



ISR workflow

Tests status

CMS week September 05, DT session

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News & status



- **Surface installation for YB+2, YB+1 finished (only feet MB4 chambers missing, to be installed after cabling)**
- **Chambers@ISR = 112 chambers (out of 170 still to be installed)**
- **HVB replacement well advanced (all chambers for next installation rounds before magnet test are already equipped with HVB5)**
- **Currently testing and preparing installation in YB0 and sectors 10 & 11 negative wheels**
- **2 shipments received since last CMS week (5 MB1 Aachen & 4 MB4 Turin)**
- **Shipments foreseen next weeks:**
 - 5 MB2 CIEMAT
 - 5 MB3 Legnaro
 - 4 MB4 Turin (October)
- **Mauro Cordero (TO technician) spent a week at CERN helping at ISR activities**
- **María Chamizo Llatas (CIEMAT) has joined the ISR crew since 01/09**



Chambers status



Type	@ISR	HVB5 (HVBI)	Under tests (HV/cosm)	HV/Cosm OK	RTI (MC)
MB1	29 (40)	23	10	7	4
MB2	29 (40)	20	10	4	2
MB3	29 (40)	24	10	6	2
MB4	1 (22)	1	1	1	
MB4/9-11	10 (10)	8			
MB4/10	6 (6)	6	6		
MB4/4	6 (6)	3			
MB4/8-12	2 (6)	2	2		
Total	112 (170)	87	39	18	8



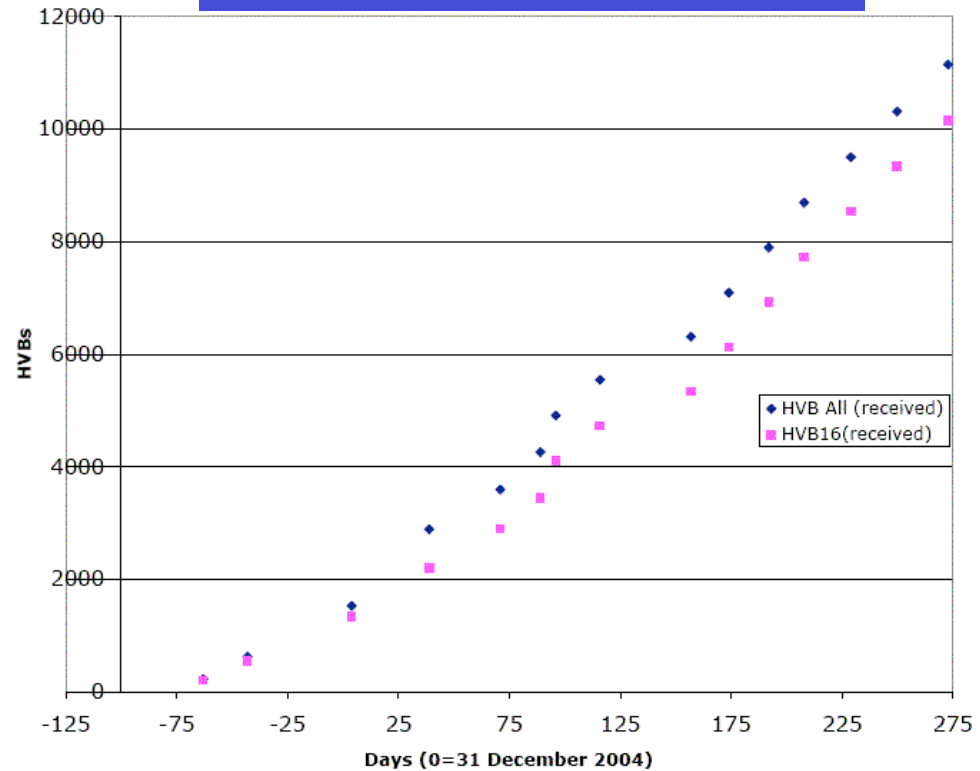
HVB delivery



HVB buffer @ ISR ~2000 HVB

New shipment expected from IHEP end September (800 HVB)

