



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**



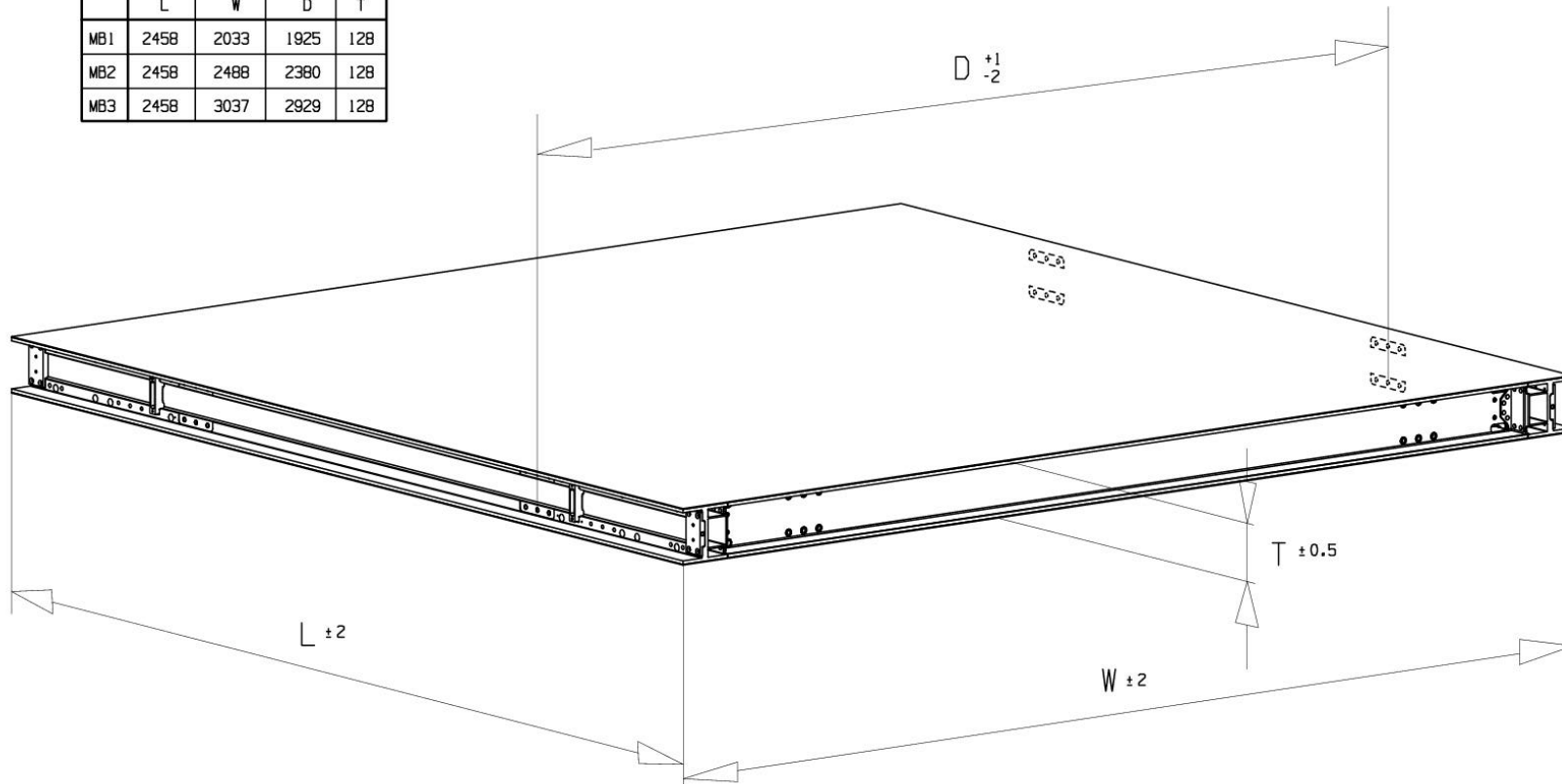
Honeycomb, SL and Chamber tests

Honeycomb test

- ◆ **Now in QC 6.0:**
test planarity on a sample basis
- ◆ **Update proposal:**
 - **measure L, W, T, D, Δ diag 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 ≤ 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.



