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Review of Cables

Cables:

- AMS-Wire like cables
- CAN-Bus cables
- Cables between PDS and xPDs
- Cables between xPDs and Crates
- Global Temperature Sensor Network
- Cables between PDS and some heaters
- Subdetector cables
- Subsystem cables
- Interface and GSE cables
- “Other” cables

AMS-Wire Like Cables

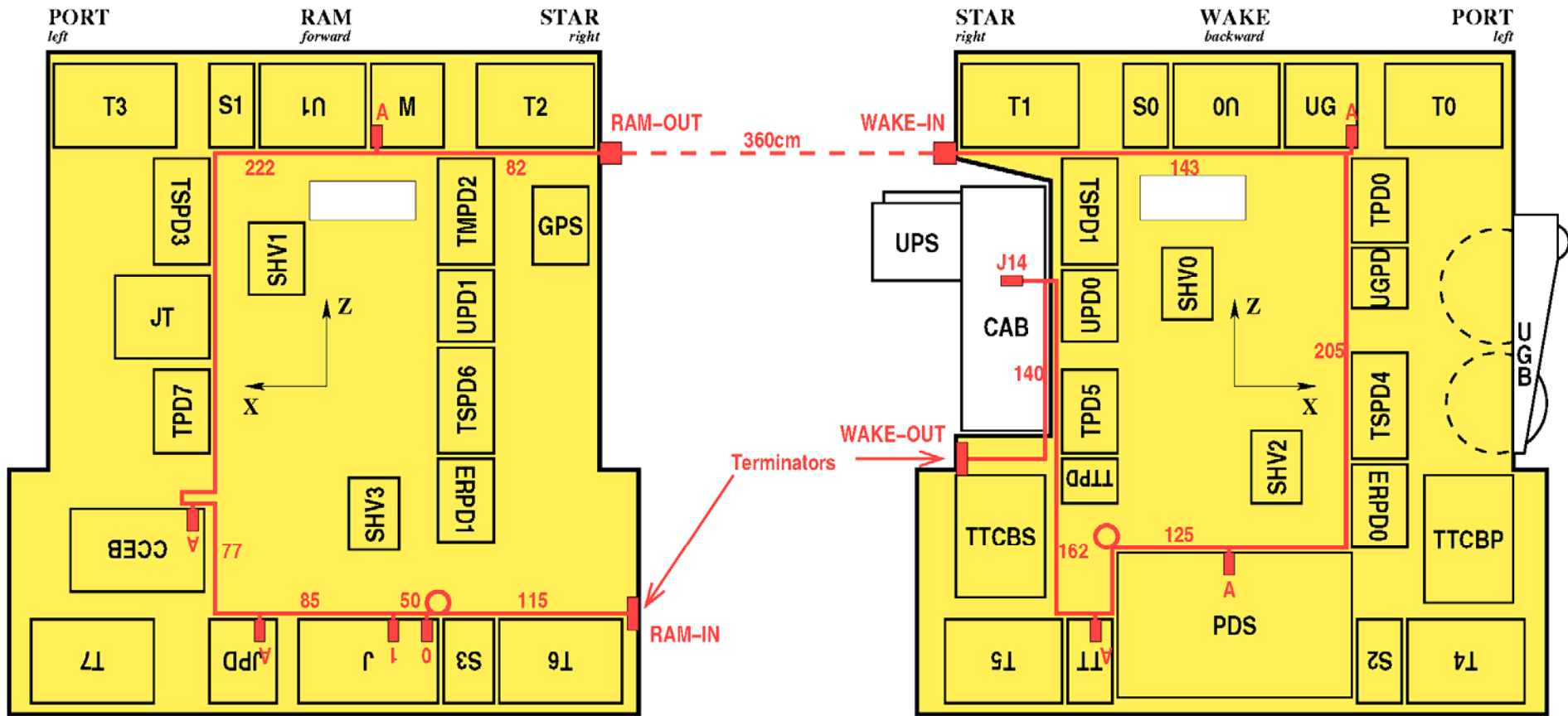
- AMS-Wire like cables (AMSW, LV1, Busy, FT, TOF, ETRG, PPS, LA), 134 in total (after reduction).
- Routing was carefully done:
 - On the wooden mockup (AR)
 - Using CGS “Manhattan” drawings (AR)
 - With 3-D CAD system (FC)
- Lengths determined, discussed and grouped in 16 groups
- Order was placed with Glenair (**Demande Achat Interne (DAI) 2503529**)
- ... cables arrived, VK is testing them
- Using AMS-Wire like pre-flight cables for pre-integration

