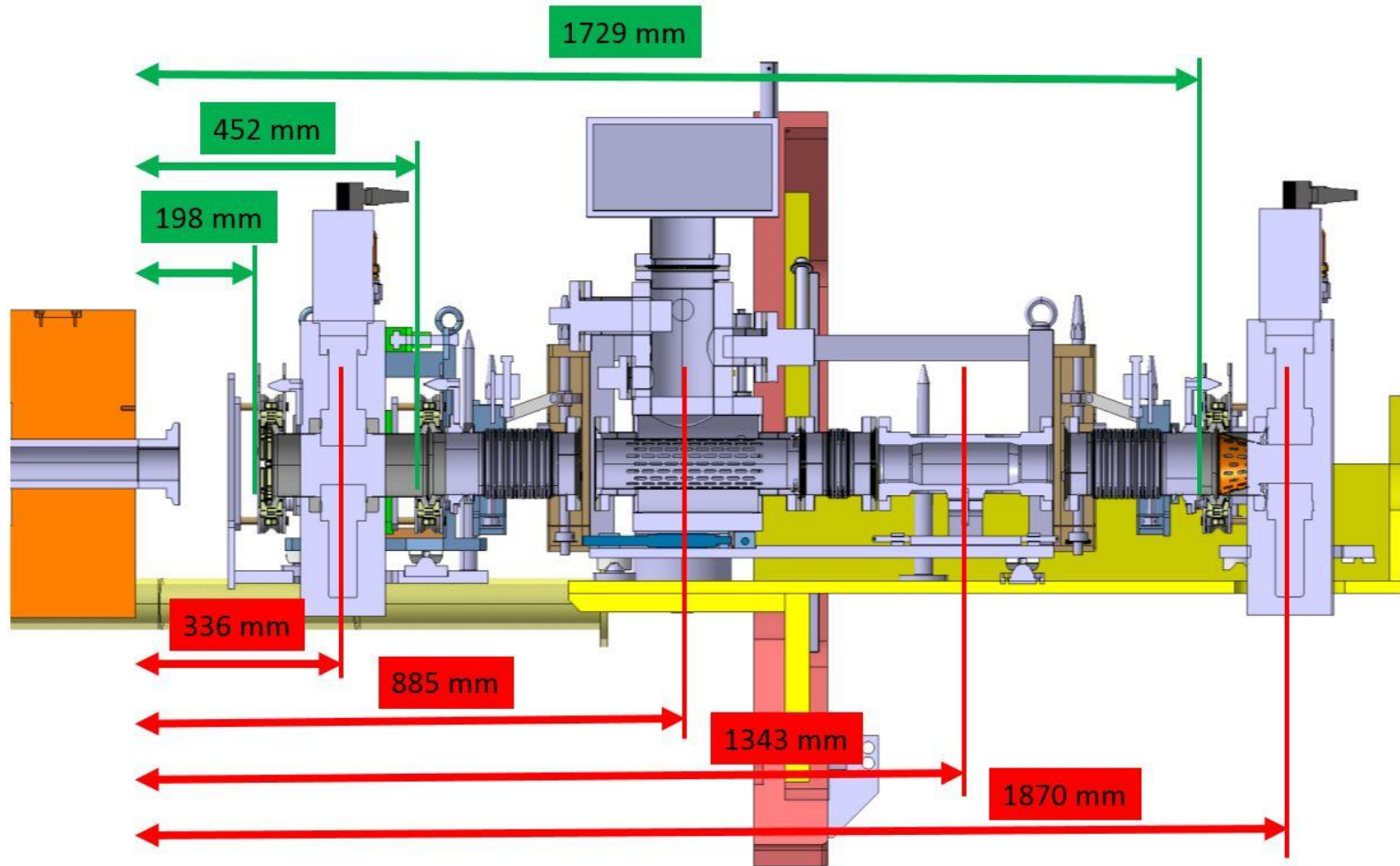
- Definition of the space between BPM and Q1 front face requires the detailed cryostat design
- Design document from the WP9 under preparation due in 1-2 weeks at detail design
- Definition of the space in between magnet(s) and end covers and between magnets require the CM design
- **It has been agreed to come back on mid of June to assess the situation**
- Presently we propose to move in next lay-out the Q1 BPM and leave the other in present non optimal region
- WP2 asked to keep the BPM in the experimental area also if the space would be very welcome from WP8 for the integration in the experimental side and it rises several technical questions
- Postponing the decision till beginning of summer it does not impact WP8 work. Decision limit in September



HiLumi - LHC integration team, dreams that shape the reality

P. Fessia->TCC (28-04-2016)

Current situation (CMS)



