Minutes of the Patch Box technical meeting
DESY Sep 2nd 1999

Present: R.Carlin, L.Wiggers, G.Nixon, M.Postranecky, J.Fraser, P.Shield

1) A conceptual design of the patch box was reviewed. The essential features are:

- There will be 4 shielded boxes (4 quadrants). The shield will be insulated from the surrounding metal structures. Each box will contain a crate with interface cards, positioned along z (the cards are in the x-y plane).
- The "combo" cables, bundled and shielded with zipper type jackets will enter from the side of the box. Inside, the single combo cables will be connected to the front of the cards (the side facing the beam pipe)
- On the opposite side of the cards, the thicker cables to the rucksack will be connected and bundled. Outside the box also those bundle will be shielded with zipper jackets.
- There will be 4 type of cards for the combo cables, each card will have space for 20 combo cables, which will split in 4 sub-cables with the appropriate connectors:
  - LV cards (passive)
  - HV+SC cards (passive)
  - C&C cards (active, with receivers-drivers for LVDS and CMOS signals)
  - Analog cards (passive, with proper impedance matching and shielding)

- This set of 4 adjacent cards will be repeated 3 times, for a total of 60 channels/box (240 total, 206 needed).
- In each box there will be 3 more cards:
  - Rad Monitor
  - Alignment
  - Miscellaneous
- The box will have to pivot around a vertical axis, to ease the cabling.

Actions to be taken:

- Study a proper mechanical support (UK)
- Define the power consumption of the active cards, to define the proper cooling (G.Nixon). Check the magnetic field (to possibly use fans) (R.C.)
- Draw a sketch of the solution and send to the MVD group for approval (P.Shield)
- Decide on connectors on front side (R.C. + UK) and on the rear side (Torino-> PCB mounted connectors, UK suggest HV connectors). Janet keeps the list updated.
- Ask R.K. to define the HV system (cables, modularity)
- Torino will check for weird effect with LV and long sense wires.
- Measure the exact length of combo cables once the design is fixed (UK)

2) Review of the concepts for the C&C HELIX drivers

- The VME card in the VW area will deliver only LVDS signals (already shifted by 1.2V)
- In the patch box card there will be piggy-back cards with LVDS receivers and drivers for the +-2V and LVDS helix signals (possibly only straight connection for the native LVDS signals?). The power for these piggy-backs will come from the VME card in the VW.
- A schematic of the piggy-back (mostly CMOS drivers) will be readily produced and sent to PD.
- A prototype piggy-back will be produced and be in DESY early October, for studies with Helix and ADC. It will be accompanied either by the mating VME card prototype, or by a card with connectors for the HP pattern generator and providing shifted LVDS signals.

3) Other items discussed:

- Routing of cables: Janet will ask for the drawings of C5 and the surrounding area (RCAL with shims), and try to figure out a possible route. R.C. will contact the C.Muhl to check the C5 installation.
- 4 or 8 extra combo cables will be reserved for the rad monitor.

Minutes by R.C.