AMS-Wire Like Cables

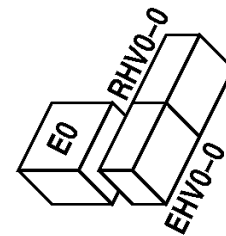
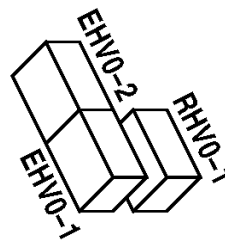
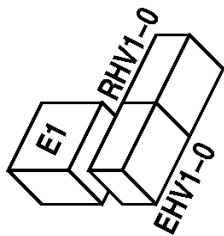
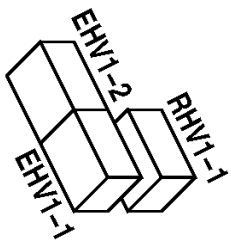
- True AMS-Wire cable carries 2 signals going in one direction and 2 signals going in opposite direction. Grounding scheme is designed for this.
- For TOF and FT some cables should carry 4 signals in one directions. There are 8 “4T” and 16 “4R” cables.
- VK found we can not use the standard AMS-Wire like cable, so 24 nonstandard cables, “ASWT” DAI 2659831, 21.03.2008 (TBC)
- Similar problem will be discussed later (LUSS patch panels).