25/04/2016

Damien BRETHOUX EN-EA-EC

BPM in experimental area requirements

- **Assembly length**: At the limit in ATLAS environment due to clash with second JTT ring.
- **Alignment** of BPM wrt Q1. Need to **survey** would imply access through shielding, adjustments through shielding or complicate remote operations.
- **On the good side**: could be done with a ballistic approach, no high precision requirements (< 5 mm)
- **On the bad side** Positioning: movements with openings & closing of forward shielding structures.
- Historic TAS alignment data show that current situation is rather stable. Few re-alignments done in the past in ATLAS, none in CMS.
- **Stability during operation a must** (<10 microns)
- BPM reliability. (Not in secondary vacuum)

BPM out of experimental area means:

- Fewer interventions

(BPM : Alignment with Q1, BPM is the weakest element in terms of vacuum leaks, to have it in secondary vacuum gives more reliability).

- Relaxed need of re-alignment for the rest of VAX , similar to current system used for VJ chamber
- VAX length decreased:
 - extra rigidity
 - ATLAS: Reduced needs of JTT machining
 - ATLAS: Extra space for opening
 - ATLAS: no interference with second JTT

Timeline

DECISION has impact in layout, alignment, survey and modifications of shielding structures and vacuum supports (ionic pump support for CMS, VJ and VT supports for ATLAS)

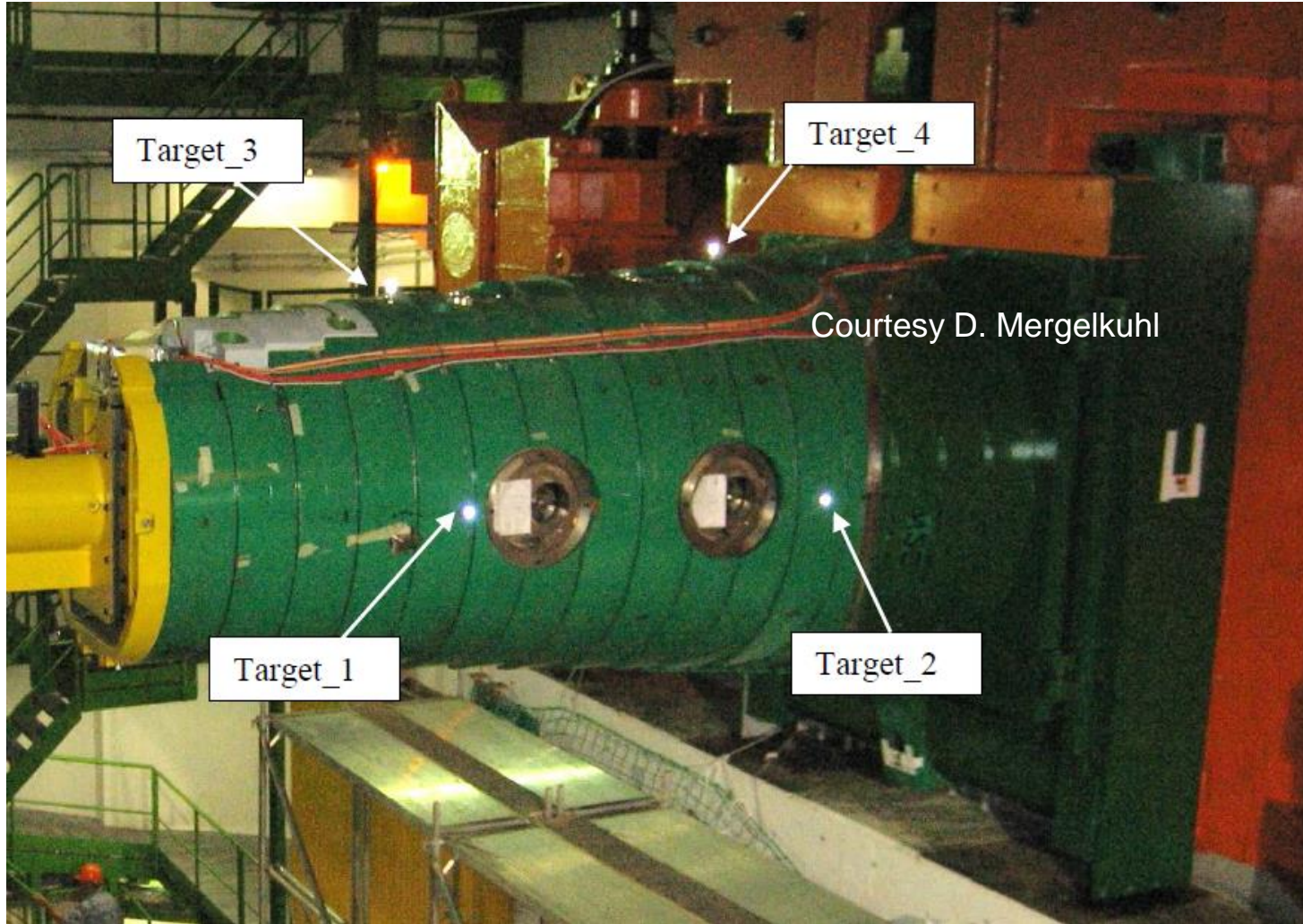
If a Experiments approval is needed for this year, September would be the latest date.

