

Dick,

I append below the unedited and unexpurgated comments from the reviewers at the BOC-ROD-TIM review of July 31-August 1. I would like to congratulate you and the rest of the UK and US team for their efforts and hope that the review was useful.

I will not try to summarize the many comments given below but there are a few key global items that should be addressed. These are listed below with my guess as to the approximate dates for resolution of the given issue. Please let me know if there is substantial disagreement from your end.

1. The BOC-ROD-TIM team should plan on an integrated ATLAS FDR by February 2001. An integrated schedule should be part of this review, and thus should be available for internal review in the US and UK by early December at the latest.
2. Having test results from all of the BOC-ROD-TIM, particularly together, was deemed very aggressive to meet the February FDR schedule. An integrated test plan, with responsibilities assigned, should be developed immediately so that it can be reviewed by the appropriate SCT, Pixel, UK and US entities by the end of September.
3. The SCT need for BOC-ROD-TIMs is substantially in advance of the current Pixel schedule and there is some risk that freezing the design too early, necessary for the SCT, may cause problems for the Pixels. This needs to be addressed directly in the integrated schedule, by a combination of sufficient design flexibility and/or phased fabrication.
4. Finally, the goal to complete the fabrication and testing of the RODs (and probably the BOC and TIM but need integrated schedule) by early 2003, practically guarantees that some parts for these items will be obsolete by the time of commissioning in 2005 or so. There should be a clear proposal how to handle this situation for the February FDR with a final proposal to be ready by the ATLAS PRR.

Gil Gilchriese

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From Chris Bebek  
High level concerns

TIM design seems to be still in flux even as PCB are being fabbed.  
ROD/BOC/TIM/Module test before February FDR will be tough to meet.

TIM

TIM is designed and in fab. (Personal comment, if ever a design should be done in one large FPGA, this is it). The implementation is smallish CPLD's which can be individually simulated but their interaction cannot. The commissioning may take some time as the IC interaction are not simulated. There is discussion about future incorporation of deadtime statistic accumulation per ROD. Fox pointed out that this might be doable with unused resources on each ROD. Another future change to the design is to mount the TTRx logic directly on the PCB instead of continuing with an "ATLAS standard" daughter board. I do not understand the motivation for this. It was stated that a switch is used to set the board base address. From the discussion that followed it, seems that the ROD used the nGA lines on the backplane to establish the board base address. It did not sound to be strictly VME64x compliant, but it will work fine. The TIM should do what the ROD does so that there is no confusion later on with TIM encroaching on ROD address space due to a mis-set switch.

TIM schedule

7 October - Two TIM boards are thought to be available.

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Date: 5-26-2000

To: ROD Reviewers

From: John Fox

Subject: Thoughts from the 7/31/2000 LBL ROD-BOC-TIM Review

Here's the notes I made during the review we had on Monday and Tuesday 7/31 and 8/1.

TIM - the basic module functionality is well-defined, and the proposed design, based on a general-purpose array of MACH PLDs, has so much flexibility that I see little risk that the required functionality (or even expanded functionality, such as the dead-time and BUSY statistics) will not be achieved in the first prototype. I think that the design group has made a pragmatic decision to use the programmable devices supported by the software they run and understand, though they expressed some concerns about availability and support for the MACH devices. I think trying to consider alternate implementations is going to have a schedule impact - I'd urge proceeding with the prototype development, and pragmatically expediting a lifetime buy on the MACH plds to insure the boards can be supported in the future years. As I understand the production module numbers, the TIM module is required in much smaller volume than the data processing BOC-ROD modules. As such, I think there are good reasons (and little cost or downside) in just stocking up on the required logic for the entire production to insure availability.

As these individual designs exist as functioning prototypes, it will become increasingly important to build up a complete set of TIM-BOC-ROD processing, and prove the system-level functionality. This is going to be difficult, given the geographical separation of the development teams, schedule uncertainties on the components of the physical detector to provide real input signals, etc. Because of these issues I think a commissioning czar needs to be designated now, and some sort of commissioning plan and schedule, defining who and where what is going to happen when, needs to be sketched out. This realistic commissioning plan needs to be developed now to insure that the schedule implications, and test requirements, and manpower needs can be foreseen before they become obstacles to a timely successful completion of the prototype testing, and approval for volume production of the full detector requirements. Once again, I want to thank all the presenters for the care and effort that went into the presentations. I look forward to hearing of future progress.

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From premisler@bnl.gov Fri Aug 18 17:07:56 2000

Date: Wed, 09 Aug 2000 11:32:21 -0400

From: Lawrence Premisler <premisler@bnl.gov>

To: Gil Gilchriese <mggilchriese@lbl.gov>

Subject: ROD-BOC-TIM Design Review Comments

#### TIM Schematic & Layout

Calculate the board hot spot temperature and determine if there is a reliability problem before the prototyping phase. If this is not done and if there is a problem, the layout will probably have to be changed and another prototyping run will have to be made that will impact schedule and cost.

#### TIM Schedule

In order for the ROD to start production, what is required by the TIM to insure that there will be no interface problems?

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From rhminor@lbl.gov Fri Aug 18 17:08:12 2000  
Date: Thu, 10 Aug 2000 15:36:49 -0700  
From: minor <rhminor@lbl.gov>  
To: Murdock Gilchriese <gilg@lbl.gov>  
Subject: Re: ROD review comments

Gil,

Comments of Atlas review 7/31--8/1/00

3) The long term availability of the MACH parts needs to be evaluated. If they are hard to get now, will they be available for production, and will large number of spares be needed?

Bob Minor  
Lawrence Berkeley Lab

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