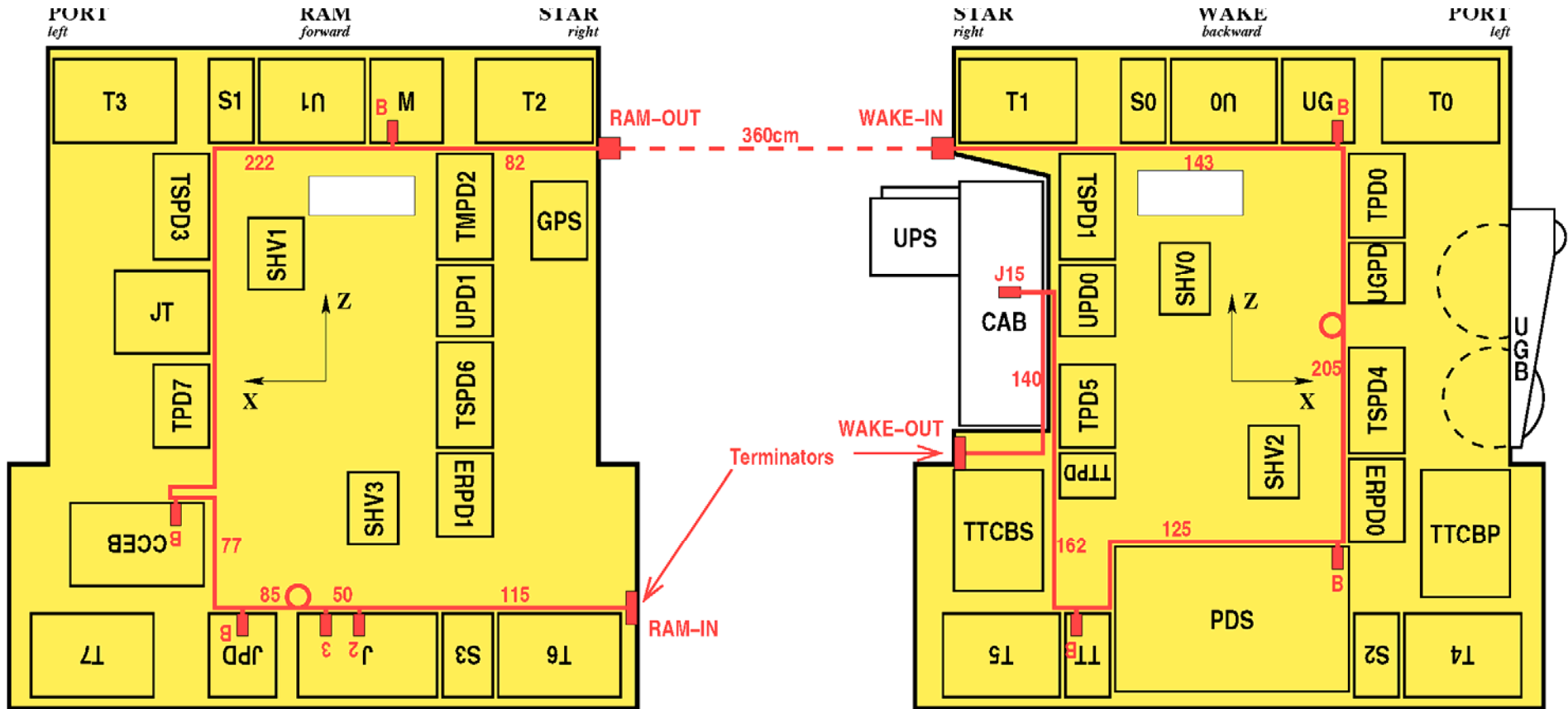
CAN-Bus Cables

- We decided to use two identical CAN-bus cables:
 - *Two* – for redundancy
 - *Identical* to speedup production and save cost (**)
- Routing was carefully done:
 - On the wooden mockup (AR)
 - Using CGS “Manhattan” drawings (AR)
 - With 3-D CAD system (FC)
- Lengths determined and discussed
- Order was placed with Glenair (**Demande Achat Interne (DAI) 2511208**)
- Cable arrived, was partially tested by VK in EMI tests of TTCE, tests OK

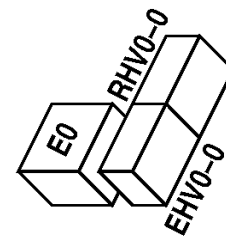
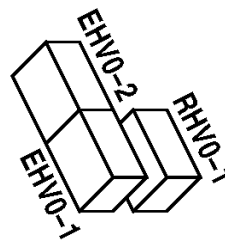
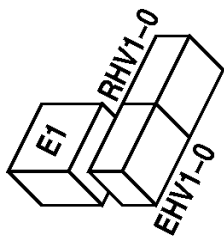
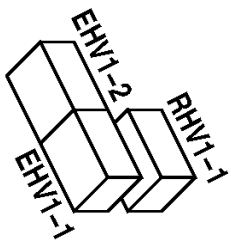