Motorization: ATLAS TAS survey history

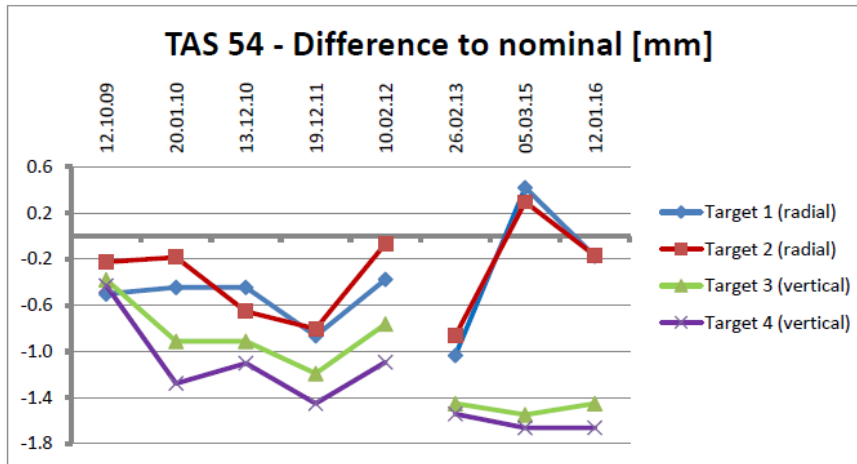
List of measurements	Operation	List of measurements	Operation
ATLAS TAS-A		ATLAS TAS-C	
March 2016	adjust	March 2016	measure
November 2014	measure	December 2014	adjust
February 2013	measure	February 2013	measure
March 2012	adjust	March 2012	adjust
February 2011	measure	28+31 January 2011	adjust
August 2009	adjust	September 2009	adjust
July 2008	adjust	18 July 2008	adjust
June 2008	adjust	04 June 2008	adjust

- Only measurement dates with the possibility (configuration) of adjustment have been taken into account.
- Other control measurements at detector opening or on permanent targets in run configuration exist

Courtesy D. Mergelkuhl



Motorization: CMS TAS survey history



35th WP8 Biweekly meeting
<https://indico.cern.ch/event/512614/>

Figure 6. Coordinate differences to nominal

Courtesy D. Mergelkuhl

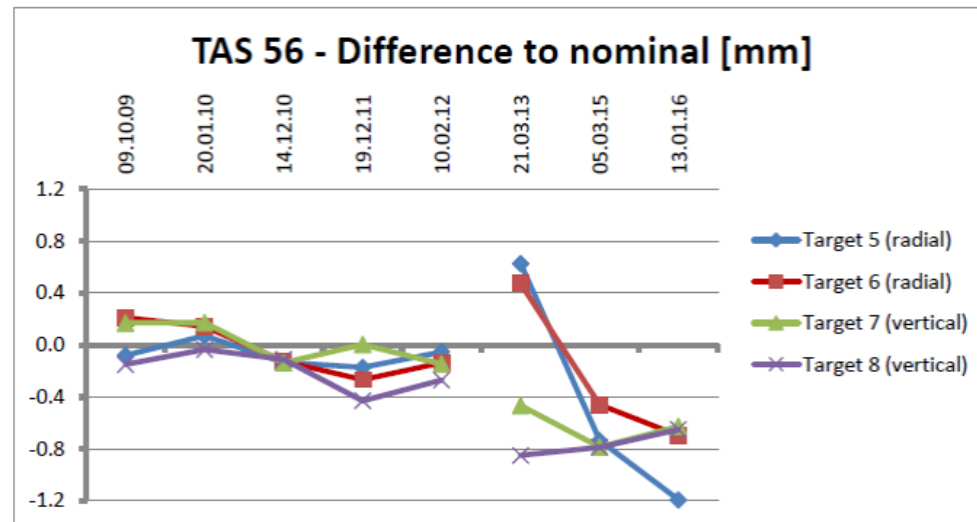


Figure 6. Coordinate differences to nominal

TAXS

- Ongoing work:
 - Integrating services
 - RP analysis
- Coming (24th may, WP8 bi-weekly)
 - Integration with Vacuum chamber @ experimental side