HVBs delivered from IHEP





HVB replacement



- **Still 25 chambers at ISR with old HVBs**
 - **Mostly spares & chambers for later (underground) installation rounds (6 MB1, 9 MB2, 5 MB3, 2 MB4/9-11, 3 MB4/4)**
- **Teams from all institutes have been present during the summer for replacement**
 - **AACHEN: HV & scaler tests except last replacement round**
 - **CIEMAT: All chambers tested under gas & scaler tests**
 - **LNL: Only HV tested after closing !**
- **Next replacement rounds**
 - **AA: Urgent: test chambers from last replacement (in progress)**
 - **CIE & LNL ?**



HV long term test



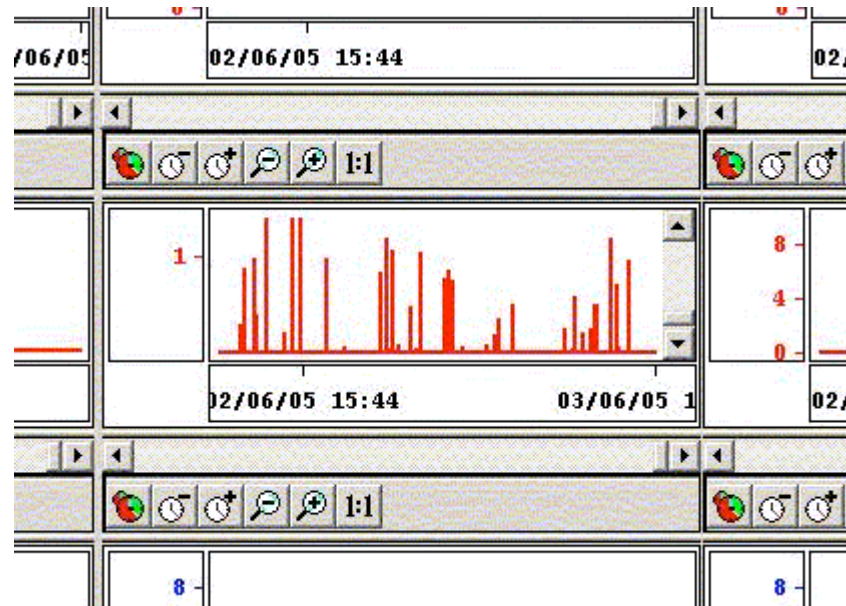
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The achieve of a stable HV behavior is the most time consuming operation and the main source of delays in chamber certification.

Many problems appeared only after weeks under gas & HV.

