Drift Tubes Production Quality Control

- **Status Report** — **Silvia**
- **QC procedures and tests in the production sites** — **All**
- **Honecomb, SL and Chamber tests** — **Ezio**
- **Cathodes QC tests** — **Alberto**
- **Data Base news** — **Simone**

Status Summary

- **New QC web page**

http://www.to.infn.it/esperimenti/cms/QualityControl.html

- **New Version of the QC document**

- still under discussion: glue QC test, planarity QC test

- Site review Check List (Excel file)

http://www.to.infn.it/esperimenti/cms/SiteRev.xls

Progress

- **Production Procedures:**
  - **Draft in the QC document**
  - **Real procedure are the ones described in the document?**
  - **Update the document**
  - **Write detailed procedures for operators**
- **Production Check Lists:**
  - **Draft in the QC document, check and update**

New QC tests?

- **QC test on End-Plugs?**

  (see experience in Madrid)

- **QC test on cooling of FEB?**

Production Data Base

- **Use of ASCII file prepared by Simone**
- **Experience from sites**
- **Report problems**

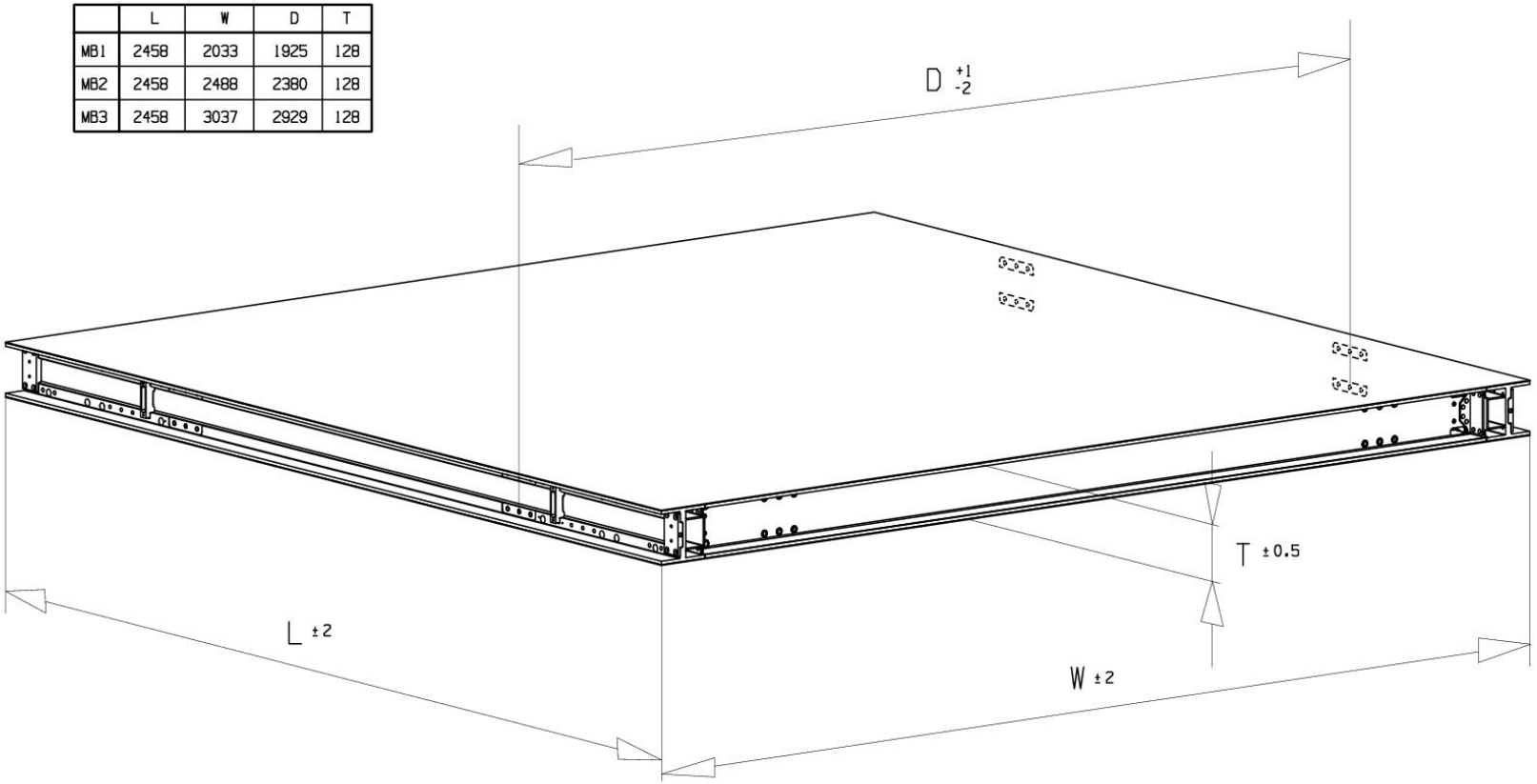
Honeycomb, SL and Chamber tests

Honeycomb test

- Now in QC 6.0:
  test planarity on a sample basis
- Update proposal:
  - measure L, W, T, D, Δdiag for every panel to check tolerances
  - measure planarity on a sample basis to check the max difference of 1 mm over the surface for both surfaces
- Store thickness in the DB (T_{mean} and T_{σ})

