Front End Layout Working Group

Murrough Landon – 2 July 2003

`http://www.hep.ph.qmul.ac.uk/~landon/talks`

Contents

- About the working group
- Latest rack layout
- Patch panels and crate layout
- Cable lengths
- Still to do...

Working Group

Mandate

- TileCal patch panels and cables to receivers
- Patch cables from receivers to PPMs
- Rack, crate and cable layout
- Cabling document

Members

- John Garvey, Paul Hanke, Murrough Landon, Steve Hillier

Activity

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- Web page for working documents and useful links
  `http://www.hep.ph.qmul.ac.uk/~landon/atlas/layout-wg`
- Initial phone meeting (minutes on web page)
- Contacts with ATLAS technical coordination (Sergei Malyukov)
- New and updated discussion documents, drawings and spreadsheets (see web page)
- Cabling "bible" document (see Steves talk)

Rack Layout

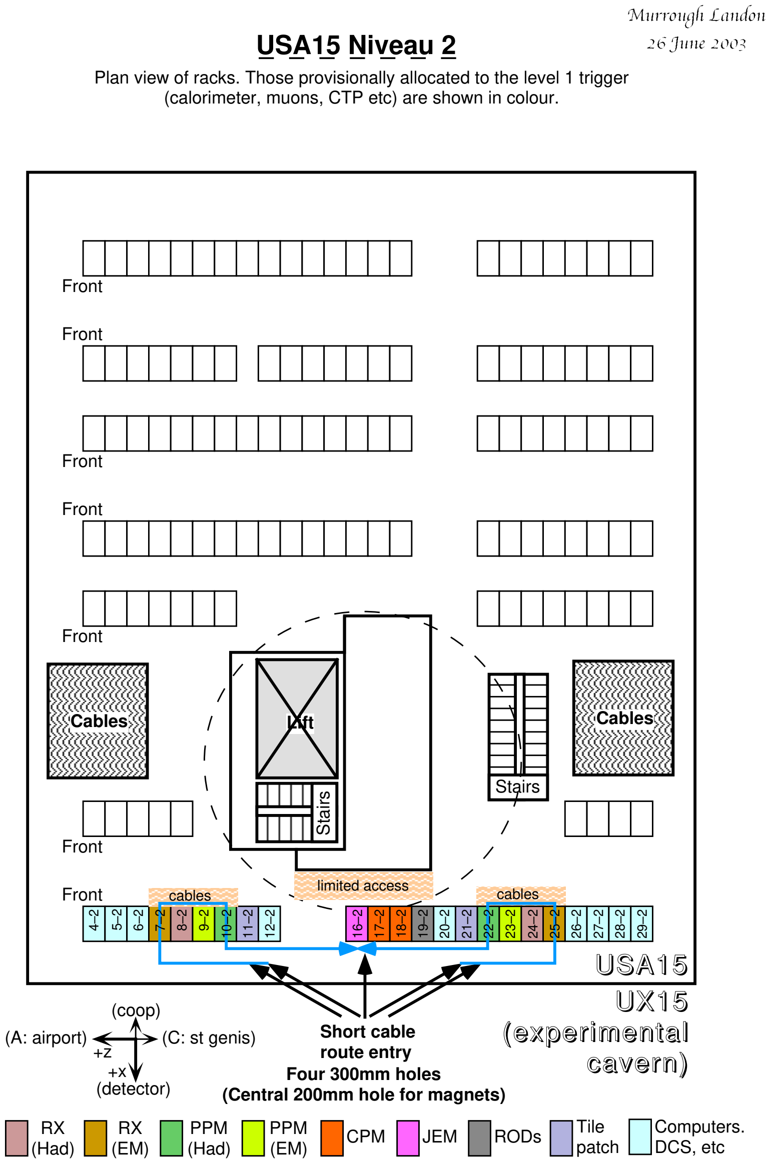
Rationale

- Minimise latency... but preserve “human” working conditions
- CP, JEP and ROD crates in the centre (by the inconvenient wall and above CTP on the floor below).
- Receiver and preprocessor crates further out for easier management of heavy cables in and out of front panels.
- Additional rack for computing/ancillary equipment on each side (between PP and CP/JEP racks)

Recent changes

- Need to make space for TileCal patch panels (whole rack on each side!). Patch panels could be mounted at the back leaving some space at the front for ancillary kit?

Rack Layout in USA15 (Niveau 2)