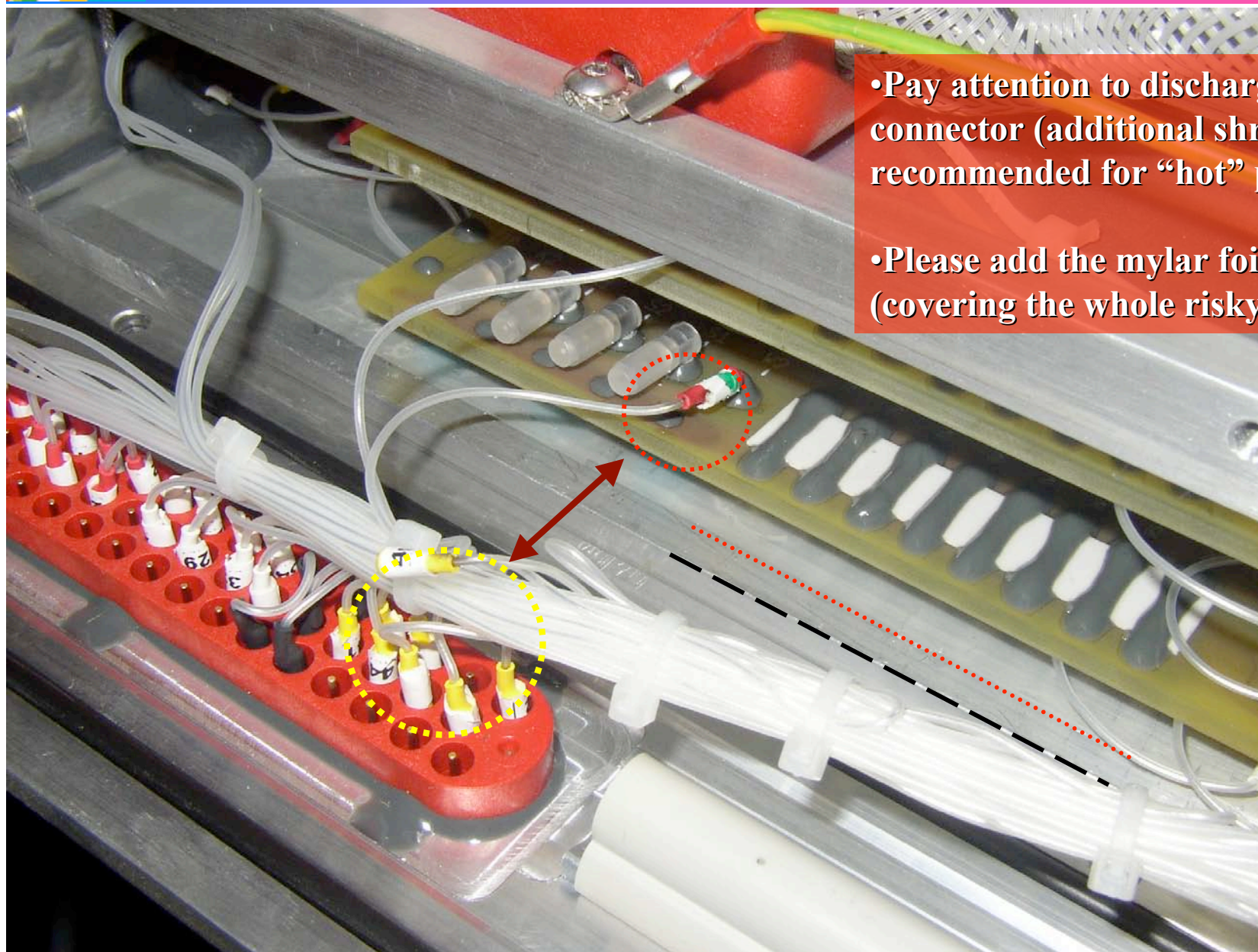
“Grass-like” discharges are still present. In some cases even despite HV components substitution the problem didn't disappear.

Careful isolation and handling of components is fundamental



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Some additional problems



- Pay attention to discharges in HV connector (additional shrink tube is recommended for “hot” pins)
- Please add the mylar foil properly (covering the whole risky surface)