CAN-Bus Two Cables Version - Cable A





CAN-Bus Two Cables Version - Cable B



Cables between PDS and xPDS

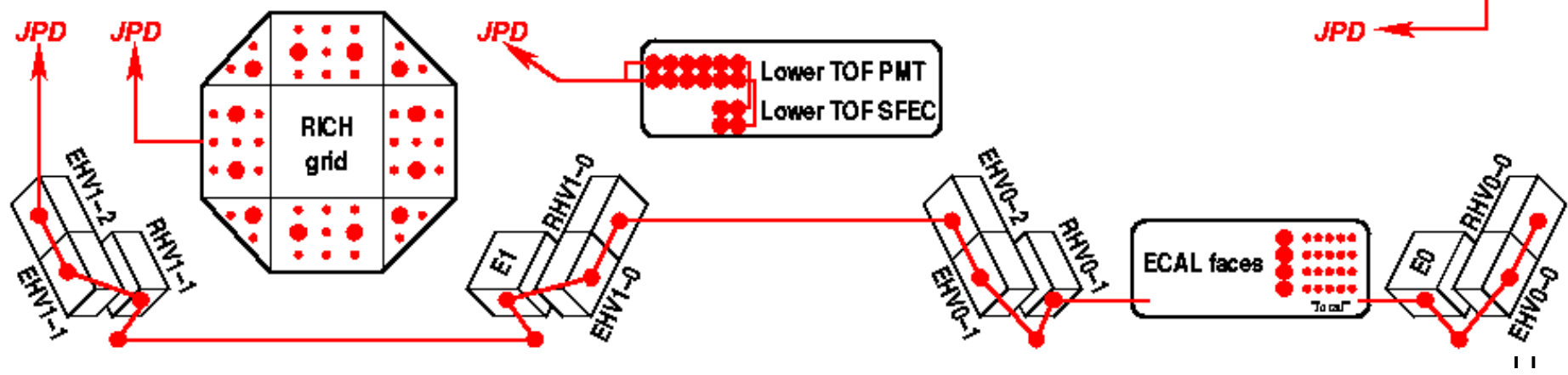
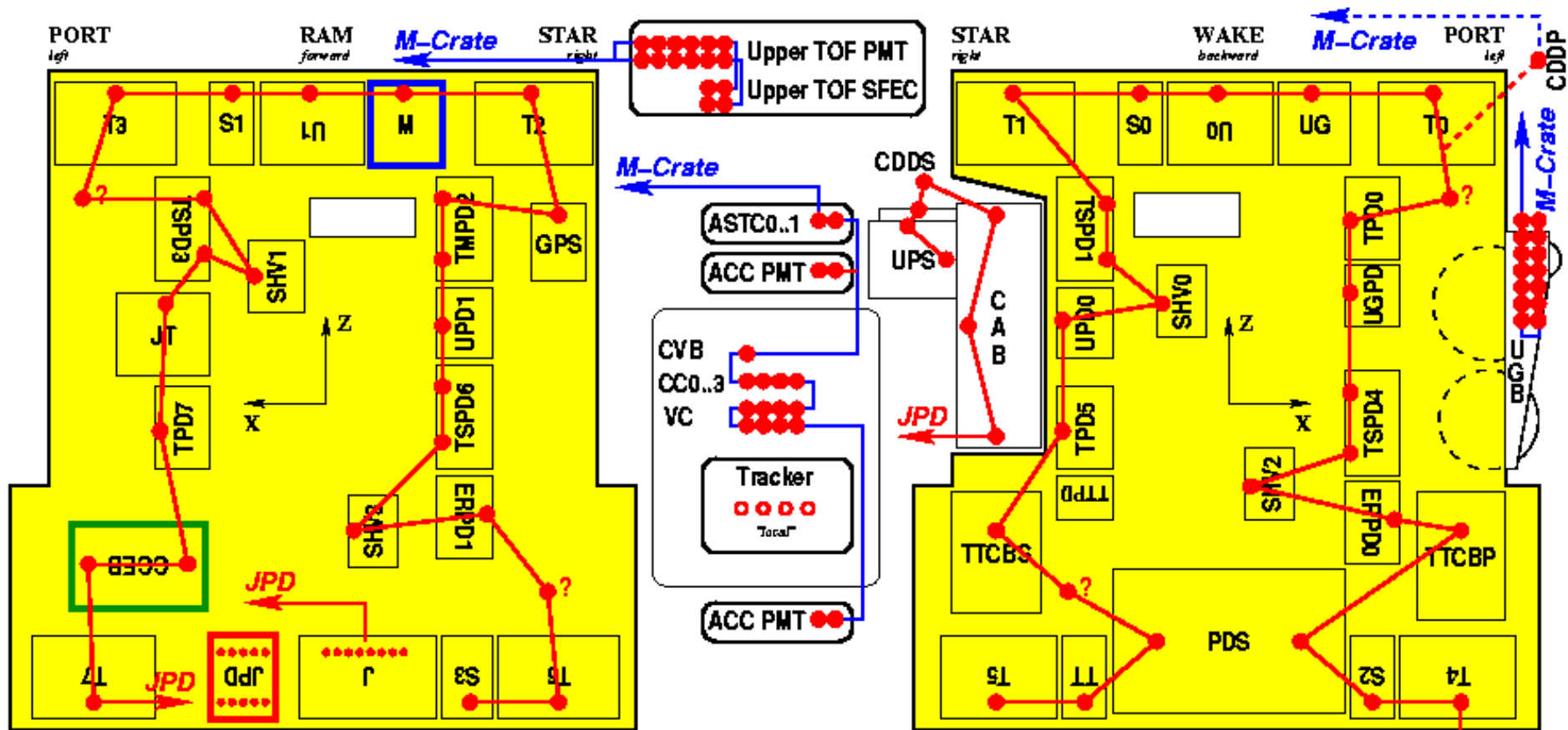
- Eight cable bundles to be produced
- Routing was carefully done:
 - On the wooden mockup (AR)
 - Using CGS “Manhattan” drawings (AR)
 - With 3-D CAD system (FC)
- Cable produced by AR and 3 electrical engineers from ETHZ
- Cables tested and some cables are used now to run the preintegrated AMS
- One cable to be reworked because VK gave the wrong documentation (TTCE), material and manpower available