Fig.2.1) Honeycomb panel - dimensions naming convention
D: distance between milled surfaces of the support side profiles
L,W: max. dimensions of the panel (plates)
diagonal difference $\leqslant$ 3 mm

	L	W	D	T
MB1	2458	2033	1925	128
MB2	2458	2488	2380	128
MB3	2458	3037	2929	128



SL test: First H.V. test

- increase the nominal voltage setting (in air) from -1500/1900/3700 to -1900/1900/3900
- increase the time from 30min to 1h
- do not store currents into the DataBase
- perform the test without F.E. boards
- do we need a test jig to supply every cell (among a group showing problems) with a single H.V. channel ? With our connectors the higher possible segmentation is 8 wires / H.V. ch 16 cathode-strip / H.V. ch.

SL test: Second H.V. test

- **Conditioning: every Lab can decide how to perform the SL conditioning.**

  We suggest to define a procedure with parameter to be automated i.e. :

  - 3 steps of increasing V_{ampl}

  - ramp-up K times the voltage with N max number of failures

- **For everyone the SL is OK when:**

  - the number of disconnected cells to outlast the conditioning is < 5%

  - channel behaviour stable for several ours

SL test: Second H.V. test

- Record into the DataBase the mean value and r.m.s of currents during the stability test
- Rates:

  The counter card (128 input channels) we supposed to build in Padova will be ready too late (or never). We can try to find other solutions.

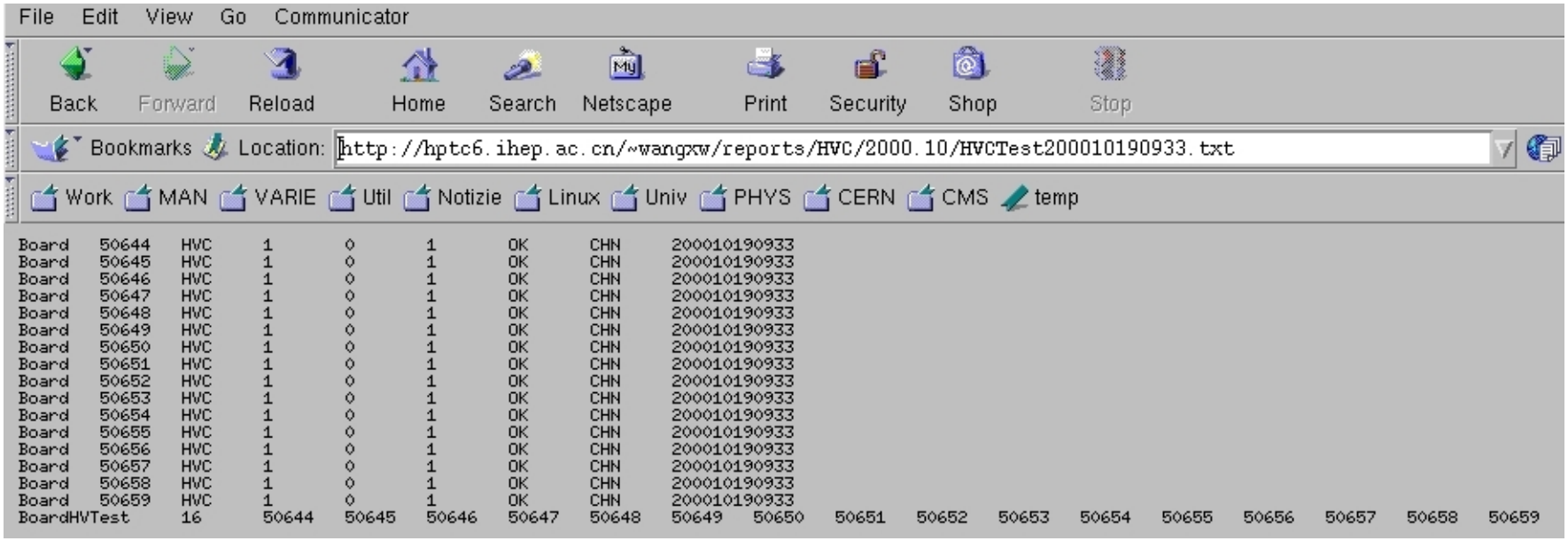
Chamber test

- Cosmic ray test still not defined
- We must decide the hardware to be used:
  for the CAEN (128 channel) TDC boars
  new level translators must be constructed

