

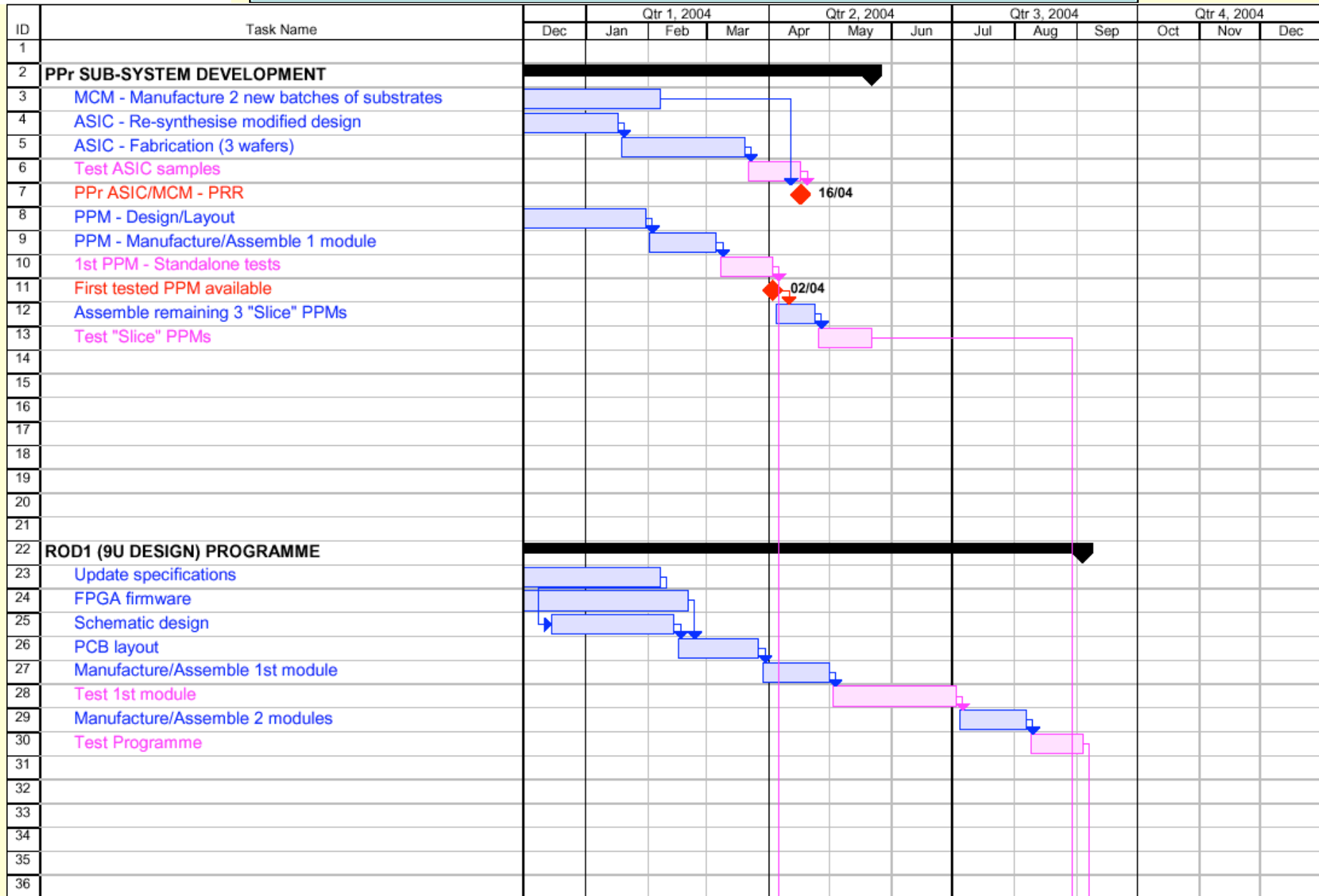
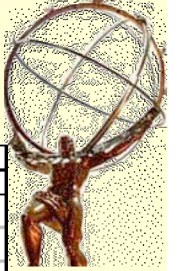