Cables between xPDs and Crates

- JPD and J+JT Crates: one more set to be produced (?)
- JPD and JINJs: waiting for connectors for FM set (?)
- UPD and U-Crates: completed
- UGPD and UG-Crate: completed
- SPD and S-Crates: 1/3 in hand, waiting for material, EDT next week
- TPD and T-Crates: in work at CSIST
- ERPD and RICH and ECAL: OK?
- TMPD and M-Crate: completed, being used by WK for TVT of M-Crate FS

Global Temperature Sensor Network

- (*)
- 3 DTS buses for ECAL, RICH and LTOF:
 - Dallas sensors mounted and tested
 - DTS cables from Glenair arrived, in work
- UTOF and UG busses:
 - Dallas sensors mounted and tested
 - DTS cable for UTOF ready
 - DTS cables for UG arrived, in work
- “Sparse” DTS:
 - PCB designed by ETHZ (HPvG)
 - DTS cables from Glenair arrived
- Patch panels for CCEB, M-Crate produced



Bus	JPD	M-Crate	CCEB
1	JPD (+J temporary)	LCFR's	CC0+CC2 H-Reject
2	LTOF	UTOF	CC0+CC2 Case
3	ECAL	Magnet+CC	
4	RICH	UG+CDDP?	
5	RAM	CDDP?	CC1+CC3 H-Reject
6	WAKE+CDDP?	ASTE	CC1+CC3 Case
7	CAB+UPS+CDDS		
8	J (Tracker temporary)		
	<i>Note: do not connect anything to bus 1, it is used for JPD analog switches</i>		

Cables between PDS and some heaters

- Cable documentation in work (AR+MC)

Subdetector Cables - TRD

- Signal cables between TRD and U-Crates: in hand
- HV cables between TRD and U-Crate: in hand
- Dallas bus cables between TRD and UGSCMs in UG-Crate: done, tested, should be retested
- Cables between TRD (UGPS) and UG-Crate (UGFM): design and production by TRD-gas @MIT
- TRD heater cables (not from PDS): TRD-gas @MIT?

Subdetector Cables – TRD-Gas

- Dallas bus cables: done, tested, should be retested
- Cables between Box-S and UG-Crate: TRD-gas @MIT
- Cables between Box-C and UG-Crate: TRD-gas @MIT
- HV cables between UHVG in U-Crates and Box-C (gas gain monitoring tubes): Thorsten

Subdetector Cables – TOF

- Dallas bus cables inside LTOF & UTOF: done, tested
- Dallas bus Y-cable from LTOF to LUSS: done, tested
- Dallas bus cable from UTOF to M-Crate: done, tested
- Signal cables between TOF and S-Crates:
 - PMT cables in hands, need labeling and testing
 - SFEC cables, material ordered, EDT in 4-5 weeks
- HV cables between TOF and SHV: in hand, need testing
- LeCroy bus between S-Crate and SHV: waiting for material

Subdetector Cables – ACC

- Signal cables between ACC and S-Crates:
 - Ready
 - Length 1.1m (from Philip von Doetinchem 31-Jul-07), checked by Franck – OK.
- HV cables between ACC and SHV:
 - Ready
 - Length 1.5m (from Philip von Doetinchem 31-Jul-07), checked by Franck – OK.