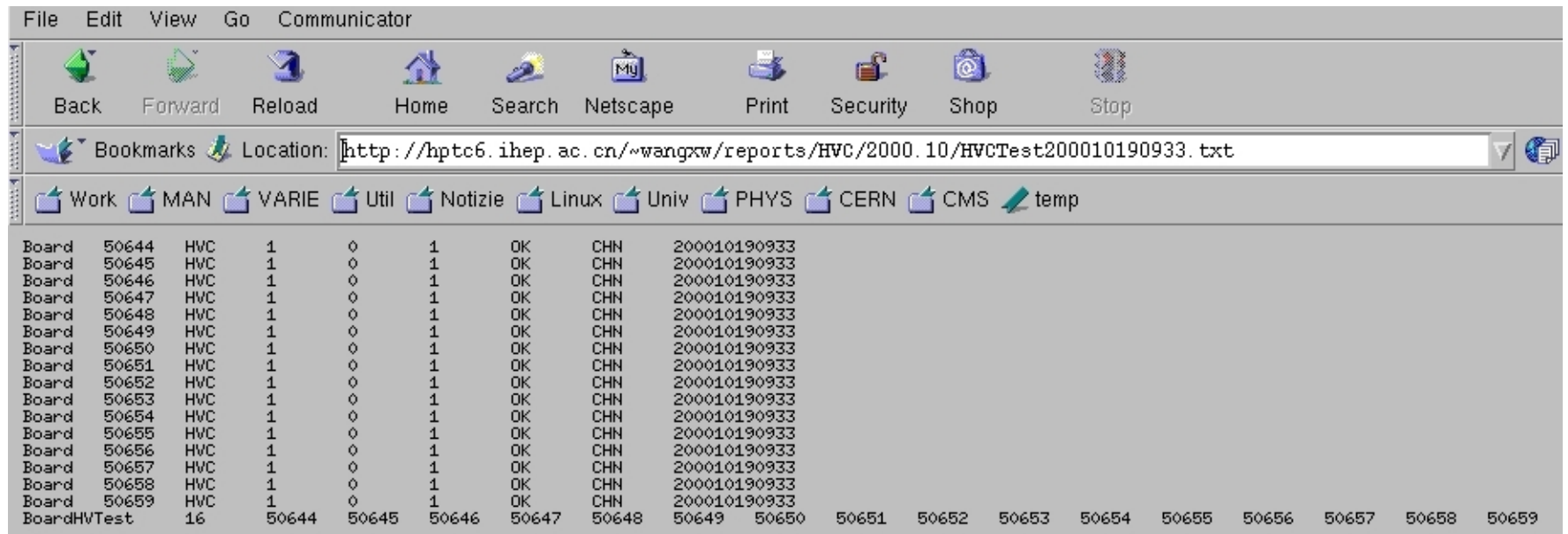
Chamber test

- ◆ **Cosmic ray test still not defined**
- ◆ **We must decide the hardware to be used:
for the CAEN (128 channel) TDC boards
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:



The screenshot shows a Netscape browser window with the following elements:

- Menu bar: File, Edit, View, Go, Communicator
- Toolbar: Back, Forward, Reload, Home, Search, Netscape, Print, Security, Shop, Stop
- Address bar: Location: <http://hptc6.ihep.ac.cn/~wangqxw/reports/HVC/2000.10/HVCTest200010190933.txt>
- Bookmark bar: Work, MAN, VARIE, Util, Notizie, Linux, Univ, PHYS, CERN, CMS, temp
- Main content area: A table of board data.

Board	50644	HVC	1	0	1	OK	CHN	200010190933											
Board	50645	HVC	1	0	1	OK	CHN	200010190933											
Board	50646	HVC	1	0	1	OK	CHN	200010190933											
Board	50647	HVC	1	0	1	OK	CHN	200010190933											
Board	50648	HVC	1	0	1	OK	CHN	200010190933											
Board	50649	HVC	1	0	1	OK	CHN	200010190933											
Board	50650	HVC	1	0	1	OK	CHN	200010190933											
Board	50651	HVC	1	0	1	OK	CHN	200010190933											
Board	50652	HVC	1	0	1	OK	CHN	200010190933											
Board	50653	HVC	1	0	1	OK	CHN	200010190933											
Board	50654	HVC	1	0	1	OK	CHN	200010190933											
Board	50655	HVC	1	0	1	OK	CHN	200010190933											
Board	50656	HVC	1	0	1	OK	CHN	200010190933											
Board	50657	HVC	1	0	1	OK	CHN	200010190933											
Board	50658	HVC	1	0	1	OK	CHN	200010190933											
Board	50659	HVC	1	0	1	OK	CHN	200010190933											
BoardHVTest	16		50644	50645	50646	50647	50648	50649	50650	50651	50652	50653	50654	50655	50656	50657	50658	50659	

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

Simone Paoletti QC meeting CERN 6/11/2000

published as a Web page:

The screenshot shows a Netscape Communicator browser window. The address bar contains the URL `http://suncas01.inl.infn.it/cmsdb/boards/Board_rep.html`. The page title is "Boards QC-database Report" and it was last updated on "Thu Nov 2 17:34:22 MET 2000". The report contains a table of board test results.

Board-ID	TYPE	Location	Test	Date-of-Test	Comment
50587	DEC	CHN	OK	200010161155	
50588	DEC	CHN	OK	200010161155	
50589	DEC	CHN	OK	200010161155	
50590	DEC	CHN	OK	200010161155	
50591	DEC	CHN	OK	200010161155	
50592	DEC	CHN	OK	200010161155	
50235	DEC	CHN	BAD	200010240906	
50495	DEC	CHN	OK	200010161155	
50510	DEC	CHN	OK	200010161155	
50491	DEC	CHN	OK	200010161155	
50516	DEC	CHN	BAD	200010250748	
50512	DEC	CHN	OK	200010161155	
50700	DEC	CHN	OK	200010250748	
50701	DEC	CHN	OK	200010250748	
50702	DEC	CHN	OK	200010250748	
50703	DEC	CHN	OK	200010250748	
50704	DEC	CHN	OK	200010250748	
50705	DEC	CHN	OK	200010250748	

Total Number of Boards: 126
126 Boards are tested 4 are BAD
Total number of boards in Padova: 0

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

