



LMBHA-002 (S3)

Work plan for dismounting, including QC

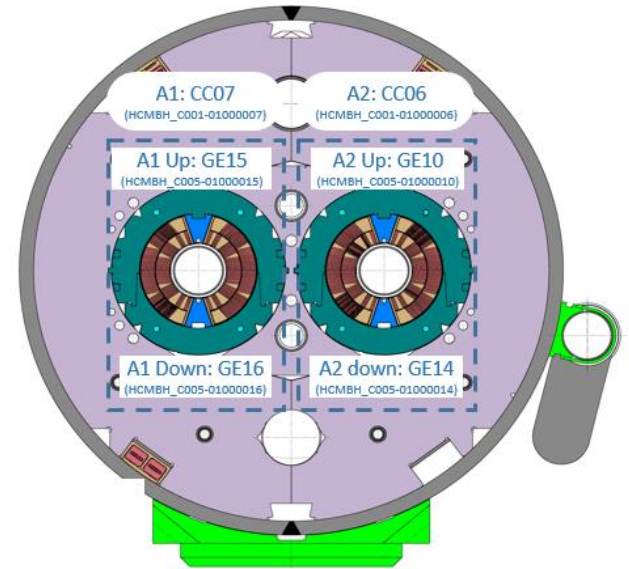
O. Housiaux, F. Savary



2020-02-19, 11T Dipole TM #24, <https://indico.cern.ch/event/889468/>

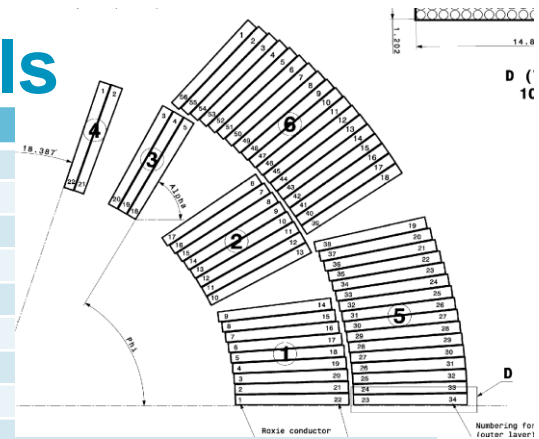
Outlook

- Pop-out events in models
- Dismounting of LMBHA002 (S3)
 - QC plan
 - Examination of coil 15
 - Preliminary schedule



Pop out events in models

Coil	Fabrication	Pop Strand in turn
104	2013	RAS
105	2013	17 CS
106	2013	1 & 2 NCS
107	2013	RAS
108	2014	RAS
109	2014	RAS
110	2014	RAS
111	2014	13&14 CS, 1&14 NCS
112	2015	19 CS, 20 NCS
113	2015	11 CS
114	2015	14 CS, 14 NCS
115	2015	14 & 20
116	2016	RAS
117	2016	RAS
118	2018	RAS
119	2018	RAS
120	2018	RAS
121	2018	13 CS
122	2018	19,20,21,22 CS & NCS
123	2018	13 CS
124	2018	RAS
201	2014	13 & 16 NCS
210	2018	RAS
211	2019	RAS
212	2019	RAS
213	2109	RAS
214	2019	17 & 20



Cable collapsed between 168 & 172 m

Summary on long coils from previous meeting			
	Total - IL	Total - OL	Total - IL+OL
Total CC	61	82	143
Total COC	64	88	152

Very instable cable. Collapsed and repaired

Courtesy J.C. Perez

Dismounting of LMBHA002 – QC Plan – 1

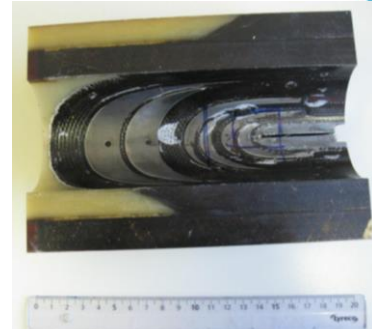
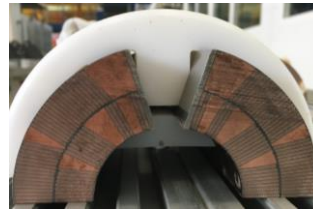
- Full spread sheet available in [Indico](#) of this meeting
- Includes the list of the disassembly operations, step by step, with the associated QC checks, as applicable
 - Part cold mass
 1. Removal of the trim leads
 2. De-cryostating
 3. Dismounting of the cold mass assembly
 4. Dismounting of the magnet assembly