Subdetector Cables – Tracker

- Cables between Tracker and T-Crates: in hand
- Cable between B-field sensors and CCEB: readout was tested OK, patch panel is being designed by FC and ETHZ (Ulf) working on it

Subdetector Cables – RICH

- Dallas bus cables for RICH: done, tested
- Cables between RICH and electronics: in hand
- HV cables between RICH and RHV: in hand
- LeCroy bus cables between RHV and JINRs: in hand
- Dallas bus cables for ERPD – GTSN: in work
- Dallas bus cables for RHV: ?

Subdetector Cables – ECAL

- Dallas bus cables inside ECAL: done, tested
- Signal cables between ECAL and E-Crates: in hand
- HV cables between ECAL and EHV: in hand
- LeCroy bus cables between EHV and E-Crates: in hand
- Dallas bus cables from ECAL to E-Crate and EHV: ?

Subdetector Cables – LUSS

- Patch panels for cables to LUSS
- Problems with serial connection of AMS-Wire like cables:
 - Have to use special circular connectors instead of 9-pin uD
 - RICH people and VK did some studies
 - Cables from RICH to patch panel to be reworked
 - Cables from patch panel to JT-Crate ordered

Subsystem Cables – LAS

- Cables between LFCR box and LDDR board (M-Crate):
4 out of 5 installed
- Cables between LCTL board (M-Crate) and JLV1 are
standard AMS-Wire cables

Subsystem Cables – TTCE

- Lucio Accardo takes care of these cables
- QM cables are available
- Do not forget 2 double redundant Dallas buses from inner tracker:
 - readout is being used now for “upper” bus (temporary connected to JPD)
 - second “lower” bus to be produced and tested (?)

Subsystem Cables – AST

- Cable between Star Tracker and ASTE boards (M-Crate):
 - Routing was done (AR), length is known
 - Cable material in hand, production will start soon

Subsystem Cables – GPS

- Cable between GPS antenna and GPS receiver: 2 flight + 2 ground cables are in hand
- Cable between GPS receiver and GPSE board (M-Crate): cable produced, tested and stored
- Cable between GPS receiver and TMPD: cable produced, tested and stored
- Cables between GPSE board (M-Crate) and JTBX are standard AMS-Wire like cables

Subsystem Cables – CCEB

- EM cables were used in CryoCooler testing at GSFC:
 - Power cables between CCEB and CC
 - Dallas cables between CCEB and CC
 - Signal cables between CCEB and CERNOX sensors in VC
- FM cables production started by ETHZ
- Cables between CCEB and PT1000 sensors on the Zenith radiator: ?
- Cables between CCEB and CC: ETHZ

