

Hybrid Report - UKB

Dave Charlton 2 Dec 2003

The short version:

Problems, problems, problems

More specifically:

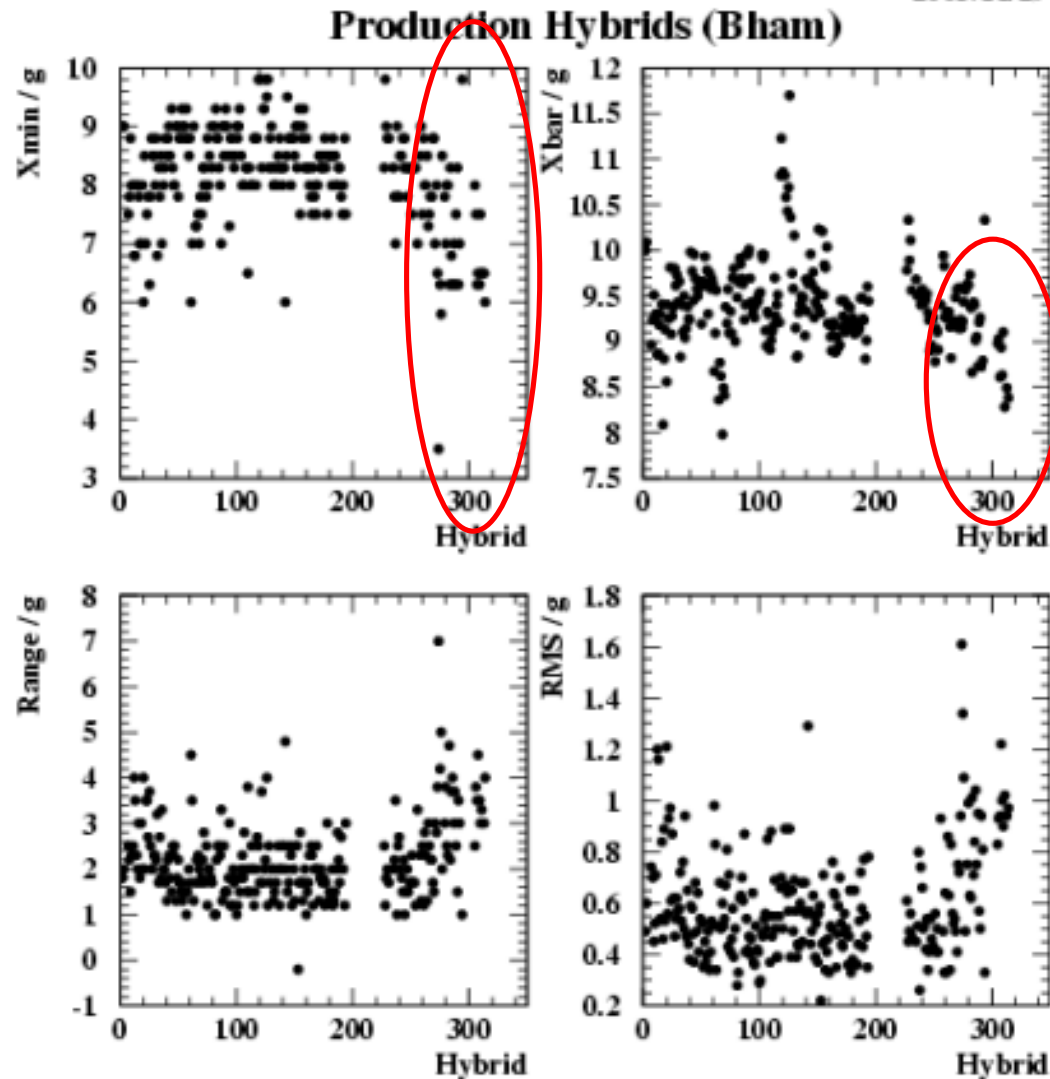
- Dirty gold surface
- Continuing poor PA quality
- Cannot plasma clean PAs
- Slow SCT decision on fate of bad chips

Hybrid Gold Problems

2003/11/29 14.59

10 September:

Suddenly saw a
~25% failure rate of
bond pull test QA,
plus high peel rate,
on 271-283



Hybrid Gold Problems (II)

- 10 September: Informed Nobu
- Only some areas of test pads show poor strengths, but they did so repeatedly
- Spent lots of time optimising bonding settings, trying to get hybrids to pass QA so we could use them
- 8 October: Stopped ASIC mounting
- 10 October: finished optimisation: need to raise power a lot, still see many peels

Hybrid Gold Problems (III)

- 16 October: realised what was wrong when we received a sample without passives
- Gold a very different colour - "straw" vs. ruddy orange - very evident, even to the naked eye
- It seems there may be lessons to be learnt about the PC-hybrid QA

Plasma Cleaning

- No Ar plasma cleaning facilities readily available in B'ham, and no local expertise
- Have been using CERN facilities, via Tony - not at all a zero-work option
- First hybrid cleaned (274), PA uncovered as recommended: gold surface very good for bonding, PA very bad
- Second (294) cleaned with PA covered, PA seems OK: now being put on a module
- 16 more cleaned (PAs covered) @CERN
- 32 more returned to Japan for cleaning

Pitch Adapters

- Continuing bonding problems at RAL
- Lot 67 samples were not usable
- Plasma cleaning PAs spoils the bondability:
 - unexpected - can we understand why?
 - emphasises need to check everything

Apparently no solution in sight to the PA problem

Should we go back to the original "whiskery" PAs?