# *Hardware Schedule*

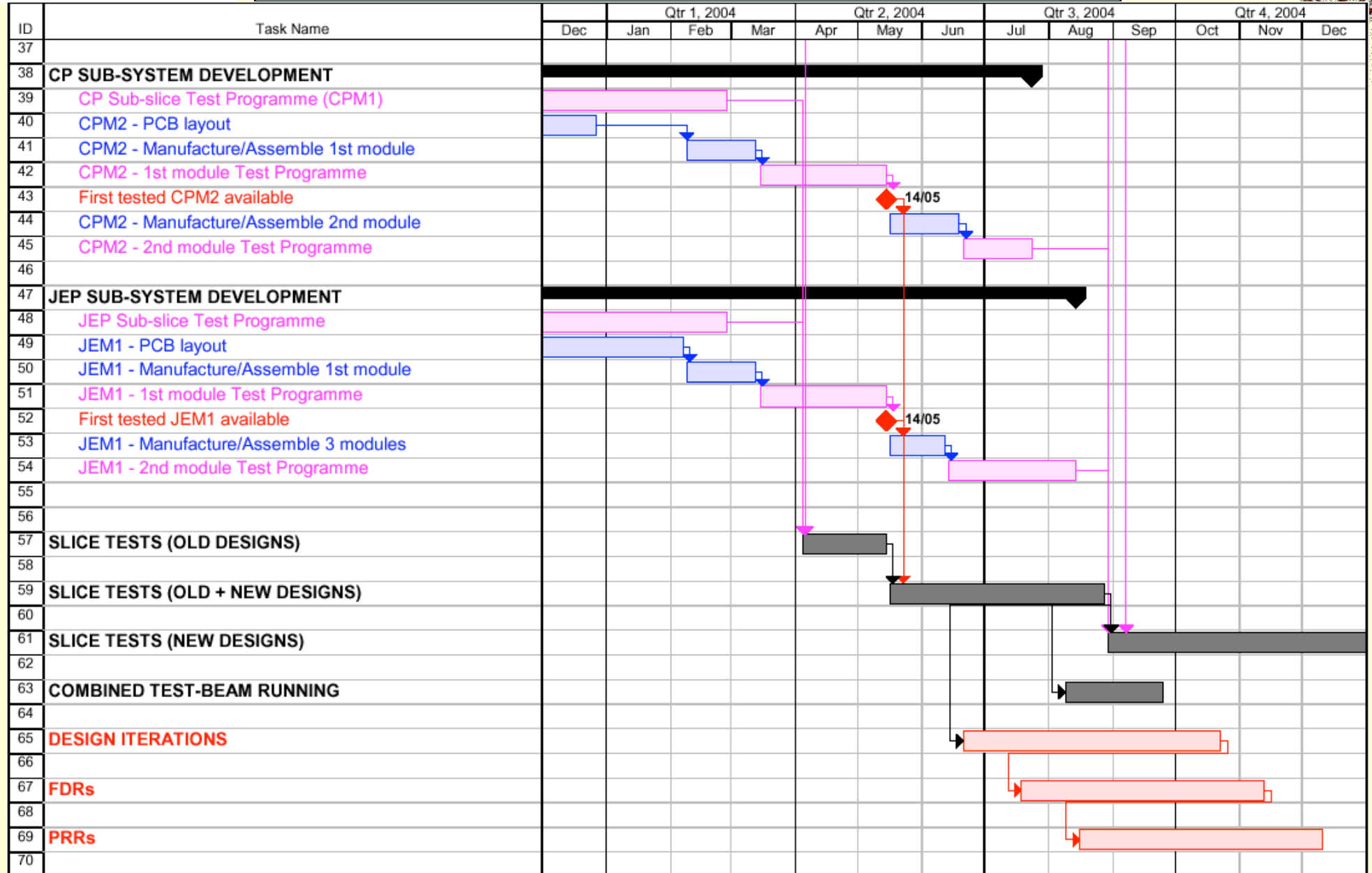
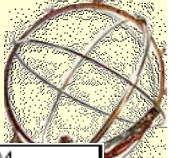
+ ~~Mill~~-Milestones

*Tony Gillman*

# Pre-PRRs – I

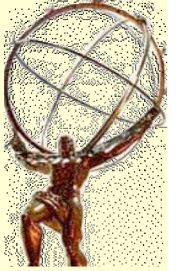


# Pre-PRRs – II





# Strategy for 2004



- ◆ Pre-PRR period is in several stages –
  1. Sub-slice tests with separate CP and JEP sub-systems – *now very well advanced*
  2. Slice Tests with combined CP, JEP and PPr sub-systems – current designs (*CPM1s, JEM0s, 6U RODs*) – *must await the PPM(s)*
  3. Full Slice Tests with all sub-systems – new designs (*CPM2s, JEM1s and 9U RODs*)
- ◆ Staged Final Design Reviews for some modules are currently scheduled to start during the last stage of the Slice Tests, e.g.
  - ◆ PPM (*needs early production → installation → integration with calorimeters*)
  - ◆ PB (*thoroughly evaluated during previous stages – different from other system modules*)
- ◆ The latest FDR will probably be for the 9U ROD – *September 2004*
- ◆ Retain the UK Slice Test setup during the August/September Test-Beam activity – a lot of valuable experience with system issues could be gained

# Installation planning...



- ◆ Sub-systems will be fully commissioned at their home institutes, *i.e.*
  - ◆ PPr sub-system (8 crates + ROD readout) at Heidelberg, with a small slice ( $\ll 1$  crate) of CP and JEP (*and*  $\ll 1$  crate of LAr/TileCal Receivers?) for interfacing checks
  - ◆ CP sub-system (4 crates + ROD readout) in UK (RAL?) with a small slice of PPr (*and* CERN modules – CTP, RoIB, ... ?) for interfacing checks
  - ◆ JEP sub-system (2 crates + ROD readout) in Mainz, with a small slice of PPr (*and* CERN modules – CTP, RoIB, ... ?) for interfacing checks
- ◆ Availability of CERN modules?
- ◆ Begin installation of PPr in USA15 ~May 2005 for integration with calorimeters and DAQ
- ◆ Install CP and JEP in USA15 ~March 2006 for integration with PPr
- ◆ A draft plan should be prepared for the Heidelberg meeting