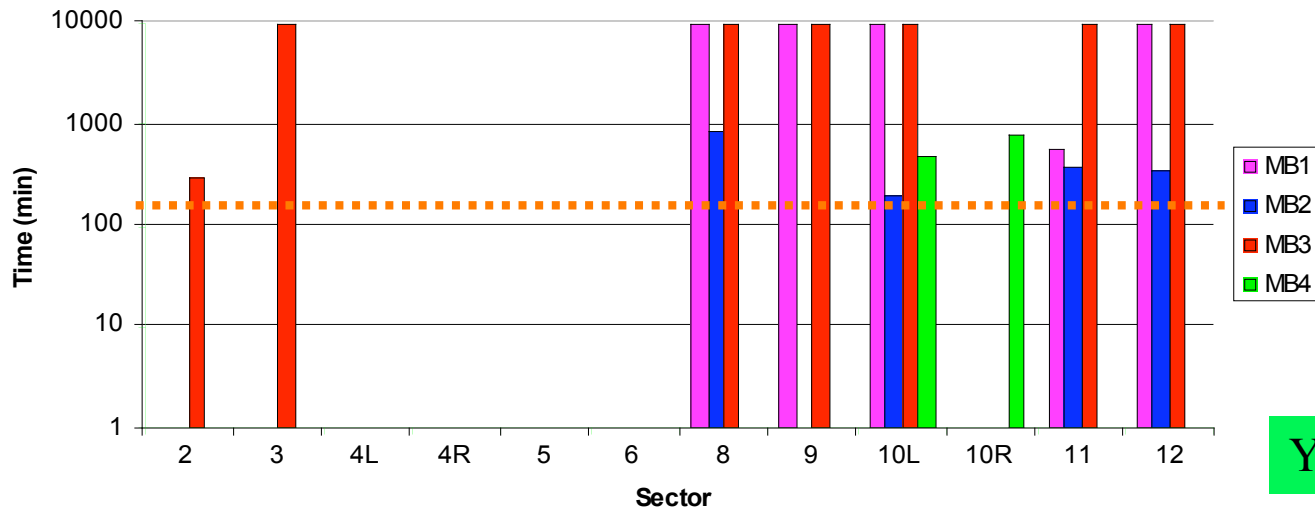
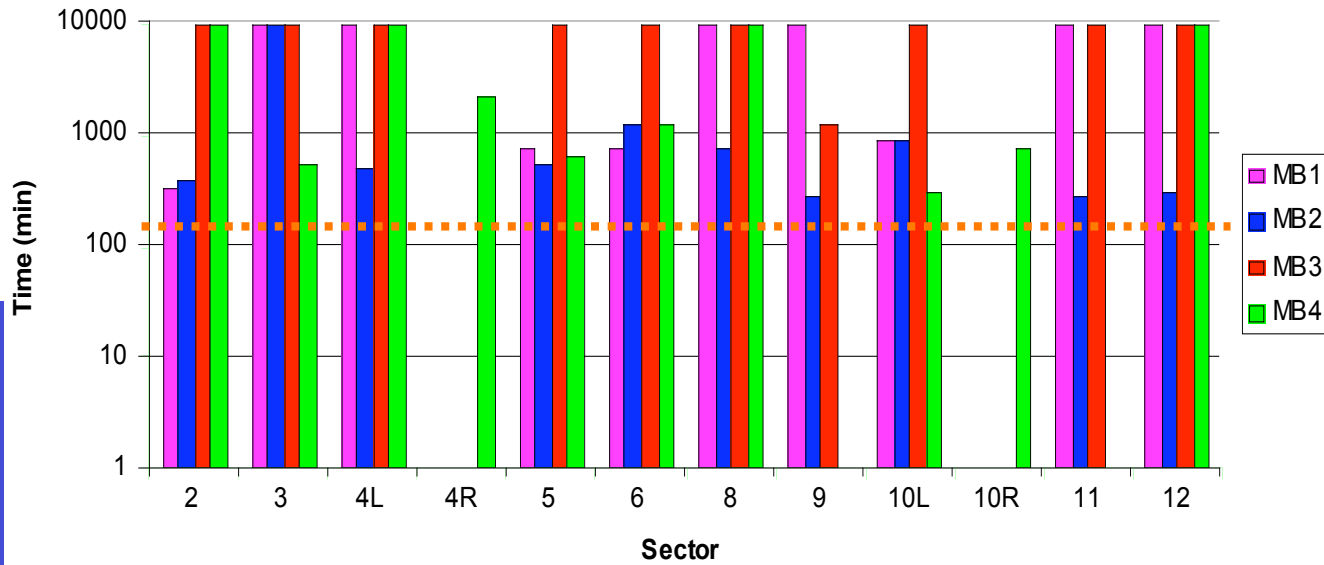


Gas tightness tests



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Minimum time constant required = 120 min



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MC tests (F. Gonella)



- **Intervention statistics from MC tests & reparations:**
- **Wheel 0**
 - (1 MB1, 1 MB2, 2 MB3, 2 MB4/10)
 - **2 noise**
 - **1 bad connector slow control theta -> changed**
- **Wheel +1**
 - **10 MB1, 10 MB2, 10 MB3, 2 MB4/4, 2 MB4/10, 6 MB4**
 - **14 noise**
 - **13 cabling (broken wires, bad/wrong connections, folded pins)**
 - **2 pin bad connection on feed thru**
 - **4 wire left inside chamber (mb2)**
 - **1 missed veto board on mc**
 - **1 dead channel -> FEB/HVC changed**
 - **1 FEB changed (fast masks)**
 - **2 slow control bus changed (fast mask)**
 - **1 BSR failed -> TRB changed**
 - **1 bad gas sensor**



YB+2 chambers status



- Surface installation for this wheel is complete (apart from feet chambers, to be installed as soon as cabling is finished)
 - Feet chambers are at the ISR, already fully certified (equipped with MC and tested), waiting for RPC coupling.
 - All installed chambers have been commissioned.
1. One **MB3** had HV problems during a few days (continuous wire discharges), intervention was planned but the problems disappeared by themselves... (?)
 2. One **MB3** had to be substituted due to HV problems (continuous strip discharges) and FE problems in the Theta SL. It was substituted for MB3C34 (initially assigned to YB+1) and equipped with HVB5.
 3. One **MB4** had to be returned to the ISR from SX5 before installation due to HV problems. At the ISR the discharges were identified inside of a cell in phi1, which had to be disconnected. We succeeded testing it under cosmics in upside-down position (RPC coupled).