Bad Chips

Because of the schedule implications, we decided to replace essentially all bad chips with 1-ana-bad ASICs (stuckcell & negative offset chips are still on hold, we have no BLG chips, yet)

The trickle of repaired hybrids has allowed UKB module construction to proceed, by putting hybrids on a sample of SBs

Some good news: UKB chip replacement now routinely successful

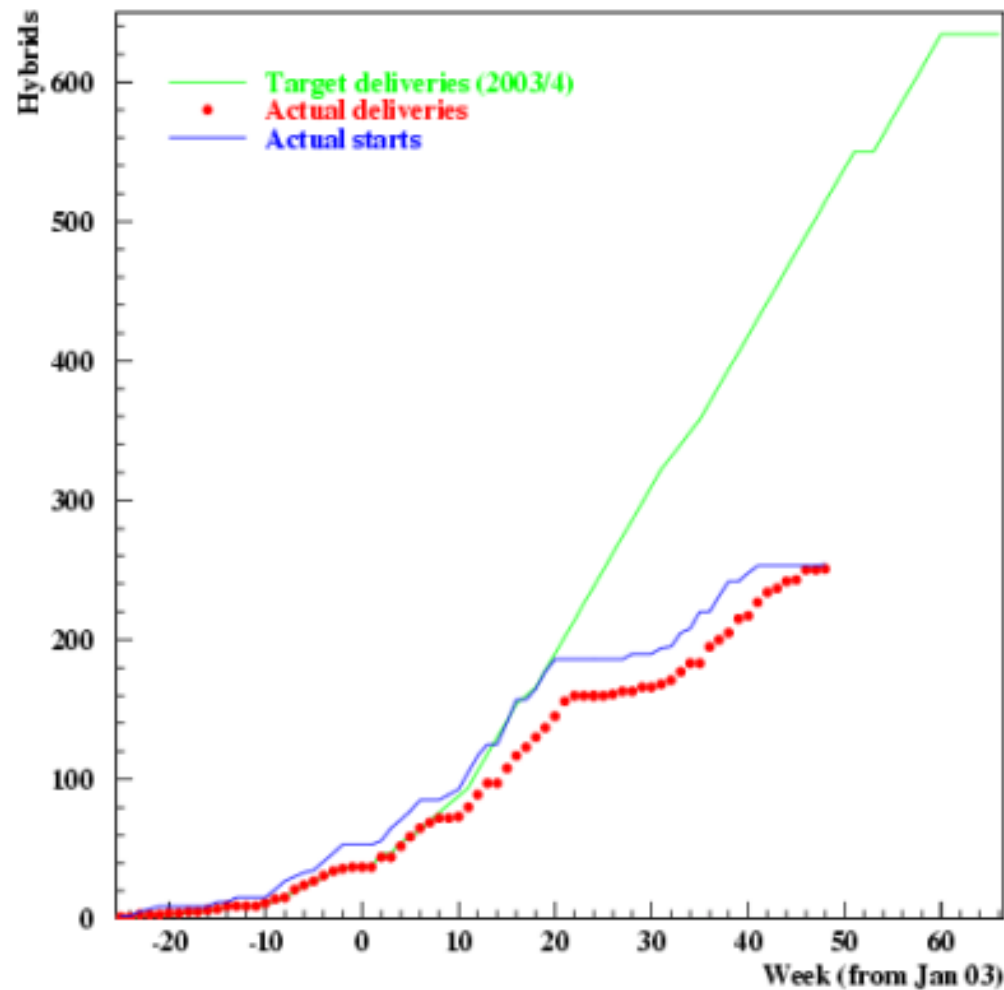
Production Statistics

2003/11/29 12.59

Hybrid Production Schedule (Bham)

Since Sept SCT week:

- 17 starts
- 42 completed (mainly rework)



Summary

- We hoped production would pick up after the difficult summer - it didn't happen!
- Hybrid gold problem now seems solved: we are going back into production with the hybrids/PAs we have
- Information flow is too poor - this is frustrating - we need fuller/faster communication
- It is vital for UKB to have a regular supply of >15 hybrids/week from now on
- Additional ASIC-stuffed hybrids needed if we are to clear the backlog of SBs