News from QC DATABASE

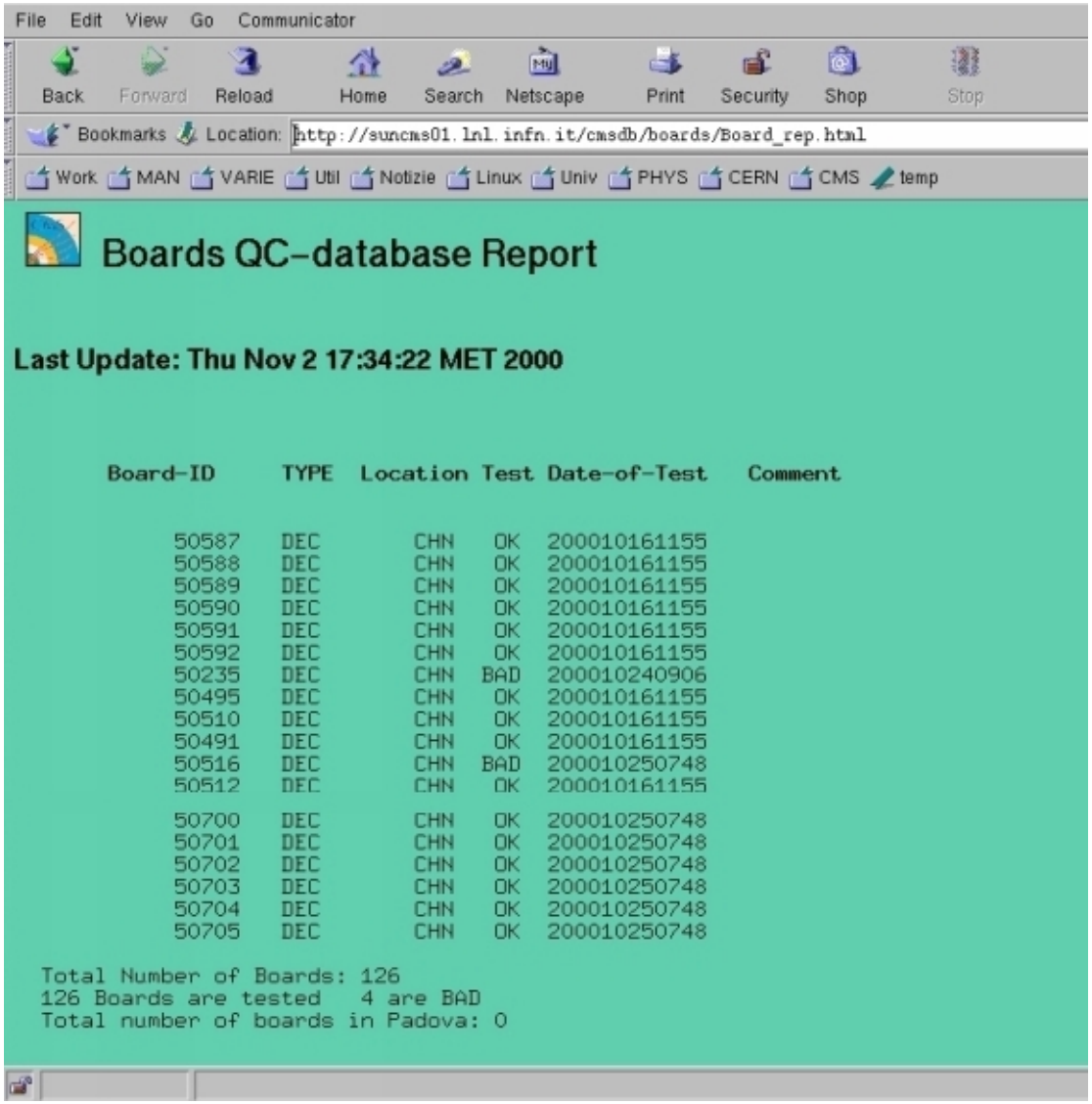
... Start to see functionality !

Decoupling boards (HVC) produced and tested in China. After few changes to the format, ascii files were available on Chinese Web server:



These data could be retrieved via Web and inserted in the db in Padova. A script is looking at the db content, looking for new boards inserted or re-measured. A summary is

published as a Web page:



DISCUSSION ON SUPERLAYER AND CHAMBER TESTS:

SUPERLAYER TESTS

TEST (Q.C. Document)	IMPLEMENTED	TO BE IMPL.	NOT TO BE IMPL.
7.1 strip electrical contact			x
7.2 First HV test (in air)	X		
7.3 Preliminary Test on Gas			x
7.4 Acceptance Test on Gas Tightness	x		
7.5 Second HV Test (in gas)	x		
7.6 Superlayer Thickness		x	
7.7 F.E. Cosmic rate		x-(1)	

(1): what do we want to store ?

Just rates ? Rates vs threshold ? Pressure ? Voltage settings ?

CHAMBER TESTS

TEST (Q.C. Document)	IMPLEMENTED	TO BE IMPL.	NOT TO BE IMPL.
8.1 phi Sup. Allign. (<500um)	x		
8.1 Thickness (+/- 1mm)		x	
8.2 Cosmic Ray Test		x-(2)	

(2): what do we want to store ?

Voltage settings ? Pressure ? Meantimes ? σ(MT) ?

Raw-data Filename ?

Stuff is still missing in the DB:

end-plugs for wires, corner blocks... and more. Pls. Look at the ascii file format !

Thanks to useful comments from Mary-Cruz and Marco Verlato