YB+1 chambers status



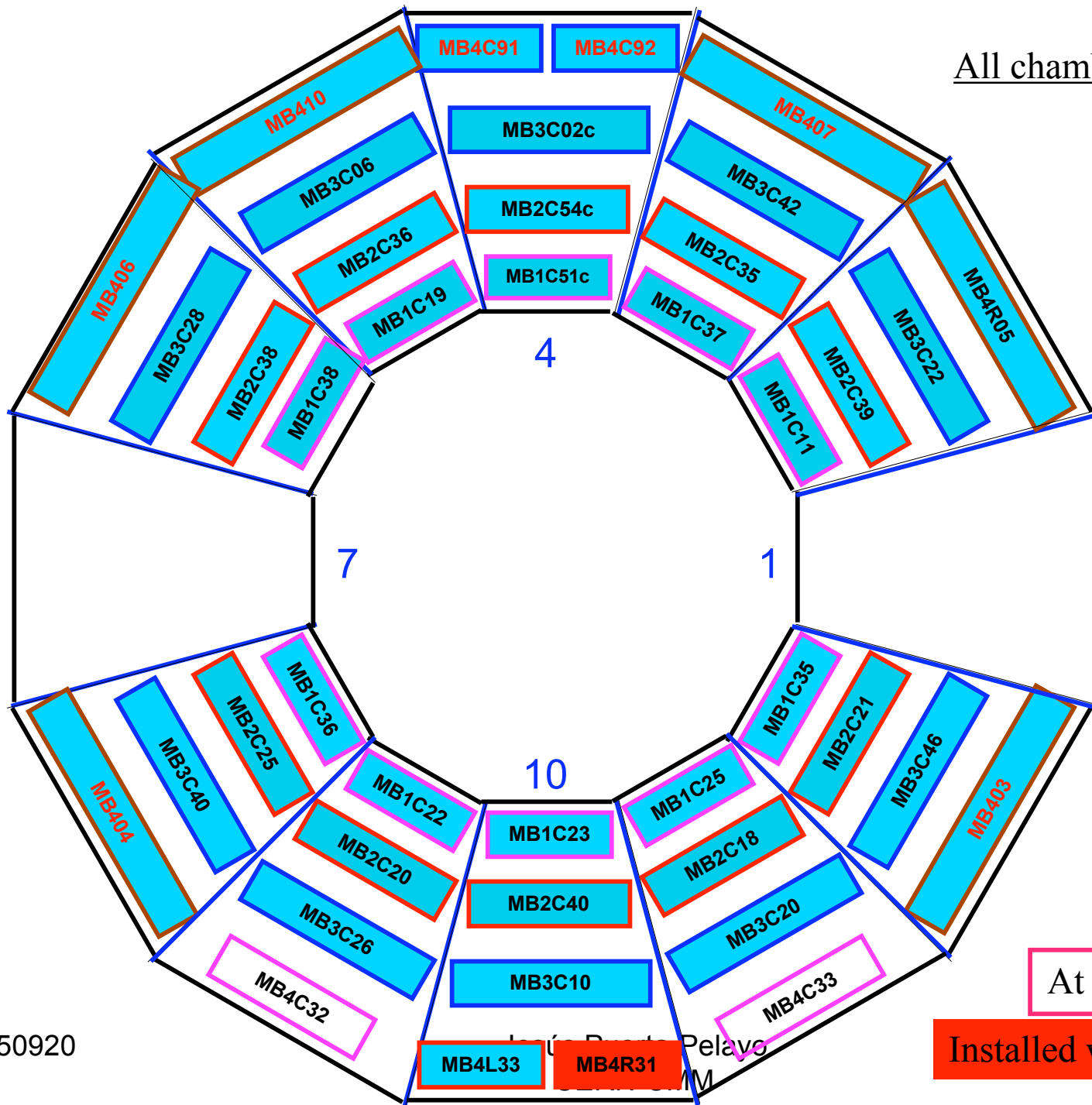
- **Surface installation just finished last week with the last MB4s (again, no feet chambers installed yet)**
- **MB3** removed from YB+2 (MB3C10) was repaired (cell disconnected), HVB substituted and reinstalled in YB+1 after testing.
- One of the **MB4/10** (MB4/10C31) chambers was installed with HV problems. It will be repaired as soon as the gas flow at SX5 comes back to normality.
- One of the big **MB4** (MB4C10) had some gluing defects along certain cathodes of the upper plate in phi2. They induced noise and some mechanical problems. It was compensated by gluing a thick plate on top of the problematic region.