# Forthcoming FDRs and PRRs



- ◆ Next important review will be the PPr ASIC and MCM combined PRR
  - ◆ The FDR for the PPr MCM was held in April 2000, with Philippe Farthouat representing TC
  - ◆ The FDR for the PPr ASIC was held in June 2000, with Erik van der Bij representing TC
- ◆ Having had representatives from TC at the FDRs, we expect the combined PRR now to be a relatively straightforward procedure, with minimal documentation required
- ◆ The original PRR date of Feb/March 2004 must be postponed until the re-designed PPr ASIC has been evaluated, and the MCM manufacturing yield problems are resolved – *April/May 2004?*
- ◆ For a satisfactory PRR, it is crucial to demonstrate that an acceptable yield of assembled MCMs is consistently achievable

# Forthcoming FDRs and PRRs



- ◆ We will participate in the PRR for the combined LAr/TileCal Receiver module, which will be at CERN on March 8<sup>th</sup> 2004 (*possibly by phone*)
- ◆ *The main review activity starts ~June 2004, when all remaining modules must be authorised for production*
- ◆ Seven sets of FDRs followed by PRRs...



# Milestones I



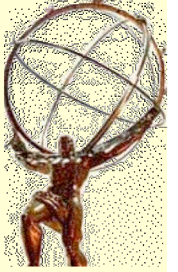
<b>Milestone</b>	<b>Date</b>	<b>“Official”</b>
FDR for JEM1	Dec 2002	(Oct 2002)
Start CP/JEP sub-system tests	May 2003	(Oct 2002)
PDR for 9U ROD	July 2003	(Mar 2003)
FDR for Lar/TileCal Receiver	Nov 2003	
PRR for Lar/TileCal Receiver	Mar2004	
Start Slice Tests – first stage	Mar 2004	(Mar 2003)
PRR for PPr ASIC/MCM	Apr 2004	(Oct/Nov 2003)
Stage 1 Slice Tests ( <i>old designs</i> ) complete	May 2004	(Jul 2003) ???
FDR for PB ( <i>Processor Backplane</i> )	June 2004	(Jan 2004) ???
FDR for PPM	June 2004	(Feb 2004) ???
Stage 2 Slice Tests ( <i>old + new designs</i> ) complete	July 2004	(Dec 2003) ???
FDR for CMM	July 2004	(Apr 2003) ???
FDR for TCM	July 2004	(Feb 2004) ???
FDR for CPM	Aug 2004	(Feb 2004) ???
FDR for JEM	Aug 2004	(Mar 2004) ???
FDR for ROD	Sept 2004	(Apr 2004) ???

# Milestones II



<b>Milestone</b>	<b>Date</b>	<b>“Official”</b>
PRR for PB	July 2004	(Feb 2004) ???
PRR for PPM	July 2004	(Feb 2004) ???
PRR for CMM	Aug 2004	(May 2004) ???
PRR for TCM	Aug 2004	(Feb 2004) ???
PRR for CPM	Sept 2004	(Feb 2004) ???
PRR for JEM	Sept 2004	(Apr 2004) ???
PRR for ROD	Oct 2004	(May 2004) ???
Sub-systems production complete	Mar 2005	(Oct 2004) ???
PPr RMI-1 for TileCal Barrel integration	Jan 2005	
PPr RMI-2 for TileCal Extended Barrel integration	Feb 2005	
PPr RMI-3 for LAr Barrels integration	Mar 2005	
PPr RMI-4 for LAr End-Caps integration	May 2005	
Finish PPr test programme	May 2005	(Apr 2005)
Finish CP/JEP test programmes	Mar 2006	(Oct 2005)
Finish PPr-Calorimeters integration	July 2006	(Oct 2005)
<i>Calorimeter trigger available in situ</i>	<i>Oct 2006</i>	<i>(Apr 2006)</i>

# Conclusions



- ◆ There is a clear break-point in mid-2004 – start of the FDR/PRR process
- ◆ After then, there is no further real opportunity to make design revisions
- ◆ Preparation for the first FDR in June 2004 (*probably the Processor Backplane – PB*) must start ~May, **3 months from now – is this realistic?**
- ◆ **The period from June – November will be extremely intensive –**
  - ◆ seven major sets (*FDR and PRR*) of reviews in five months
  - ◆ continuing work in the Slice Test system
  - ◆ participation in the 2004 Combined Test-Beam running – implies a break of ~2 months
- ◆ **Is this really viable ...?**
- ◆ **We should perhaps consider sacrificing some of the (generous?) 12 months allocated for final sub-system testing (March 2005 – March 2006) for more Slice Test time in 2004**