Subsystem Cables – CAB

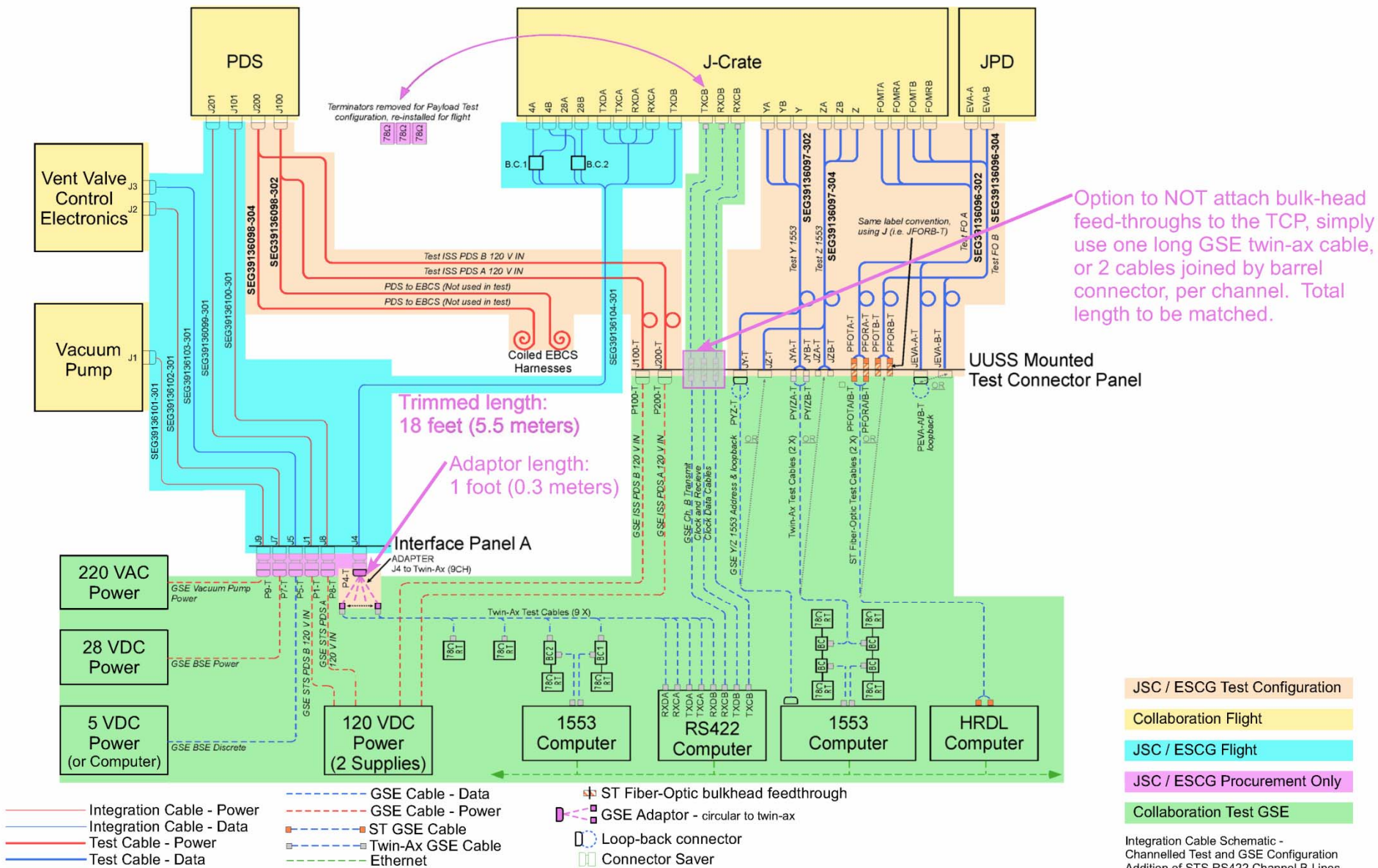
- On the CAB side we have full connector description, location and pin out
- Cables between CAB and connectors on VC:
 - Preliminary disposition of signals is available from SCL (BA)
 - All mating connectors are in hand
 - Cables between CAB and various hardware mounted on the VC: Now defined
- Cables between CAB and UPS:
 - All in hand, need to estimate the length and order wire
- Cables to charge and discharge the magnet:
 - Wires are in hand
 - Very special tooling is needed
 - TU will take care

Subsystem Cables – CGSE

- CGSE has its own system of power and signal cables
- Connector for AMS end are in hand, need wire length

Interface and GSE Cables

- In hands of:
 - Tim Urban (Interface cables) (*)
 - Xudong Cai (GSE cables)
- Xudong:
 - We have enough cables (twinax and ST-ST fibers) and components (couplers and cards) to support two setups:
 - We will maintain one setup in the clean room all the time starting from August 2007
 - The other setup will be either in 892 RB01 or in Taiwan for tests
 - For beam test, the clean room setup of GSE cables and components will be used
 - For TVT, part of the clean room setup of GSE cables and components will be used together with the feed through cables
 - The feed through cables need to be discussed with ESTEC



Summary

- It seems I know (hope) all the cables and watch closely their status.
- G.Viertel is working on more detailed and formal “book” (like he did in AMS-01). This will also provide us with the cable documentation needed for QA.

No Additional Slides with Technical Details