YB+1 status



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All chambers with HVB5

Installed

At ISR (to be tested)

Installed with HV problems



YB0 chambers status



- Next installation will proceed with the positive sectors of wheel 0 and negative sectors on the bottom part of the wheel (total 8 sectors to prepare).
- All chambers for these sectors have been aligned and equipped with HVB5. They are at the ISR going through certification (only 2 MB4s not yet present)
- As soon as these chambers are ready, equipped with MCs, and coupled to RPCs they will be stored in vertical position in order to advance the installation tasks and free some space at the testing area (Up to 24 chambers, tool will be ready in the next days).
- Actually already 6 of them are sitting on the transport frames

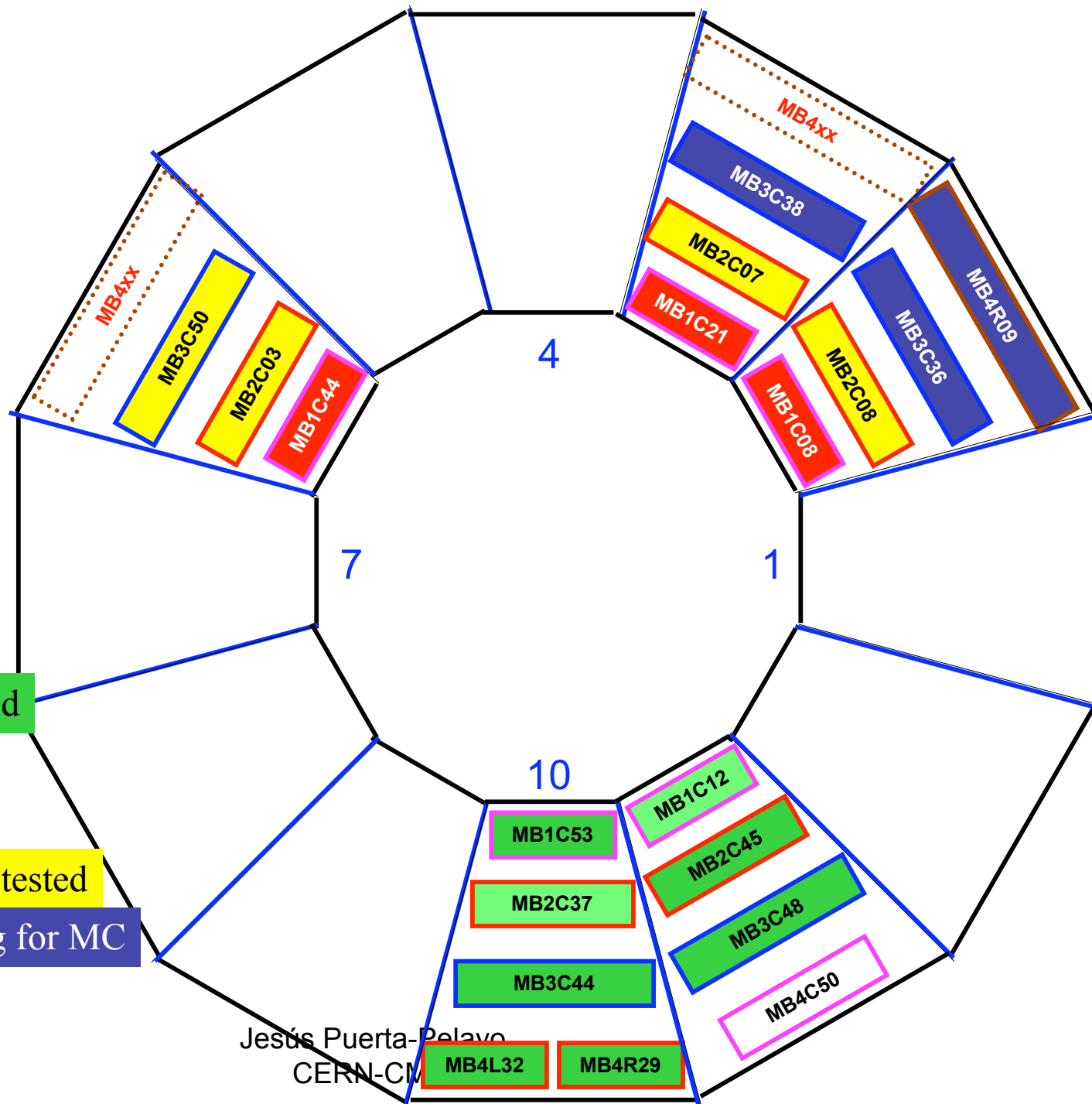


YB0, positive sectors



- RTI, RPC coupled
- RTI (MC)
- HV problems
- Under HV, to be tested
- Certified, waiting for MC

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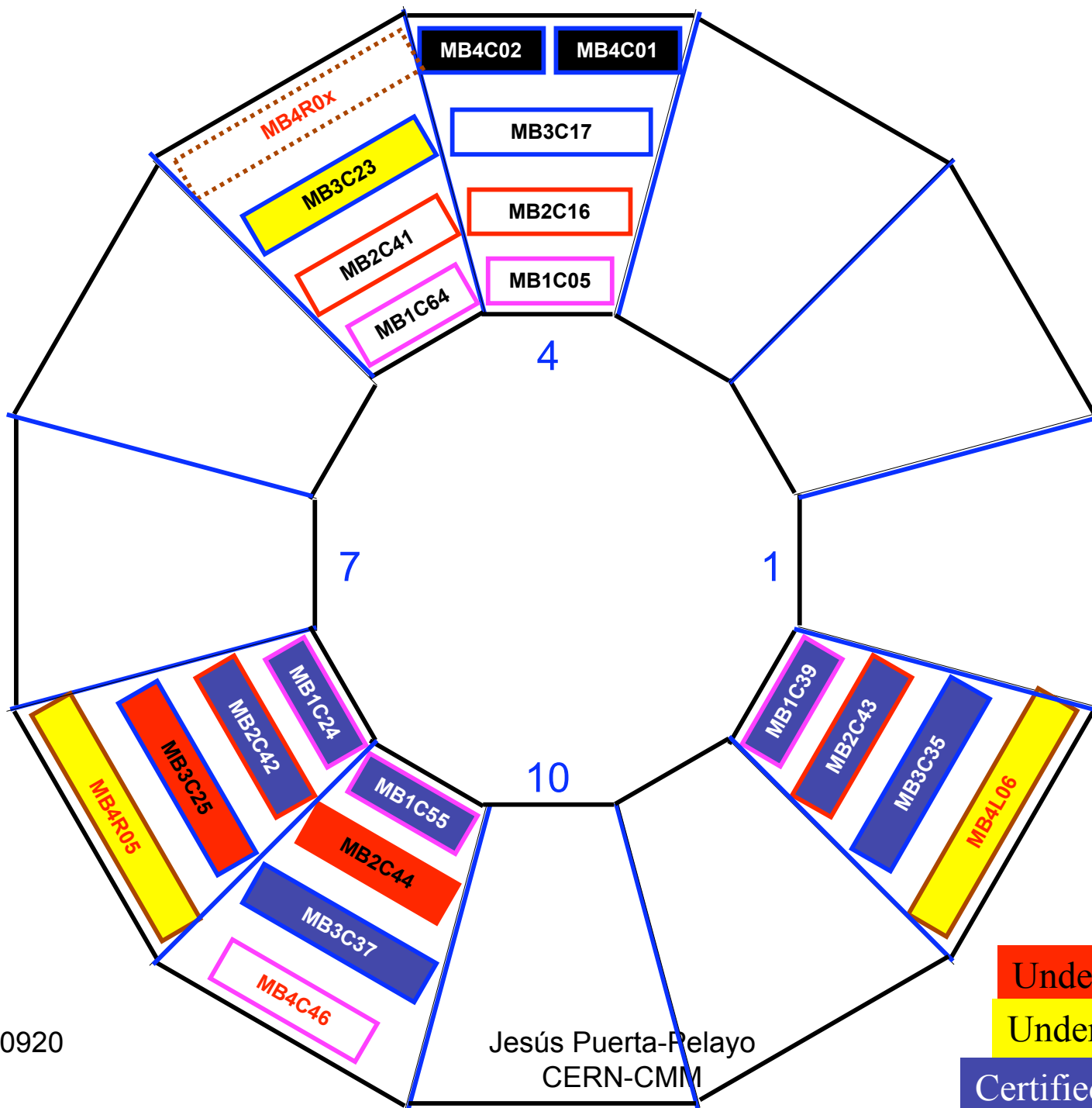
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YB0, negative sectors