Dismounting of LMBHA002 – QC Plan – 2

- Includes the list of the disassembly operations, step by step, with the associated QC checks, as applicable
 - Part collared coils of Aperture 1, CC07
 1. De-collaring
 2. Inspection of coil 15, which is limiting the magnet performance (NCR [2317612](#))
 3. Inspection of coil 16 (do we need to re-do metrology? T.b.c. later)
 - Part collared coils of Aperture 2, CC06
 1. Inspection of collared coils assembly, electrical tests, metrology, **check QH wires** (specially those of coil 14, NCR [2311125](#))
 2. De-collaring, **only if QH wires are good**
 3. Inspection of coil 14, specially of the QH circuits, re-do metrology t.b.c. later
 4. Inspection of coil 10, re-do metrology t.b.c. later
- Coils 10, 14, and 16 can be re-used for the next magnet

Examination of coil 15 (D1-UP)

- After all NDTs are completed, i.e. electrical tests, metrology, visual, organize micro-tomography on coil head, non-connection side
 - We will likely start with a longitudinal cut (S. Sgobba et al.)
 - Look for cracks, crossing wires (which would result from pop out that we would have missed, and left not repaired), voids (if “visible), ...
 - Then, we would do transversal cuts progressing towards the most probable location of the weak spots, as indicated by the local quench antenna
- It is also planned to do Nb₃Sn and Cu residual strain mapping by neutron diffraction (C. Scheuerlein)
- We can train on coil 2 (D1-UP) of the hybrid assembly, coil head, connection side



Preliminary schedule

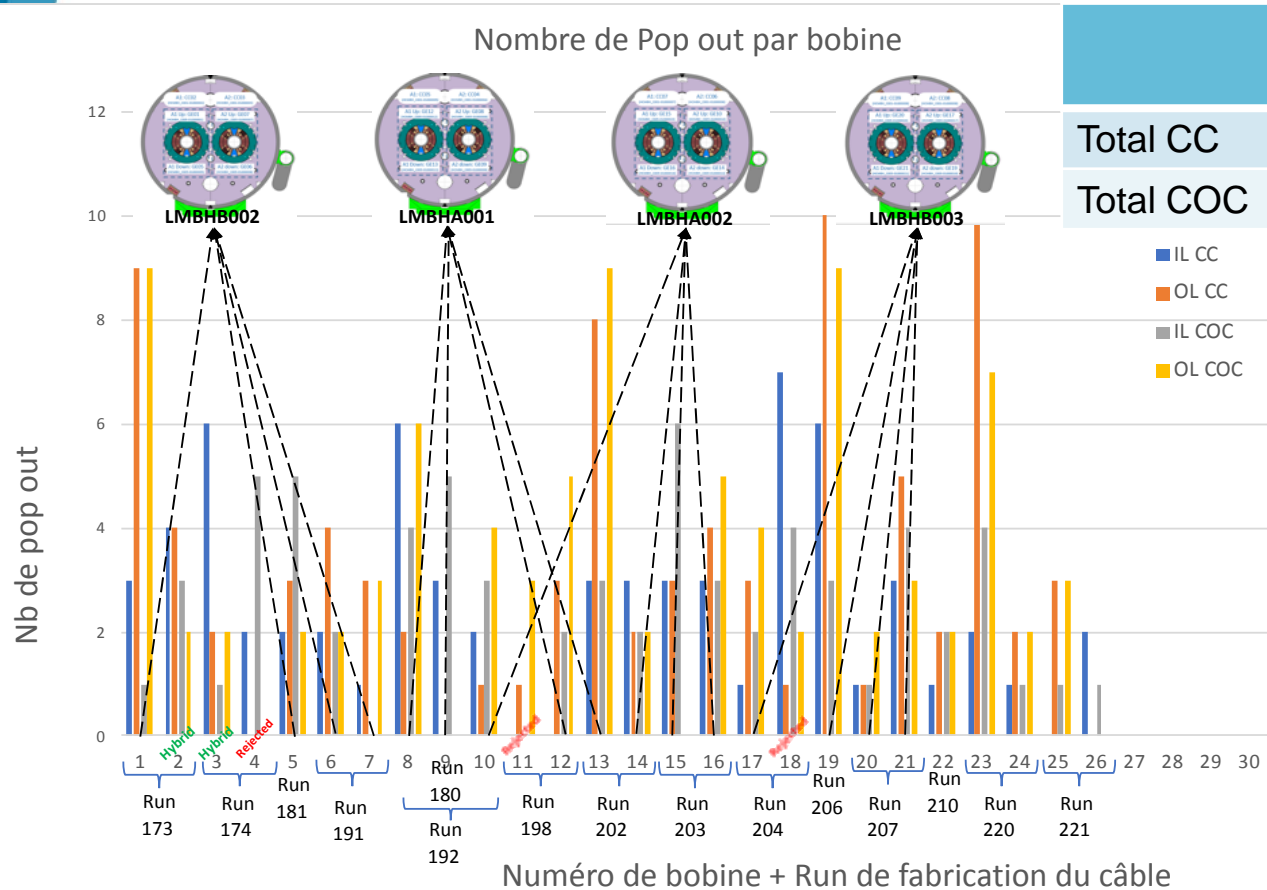
- De-cryostating ongoing, completed hopefully by end of next week
- Cold mass assembly back in 180 in the first week of March