Patch Panels

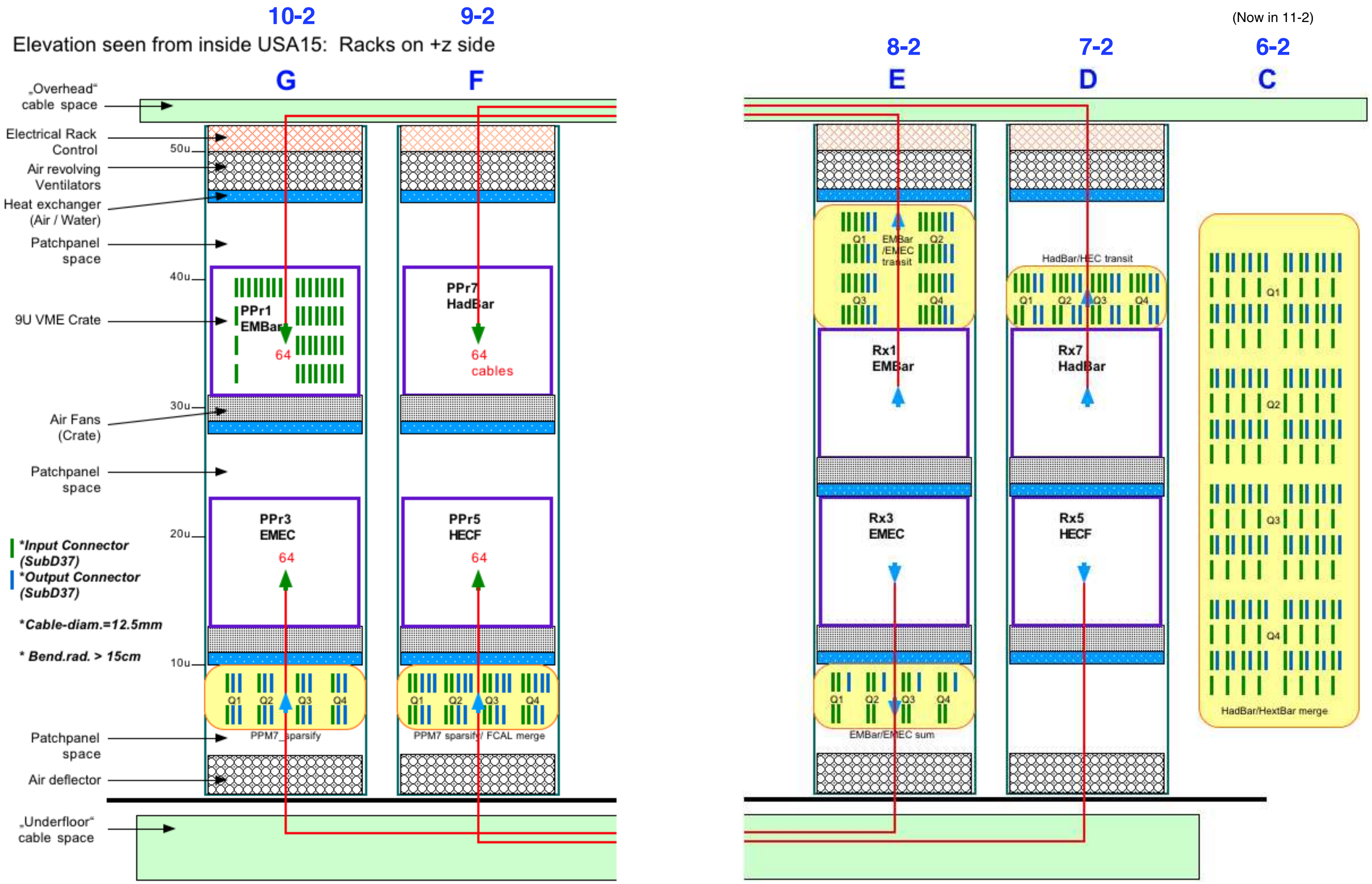
Regions	Mapping	N. in (each side)	N. out (each side)	Comments
TileCal barrel/extended barrel merging and calo/muon separation	2:2	128	128	Receiver inputs
Summing across LAr EM barrel/endcap transition	4:1	16	4	Internal to receiver system
LAr EM barrel/endcap transition	2:1	32	16	
Tile barrel/HEC transition	5:4	20	16	
EMEC far eta "sparsification"	1:2	8	16	
HEC far eta "sparsification"	1:2	8	16	
Hadronic FCAL merging	2:1	8	4	

Crate and Patch Panel Layout

Location of patch panels

- TileCal barrel/extended barrel merging and calo/muon separation: this is a monster and needs a rack of its own
- Summing across LAr EM barrel/endcap transition: internal to the receiver rack (at the back??)
- Remaining panels (between receivers and PPMs) located in the front of the racks, top and bottom, leaving crates at more “human” height near the middle

Layout of Receiver and PreProcessor Crates (A side)



Cable Lengths

From TileCal/LAr

- We now have TileCal signal cable lenths for each of the 64 drawers (“fingers”?) in phi for barrel and extended barrel.
- The range is 32-45m from the barrel and 62-75m from the extended barrel. The maximum is 4m higher than the previous estimate. Despite the apparent precision there are still uncertainties. But it is said that the route is now fixed.
- We do not yet have the same detail for the LAr calorimeters, but there is a suggestion there may be an extra 1.5m.
- The TileCal cables (like LAr) will probably be cut in four(?) groups of identical lengths rather than individual minimum lengths. This is to minimise the number of different input daughterboards on the receivers
- With the information of how many cables will be cut to each length we will determine how many more patch cables we need to order? (Some, or maybe all, can be made from offcuts of the long cables).

Remaining Work

Dont forget

- Cable paths between racks: separate heavy analogue and light LVDS (and Glink, TTC, etc) cables. Also separate cables from detector and those between receivers and preprocessors.