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Old HVB

Under HV observation

Under HV, to be tested

Certified, waiting for MC



Chambers for magnet test

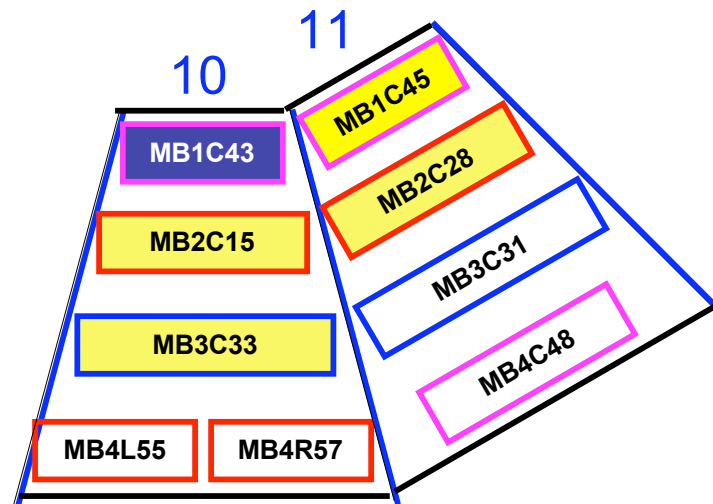


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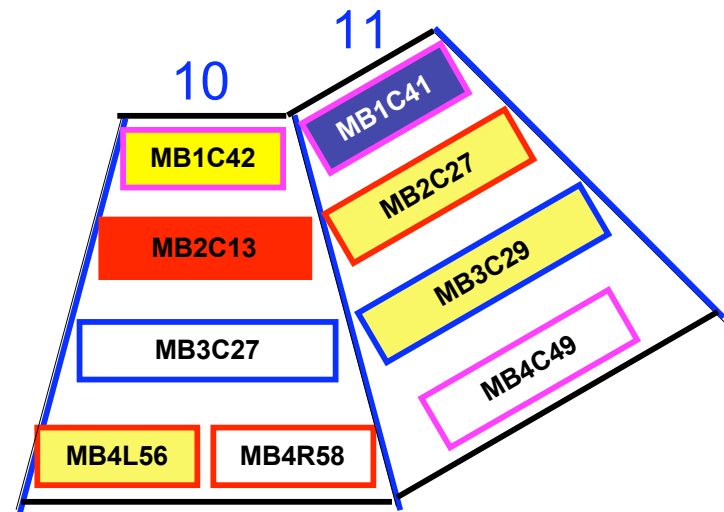
Chambers for sectors 10 & 11 of negative wheels are being prepared as well. Certification is still a few steps behind YB0 chambers.

(Installation foreseen for December / January)

All chambers with HVB5



Wheel -1



Wheel -2

HV problems

Under HV, to be tested

Certified, waiting for MC

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Perspectives



- Two wheels completed, YB0 in progress. We expect to have the chambers ready on time, but...
- Final certification is conditioned by settlement of **HV problems**. These delays are unpredictable.
- **MC availability** is not delaying recently chamber availability .
- **HVB production and delivery is out of the critical path.**
- **HVB for all chambers needed for next installation rounds before the magnet test have been already substituted.**
- Only a few chambers are left for HVB substitution. For this few chambers, it's important to minimize the time required to have them ready for MCS. We ask the replacement teams to **test** the chambers (HV & scalers) after substitution.
- A new data base with final versions of the traveller files is almost ready. It'll be released in the next days. Data from MC & MC tests will be included, and we are planning to create an electronic logbook for tests.