Thank you for your attention!



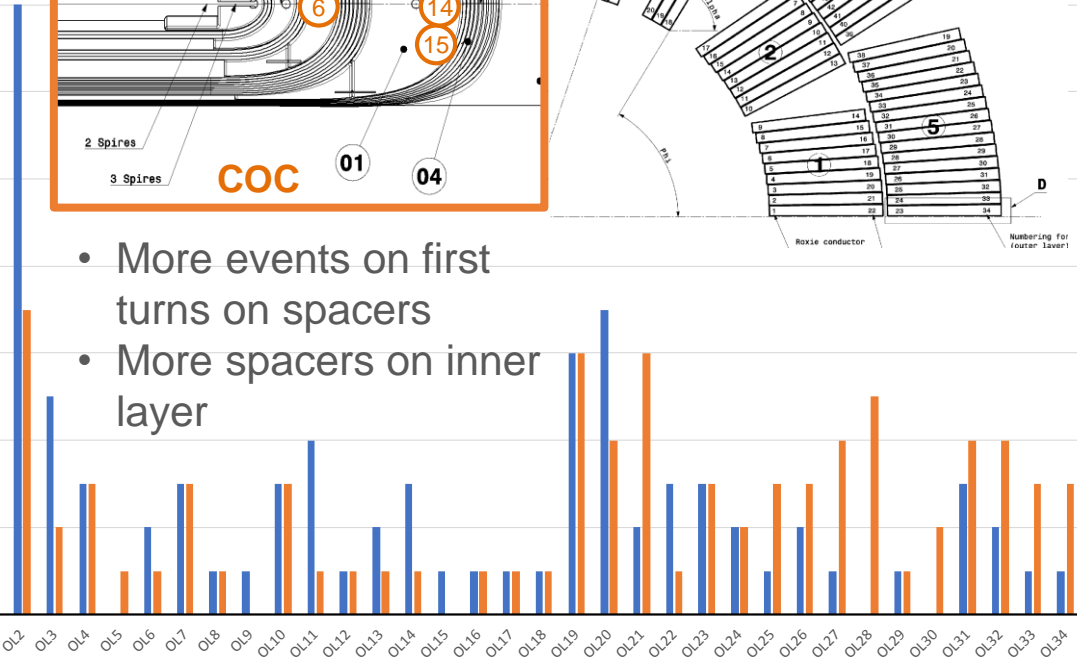
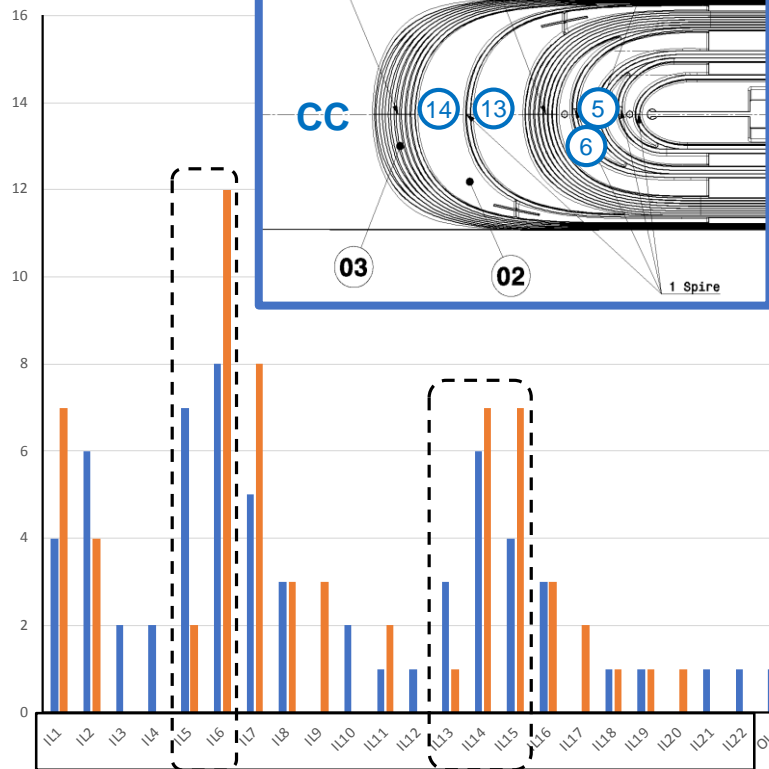
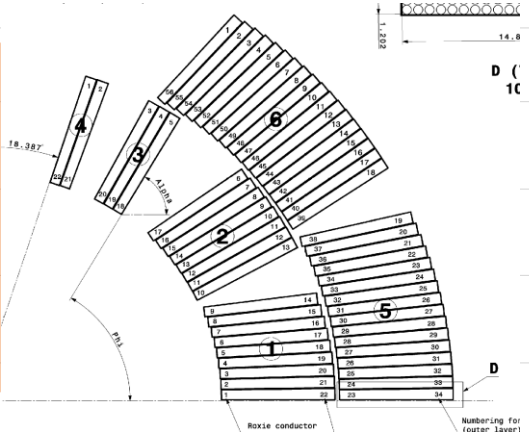
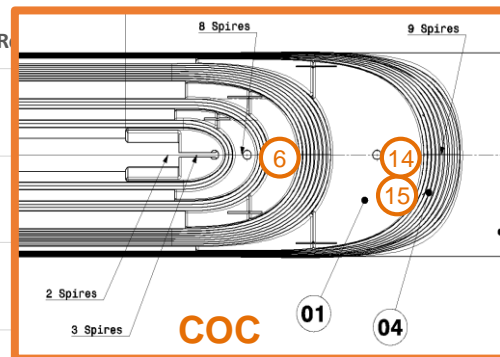
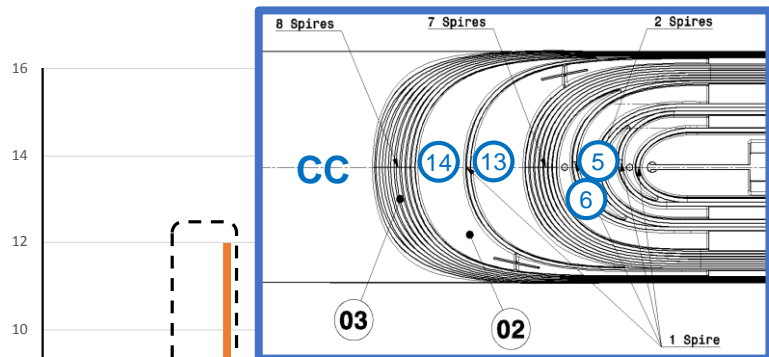
Winding and pop out – Nb events per coil



	Total IL	Total OL	Total IL+OL
Total CC	61	82	143
Total COC	64	88	152

- All coils concerned
- More events on OL, goes with Nb turns (globally)
- However, more events on some turns (see next slides)
- Only IL for coil 26
- We could also indicate the billets

Winding and pop out – Inner layer (22 turns)



- More events on first turns on spacers
- More spacers on inner layer

Winding and pop out – Outer layer (34 turns)

